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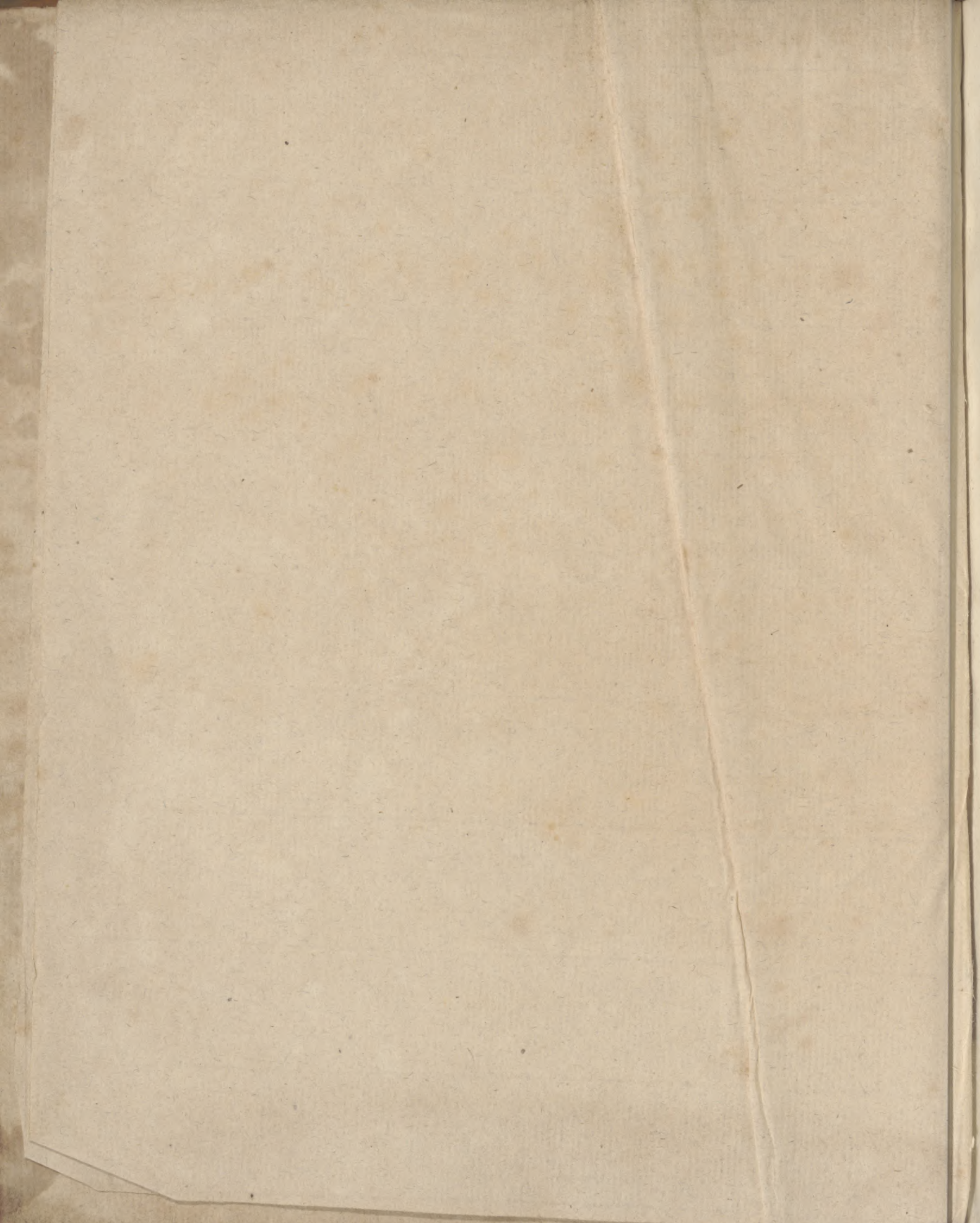
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ENCYCLOPÆDIA BRITANNICA;
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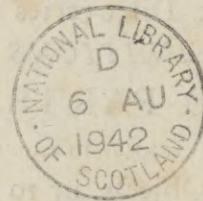
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ENCYCLOPÆDIA BRITANNICA.

C I C

Cicero.

CICERO (Marcus Tullius), the celebrated Roman orator, was born in the year of Rome 647, about 107 years before Christ. His father Marcus Tullius, who was of the equestrian order, took great care of his education, which was directed particularly with a view to the bar. Young Tully, at his first appearance in public, declaimed with such vehemence against Sylla's party, that it became expedient for him to retire into Greece; where he heard the Athenian orators and philosophers, and greatly improved both in eloquence and knowledge. Here he met with T. Pomponius, who had been his school-fellow; and who, from his love to Athens, and spending a great part of his days in it, obtained the surname of *Atticus*; and here they revived and confirmed that noted friendship which subsisted between them through life with so celebrated a constancy and affection. From Athens he passed into Asia; and after an excursion of two years came back again into Italy.

Cicero was now arrived at Rome; and, after one year more spent at the bar, obtained, in the next place, the dignity of *quæstor*. Among the causes which he pleaded before his *quæstorship*, was that of the famous comedian Roscius, whom a singular merit in his art had recommended to the familiarity and friendship of the greatest men in Rome. The *quæstors* were the general receivers or treasurers of the republic, and were sent annually into the provinces distributed to them, as they always were, by lot. The island of Sicily happened to fall to Cicero's share; and that part of it, for it was considerable enough to be divided into two provinces, which was called *Lilybaum*. This office he received, not as a gift, but a trust; and he acquitted himself so well in it, that he gained the love and admiration of all the Sicilians. Before he left Sicily, he made the tour of the island, to see every thing that was curious, and especially the city of Syracuse; where he discovered the tomb of Archimedes to the magistrates who were showing him the curiosities of the place, but who, to his surprise, knew nothing of any such tomb.

We have no account of the precise time of Cicero's marriage with Terentia; but it is supposed to have been celebrated immediately after his return from his travels to Italy, when he was about 30 years old. He was now disengaged from his *quæstorship* in Sicily, by which first step, in the legal gradation and ascent of public honours, he gained an immediate right to the senate, and an actual admission into it during life; and settled again in Rome, where he employed himself constantly in defending the persons and properties

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of its citizens, and was indeed a general patron. Five years were almost elapsed since Cicero's election to the *quæstorship*, which was the proper interval prescribed by law before he could hold the next office of *ædile*; to which he was now, in his 37th year, elected by the unanimous suffrages of all the tribes, and preferably to all his competitors. After Cicero's election to the *ædileship*, but before his entrance upon the office, he undertook the famed prosecution of C. Verres, the late prætor of Sicily; who was charged with many flagrant acts of injustice, rapine, and cruelty, during his triennial government of that island. This was one of the most memorable transactions of his life; for which he was greatly and justly celebrated by antiquity, and for which he will, in all ages, be admired and esteemed by the friends of mankind. The result was, that, by his diligence and address, he so confounded Hortensius, though the reigning orator at the bar, and usually styled *the king of the forum*, that he had nothing to say for his client. Verres, despairing of all defence, submitted immediately, without expecting the sentence, to a voluntary exile; where he lived many years, forgotten and deserted by all his friends. He is said to have been relieved in this miserable situation by the generosity of Cicero; yet was proscribed and murdered after all by Mark Antony, for the sake of those fine statues and Corinthian vessels of which he had plundered the Sicilians.

After the usual interval of two years from the time of his being chosen *ædile*, Cicero offered himself a candidate for the *prætorship*; and, in three different assemblies convened for the choice of prætors, two of which were dissolved without effect, he was declared every time the first prætor by the suffrages of all the centuries. He was now in the career of his fortunes; and in sight, as it were, of the consulship, the grand object of his ambition: and therefore, when his *prætorship* was at an end, he would not accept any foreign province, the usual reward of that magistracy, and the chief fruit which the generality proposed from it. He had no particular love for money, nor genius for arms; so that those governments had no charms for him: the glory which he pursued was to shine in the eyes of the city as the guardian of its laws; and to teach the magistrates how to execute, the citizens how to obey, them.

Being now in his 43d year, the proper age required by law, he declared himself a candidate for the consulship along with six competitors, L. Sculpicius Galba, L. Sergius Catilina, C. Antonius, L. Cassius Longinus, Q. Cornificius, and C. Licinius Sacerdos. The

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two

Cicero.

two first were patricians; the two next plebeians, yet noble; the two last the sons of fathers who had first imported the public honours into their families: Cicero was the only *new man*, as he was called, among them, or one of equestrian rank. These were the competitors; and in this competition the practice of bribing was carried on as openly and as shamefully by Antonius and Catiline as it usually is at our elections in Britain. However, as the election approached, Cicero's interest appeared to be superior to that of all the candidates: for the nobles themselves, though always envious and desirous to depress him, yet out of regard to the dangers which threatened the city from many quarters, and seemed ready to burst out into a flame, began to think him the only man qualified to preserve the republic, and break the cabals of the desperate by the vigour and prudence of his administration. The method of choosing consuls was not by an open vote; but by a kind of ballot, or little tickets of wood distributed to the citizens, with the names of the several candidates inscribed upon each: but in Cicero's case the people were not content with this secret and silent way; but, before they came to any scrutiny, loudly and universally proclaimed Cicero the first consul: so that, as he himself says, "he was not chosen by the votes of particular citizens, but the common suffrage of the city; nor declared by the voice of the crier, but of the whole Roman people."

Cicero had no sooner entered upon his office than he had occasion to exert himself against P. Servilius Rullus, one of the new tribunes, who had been alarming the senate with the promulgation of an Agrarian law; the purpose of which was to create a decemvirate, or ten commissioners, with absolute power for five years over all the revenues of the republic, to distribute them at pleasure to the citizens, &c. These laws used to be greedily received by the populace, and were proposed therefore by factious magistrates as oft as they had any point to carry with the multitude against the public good; so that Cicero's first business was to quiet the apprehensions of the city, and to baffle, if possible, the intrigues of the tribune. Accordingly, in an artful and elegant speech from the rostra, he gave such a turn to the inclination of the people, that they rejected this law with as much eagerness as they had ever received one. But the grand affair of all, which constituted the glory of his consulship, and has transmitted his name with such lustre to posterity, was the skill he showed, and the unwearièd pains he took, in suppressing that horrid conspiracy which was formed by Catiline and his accomplices for the subversion of the commonwealth. For this great service he was honoured with the glorious title of *pater patriæ*, "the father of his country," which he retained for a long time after.

Cicero's administration was now at an end; but he had no sooner quitted his office, than he began to feel the weight of that envy which is the certain fruit of illustrious merit. He was now, therefore, the common mark, not only of all the factious, against whom he had declared perpetual war, but of another party not less dangerous, the envious too: whose united spleen never left him from this moment till they had driven him out of that city which he had so lately preserved. Cicero, upon the expiration of his consul-

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ship, took care to send a particular account of his whole administration to Pompey, who was finishing the Mithridatic war in Asia; in hopes to prevent any wrong impressions there from the calumnies of his enemies, and to draw from him some public declaration in praise of what he had been doing. But Pompey being informed by Metellus and Cæsar of the ill humour that was rising against Cicero in Rome, answered him with great coldness; and instead of paying him any compliment, took no notice at all of what had passed in the affair of Catiline: upon which Cicero expostulates with him in a letter which is still extant.

About this time Cicero bought a house of M. Crassus on the Palatine-hill, adjoining to that in which he had always lived with his father, and which he is now supposed to have given up to his brother Quintus. The house cost him near L. 30,000, and seems to have been one of the noblest in Rome. It was built about 30 years before by the famous tribune M. Livius Drusus: on which occasion we are told, that when the architect promised to build it for him in such a manner that none of his neighbours should overlook him; "But if you have any skill (replied Drusus), contrive it rather so that all the world may see what I am doing." The purchase of so expensive a house raised some censure on his vanity; and especially as it was made with borrowed money. This circumstance he himself does not dissemble; but says merrily upon it, that "he was now plunged so deeply in debt, as to be ready for a plot, only that the conspirators would not trust him."

The most remarkable event that happened in this year, which was the 45th of Cicero's life, was the pollution of the mysteries of the *bona dea* by P. Clodius; which, by an unhappy train of consequences, involved Cicero in a great and unexpected calamity. Clodius had an intrigue with Cæsar's wife Pompeia, who, according to annual custom, was now celebrating in her house those awful sacrifices of the goddesses, to which no male creature ever was admitted, and where every thing masculine was so scrupulously excluded, that even pictures of that sort were covered during the ceremony. It flattered Clodius's imagination greatly to gain access to his mistress in the midst of her holy ministry; and with this view he dressed himself in a woman's habit, that by the benefit of his smooth face, and the introduction of one of the maids, he might pass without discovery: but by some mistake between him and his guide, he lost his way when he came within the house, and fell in unluckily among the other female servants. Here he was detected by his voice, and the servants alarmed the whole company by their shrieks, to the great amazement of the matrons, who threw a veil over their sacred mysteries, while Clodius found means to escape. The story was presently spread abroad, and raised a general scandal and horror throughout the city. The whole defence which Clodius made when, by order of the senate, he was brought to a trial, was to prove himself absent at the time of the fact; for which purpose he produced two men to swear that he was then at Interamna, about two or three days journey from the city. But Cicero being called upon to give his testimony, deposed, that Clodius had been with him that very morn-

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ing at his house in Rome. Irritated by this, Clodius formed a scheme of revenge. This was to get himself chosen tribune, and in that office to drive Cicero out of the city, by the publication of a law, which, by some stratagem or other, he hoped to obtrude upon the people. But as all patricians were incapable of the tribunate by its original institution, so his first step was to make himself a plebeian, by the pretence of an adoption into a plebeian house, which could not yet be done without the suffrage of the people. The first triumvirate was now formed; which was nothing else in reality but a traiterous conspiracy of three of the most powerful citizens of Rome, to extort from their country by violence what they could not obtain by law. Pompey's chief motive was to get his acts confirmed by Cæsar in his consulship, which was now coming on; Cæsar, by giving way to Pompey's glory, to advance his own; and Crassus, to gain that ascendance by the authority of Pompey and Cæsar, which he could not sustain alone. Cicero might have made what terms he pleased with the triumvirate; and been admitted even a partner of their power, and a fourth in their league: but he would not enter into any engagements with the three whose union he and all the friends of the republic abhorred. Clodius, in the mean time, had been pushing on the business of his adoption: which at last he effected; and began soon after to threaten Cicero with all the terrors of his tribunate, to which he was now advanced without any opposition. Both Cæsar and Pompey secretly favoured his scheme: not that they intended to ruin Cicero, but only to keep him under the lash; and if they could not draw him into their measures, or make him at least keep quiet, to let Clodius loose upon him. Cæsar, in particular, wanted to distress him so far as to force him to a dependence on himself: for which end, while he was privately encouraging Clodius to pursue him, he was proposing expedients to Cicero for his security. But though his fortunes seemed now to be in a tottering condition, and his enemies to gain ground daily upon him; yet he was unwilling to owe the obligation of his safety to any man, far less to Cæsar, whose designs he always suspected, and whose schemes he never approved. This stiffness in Cicero so exasperated Cæsar, that he resolved immediately to assist Clodius with all his power to oppress him; while Pompey was all the while giving him the strongest assurances that there was no danger, and that he would sooner be killed himself than suffer him to be hurt.

Clodius, in the mean time, was obliging the people with several new laws, contrived chiefly for their advantage; the design of all which was only to introduce, with a better grace, the ground-plot of the play, the banishment of Cicero. In short, having caused a law to be enacted, importing, that any who had condemned a Roman citizen unheard should himself be banished, he soon after impeached Cicero upon it. It was in vain that this great man went up and down the city soliciting his cause in the habit of a suppliant, and attended by many of the first young noblemen whom he had taught the rules of eloquence; those powers of speaking which had so often been successful in defending the cause of others, seemed totally to forsake his own: he was banished by the votes of the people 400 miles from Italy; his houses were ordered

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to be demolished, and his goods set up to sale. It cannot be denied, that in this great calamity he did not behave himself with that firmness which might reasonably be expected from one who had borne so glorious a part in the republic; conscious of his integrity, and suffering in the cause of his country: for his letters are generally filled with such lamentable expressions of grief and despair, that his best friends, and even his wife, were forced sometimes to admonish him to rouse his courage, and remember his former character. Atticus was constantly putting him in mind of it; and sent him word of a report that was brought to Rome by one of Cassius's freed-men, that his affliction had disordered his senses. He was now indeed attacked in his weakest part; the only place in which he was vulnerable. To have been as great in affliction as he was in prosperity, would have been a perfection not given to man: yet this very weakness flowed from a source which rendered him the more amiable in all the other parts of his life; and the same tenderness of disposition which made him love his friends, his children, and his country, more passionately than other men, made him feel the loss of them more sensibly. When he had been gone a little more than two months, a motion was made in the senate by one of the tribunes, who was his friend, to recal him, and repeal the laws of Clodius; to which the whole house readily agreed. Many obstructions, as may be easily imagined, were given to it by the Clodian faction; but this made the senate only more resolute to effect it. They passed a vote, therefore, that no other business should be done till Cicero's return was carried: which at last it was; and in so splendid and triumphant a manner, that he had reason, he says, to fear, lest people should imagine that he himself had contrived his late flight for the sake of so glorious a restoration.

Cicero, now in his 50th year, was restored to his former dignity, and soon after to his former fortunes; satisfaction being made to him for the ruin of his estates and houses; which last were built up again by himself with more magnificence than before. But he had domestic grievances about this time, which touched him very nearly; and which, as he signifies obscurely to Atticus, were of too delicate a nature to be expressed in a letter: They arose chiefly from the petulant humour of his wife, which began to give him frequent occasions of chagrin; and, by a series of repeated provocations, confirmed in him that settled disgust which at last ended in a divorce.

In the 56th year of his age, he was made proconsul of Cilicia; and his administration there gained him great honour. About this time the expectation of a breach between Cæsar and Pompey engaged the general attention. Crassus had been destroyed with his army some years before in the war with the Parthians; and Julia the daughter of Cæsar, whom Pompey married, and who, while she lived, was the cement of their union, was also dead in child-bed. Cæsar had put an end to the Gallic war, and reduced the whole province to the Roman yoke: but though his commission was near expiring, he seemed to have no thoughts of giving it up and returning to the condition of a private subject. He pretended that he could not possibly be safe if he parted with his army; especially while Pompey held the province of Spain

Cicero. prolonged to him for five years. This disposition to a breach Cicero soon learned from his friends, as he was returning from his province of Cilicia. But as he foresaw the consequences of a war more clearly and fully than any of them, so his first resolution was to apply all his endeavours and authority to the mediation of a peace; though, in the event of a breach, he was determined within himself to follow Pompey. He clearly foresaw, what he declared without scruple to his friends, that which side soever got the better, the war must necessarily end in a tyranny. The only difference, he said, was, that if their enemies conquered, they should be proscribed; if their friends, they would be slaves.

He no sooner arrived at the city, however, than he fell, as he tells us, into the very flame of civil discord, and found the war in effect proclaimed: for the senate had just voted a decree, that Cæsar should disband his army by a certain day, or be declared an enemy; and Cæsar's sudden march towards Rome effectually confirmed it. In the midst of all this hurry and confusion, Cæsar was extremely solicitous about Cicero; not so much to gain him, for that was not to be expected, as to prevail with him to stand neuter. He wrote to him several times to that effect; and employed all their common friends to press him with letters on that subject: all which was done; but in vain, for Cicero was impatient to be gone to Pompey. In the mean time, these letters give us a most sensible proof of the high esteem and credit in which Cicero flourished at this time in Rome; when, in a contest for empire, which force alone was to decide, we see the chiefs on both sides so solicitous to gain a man to their party, who had no peculiar skill in arms or talents for war. Pursuing, however, the result of all his deliberations, he embarked at length to follow Pompey, who had been obliged to quit Italy some time before, and was then at Dyrrhachium; and arrived safely in his camp with his son, his brother, and his nephew, committing the fortunes of the whole family to the issue of that cause. After the battle of Pharsalia, in which Pompey was defeated, Cicero returned into Italy, and was afterwards received into great favour by Cæsar, who was now declared dictator the second time, and Mark Antony his master of horse. We may easily imagine, what we find indeed from his letters, that he was not a little discomposed at the thoughts of an interview with Cæsar, and the indignity of offering himself to a conqueror against whom he had been in arms: for though upon many accounts he had reason to expect a kind reception from Cæsar, yet he hardly thought his life, he says, worth begging; since what was given by a master might always be taken away again at pleasure. But at their meeting he had no occasion to say or do any thing that was below his dignity: for Cæsar no sooner saw him than he alighted, ran to embrace him; and walked with him alone, conversing very familiarly, for several furlongs.

Cicero was now in his 61st year, and forced at last to part with his wife Terentia; whose humour and conduct had been long uneasy to him. She was a woman of an imperious and turbulent spirit: and though he had borne her perverseness in the vigour of health, and flourishing state of his fortunes; yet, in a declining life, soured by a continual succession of mor-

tifications from abroad, the want of ease and quiet at home was no longer tolerable to him. But he was immediately oppressed by a new and most cruel affliction, the death of his beloved daughter Tullia, who died in child-bed soon after her divorce from her third husband Dolabella. She was about 32 years old at the time of her death; and, by the few hints which are left of her character, appears to have been an excellent and admirable woman. She was most affectionately and piously observant of her father; and, to the usual graces of her sex, having added the more solid accomplishments of knowledge and polite letters, was qualified to be the companion and delight of his age; and was justly esteemed not only as one of the best, but the most learned, of the Roman ladies. His affliction for the death of this daughter was so great, that, to shun all company as much as he could, he removed to Atticus's house, where he lived chiefly in his library, turning over every book he could meet with on the subject of moderating grief. But finding his residence here too public, and a greater resort to him than he could bear, he retired to Asturia, one of his seats near Antium; a little island on the Latian shore, at the mouth of a river of the same name, covered with woods and groves cut into shady walks; a scene of all others the fittest to indulge melancholy, and where he could give a free course to his grief. "Here (says he to Atticus) I live without the speech of man; every morning early I hide myself in the thickest of the wood, and never come out till the evening. Next to yourself, nothing is so dear to me as this solitude; and my whole conversation is with my books." Indeed his whole time was employed in little else than reading and writing during Cæsar's administration, which he could never cheerfully submit to; and it was within this period that he drew up one of the gravest of those philosophical pieces which are still extant in his works.

Upon the death of Cæsar, Octavius his nephew and heir coming into Italy, was presented to Cicero by Hirtius and Pansa, with the strongest professions on the part of the young man that he would be governed entirely by his direction. Indeed Cicero thought it necessary to cherish and encourage Octavius, if for nothing else, yet to keep him at a distance from Antony; but could not yet be persuaded to enter heartily into his affairs. He suspected his youth and want of experience; and that he had not strength enough to deal with Antony; and, above all, that he had no good disposition towards the conspirators. He thought it impossible he should ever be a friend to them; and was persuaded rather, that if ever he got the upper hand, his uncle's acts would be more violently enforced, and his death more cruelly revenged, than by Antony himself. And when Cicero did consent at last to unite himself to Octavius's interests, it was with no other view but to arm him with a power sufficient to oppress Antony; yet so checked and limited, that he should not be able to oppress the republic.

In the hurry of all these politics, he was still prosecuting his studies with his usual application; and, besides some philosophical pieces, now finished his book of offices, or the duties of man, for the use of his son: A work admired by all succeeding ages as the most perfect system of Heathen morality, and the noblest effort

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and specimen of what reason could do in guiding man through life with innocence and happiness. However, he paid a constant attention to public affairs; missed no opportunities, but did every thing that human prudence could do for the recovery of the republic: for all that vigour with which it was making this last effort for itself, was entirely owing to his counsels and authority. This appears from those memorable Philippics which from time to time he published against Antony, as well as from other monuments of antiquity. But all was in vain: for though Antony's army was entirely defeated at the siege of Modena, which made many people imagine that the war was at an end, and the liberty of Rome established; yet the death of the consuls Pansa and Hirtius in that action gave the fatal blow to all Cicero's schemes, and was the immediate cause of the ruin of the republic.

Octavius having subdued the senate to his mind, marched towards Gaul to meet Antony and Lepidus; who had already passed the Alps, and brought their armies into Italy, in order to have a personal interview with him; which had been privately concerted for settling the terms of a triple league, and dividing the power and provinces of Italy among themselves. The place appointed for this interview was a small island about two miles from Bononia, formed by the river Rhenus which runs near that city. Here they met, and spent three days in a close conference to adjust the plan of their accommodation: and the last thing they adjusted was the list of a proscription which they were determined to make of their enemies. This, as the writers tell us, occasioned much difficulty and warm contests among them; till each in his turn consented to sacrifice some of his best friends to the revenge and resentment of his colleagues. Cicero was at his Tusculan villa, when he first received the news of the proscription, and of his being included in it. It was the design of the triumvirate to keep it a secret, if possible, to the moment of execution; in order to surprize those whom they had destined to destruction, before they were aware of their danger, or had time to make their escape. But some of Cicero's friends found means to give him early notice of it; upon which he set forward to the sea-side, with a design to transport himself out of the reach of his enemies. There, finding a vessel ready, he presently embarked; but the winds being adverse, and the sea uneasy to him, after he had sailed about two leagues along the coast, he was obliged to land, and spend the night on shore. From thence he was forced, by the importunity of his servants, on board again; but was soon afterwards obliged to land at a country-seat of his a mile from the shore, weary of life, and declaring he was resolved to die in that country which he had so often saved. Here he slept soundly for some time, till his servants once more forced him away in a litter towards the ship, having heard that he was pursued by Antony's assassins. They were scarce departed when the assassins arrived at his house; and, perceiving him to be fled, pursued him immediately towards the sea, and overtook him in a wood that was near the shore. Their leader was one Popilius Lenas, a tribune of the army, whose life Cicero had formerly defended and saved. As soon as the soldiers appeared, the servants prepared to defend their master's life at the hazard of

their own; but Cicero commanded them to set him down and make no resistance. They soon cut off his head and his hands, returning with them to Rome as the most agreeable present to their cruel employer. Antony, who was then at Rome, received them with extreme joy, rewarding the murderer with a large sum of money, and ordering the head to be fixed upon the rostra between the two hands: a sad spectacle to the city; and what drew tears from every eye, to see those mangled members which used to exert themselves so gloriously from that place in defence of the lives, the fortunes, and the liberties of the Roman people, so lamentably exposed to the scorn of sycophants and traitors. The deaths of the rest, says an historian of that age, caused only a private and particular sorrow; but Cicero's an universal one. It was a triumph over the republic itself; and seemed to confirm and establish the perpetual slavery of Rome.

A modern writer*, however, is of opinion, that "posterity has been too much seduced by the name of Cicero, and that better citizens were sacrificed to the jealousy of the triumvirs without exciting so much indignation. If we take an impartial survey of Cicero's conduct and principles, avowed in his own epistolary correspondence, and trace him through all the labyrinths of his contradictory letters, we shall find more to blame than to admire; and discover, that the desire of advancing his fortunes, and making himself a name, were, from his outset in life, the only objects he had in view. The good of his country, and the dictates of stern steady virtue, were not, as in Brutus and Cato, the constant springs of his actions. The misfortunes that befel him after his consulship, developed his character, and showed him in his true colours; from that time to his death, pusillanimity, irresolution, and unworthy repining, tainted his judgment, and perplexed every step he wished to take. He flattered Pompey and cringed to Cæsar, while in his private letters he abused them both alternately. He acknowledges in a letter to his friend, the time-serving Atticus, that, although he was at present determined to support the cause of Rome and liberty, and to bear misfortune like a philosopher, there was one thing which would gain him over to the triumvirs, and that was their procuring for him the vacant augurship; so pitiful was the bribe to which he would have sacrificed his honour, his opinion, and the commonwealth. By his wavering imprudent conduct, he contributed greatly towards its destruction. After reproaching the conspirators for leaving him out of the secret, and loading them with the most flattering compliments on their delivering Rome from Cæsar's tyranny, he calls Cæsar an *assassin*, to pay his court to the boy Octavius, by whom he was completely duped. His praises of this triumvir are in the highest strain of panegyric. Mark Antony well knew, that the virulent abuse which Cicero was continually pouring out against him, was not an effusion of patriotic zeal or virtuous indignation, but merely the ebullitions of personal hatred. He therefore caused Cicero to be killed, as an angry man that has been stung stings on a venomous animal that comes within reach of his foot. The cloak he threw over the body of Brutus, and the speech he pronounced at the sight of that hero when dead, differ widely from the treatment he gave the remains of Cicero; and show, that he

Cicero.

* Swinburne,
Travels in
Sicily, vol.
ii. p. 502.

Cicero,
Cichori-
um.

made a distinction between a Roman who opposed him from political motives, and one whose enmity arose from private pique."

Cicero's death happened on the 7th of December, in the 64th year of his age, about ten days from the settlement of the first triumvirate; and with him expired the short empire of eloquence among the Romans. As an orator he is thus characterised by Dr Blair. "In all his orations his art is conspicuous. He begins commonly with a regular exordium; and with much address prepossesses the hearers, and studies to gain their affections. His method is clear, and his arguments are arranged with exact propriety. In a superior clearness of method, he has an advantage over Demosthenes. Every thing appears in its proper place. He never tries to move till he has attempted to convince; and in moving, particularly the softer passions, he is highly successful. No one ever knew the force of words better than Cicero. He rolls them along with the greatest beauty and magnificence; and in the structure of his sentences is eminently curious and exact. He is always full and flowing, never abrupt. He amplifies every thing; yet though his manner is generally diffuse, it is often happily varied and accommodated to the subject. When an important public object roused his mind, and demanded indignation and force, he departs considerably from that loose and declamatory manner to which he at other times is addicted, and becomes very forcible and vehement. This great orator, however, is not without his defects. In most of his orations there is too much art, even carried to a degree of ostentation. He seems often desirous of obtaining admiration rather than of operating conviction. He is sometimes, therefore, showy rather than solid, and diffuse where he ought to have been urgent. His sentences are always round and sonorous. They cannot be accused of monotony, since they possess variety of cadence; but from too great a fondness for magnificence, he is on some occasions deficient in strength. Though the services which he had performed to his country were very considerable, yet he is too much his own panegyrist. Ancient manners, which imposed fewer restraints on the side of decorum, may in some degree excuse, but cannot entirely justify, his vanity."

CICHORIUM, succory: A genus of the polygama æqualis order, belonging to the syngenesia class of plants; and in the natural method ranking under the 49th order, *Compositæ*. The receptacle is a little paleaceous; the calyx calyculated; the pappus almost quinque-dentated, and indistinctly hairy.

Species. 1. The intybus, or wild succory, grows naturally by the sides of roads, and in shady lanes, in many places of Britain. It sends out long leaves from the roots, from between which the stalks arise, growing to the height of three or four feet, and branching out into smaller ones. The flowers come out from the sides of the stalks, and are of a fine blue colour. They are succeeded by oblong seeds covered, inclosed in a down. 2. The spinosum, with a prickly forked stalk, grows naturally on the sea-coasts in Sicily, and the islands of the Archipelago. This sends out from the root many long leaves which are indented on their edges, and spread flat on the ground; from between these arise the stalks, which have very few leaves,

and those are small and entire: these stalks are divided in forks upward, and from between them come out the flowers, which are of a pale blue colour, and are succeeded by seeds shaped like those of the common forts. The ends of the smaller branches are terminated by star-like spines which are very sharp. 3. The endivia, or succory with broad crenated leaves, differs from the wild sort in its duration, being only annual, whereas the wild sort is perennial.

Culture, &c. The last species may be considered both as an annual and biennial plant. If sown early in the spring, or even any time before the beginning of June, the plants very commonly fly up to seed the same summer, and perish in autumn. If sown in June and July, they acquire perfection in autumn, continue till the next spring, then shoot up stalks for flower and seed, and soon after perish. The inner leaves are the useful parts. These when blanched white to render them crisp and tender, and reduce them from their natural strong taste to an agreeably bitter one, are then fit for use. They are valued chiefly as ingredients in autumn and winter salads, and for some culinary uses. The principal season of them is from the latter end of August till Christmas or longer, according to the temperature of the season; though the curled kinds generally resist the frosts of our ordinary winters, and remain in tolerable perfection till March or April. They are propagated by seeds sown in an open spot of ground, from which the plants are to be removed into open beds or borders, where they may remain to grow to full size. The season for sowing these seeds is from the beginning of June to the end of July; and to have a regular supply of plants, it is proper to perform three different sowings at about three weeks or a month's interval. The great excellence of endive is to have its inner leaves finely whitened or blanched. They naturally incline to whiteness of themselves; but this may be greatly improved by art when the plants are arrived at full growth. Different methods are practised for this purpose, such as tying the leaves together; or taking up the plants, and replanting them directly, almost to their tops, in ridges of dry earth, laying boards or tiles flat ways on the top of the plants; but the first is found to answer the purpose most effectually. The proper time for beginning this work is, when the leaves are almost full grown; that is, when they are so far advanced that the leaves of the different plants interfere with one another, and their hearts are full and bushy: but they are not all to be tied up at once, only a due supply of the largest and forwardest plants, once every ten or twelve days according to the demand; for the blanching takes up about three weeks. Blanching in ridges of earth, however, is sometimes practised in winter when a severe frost is setting in; for by burying them in the earth almost to their tops, they are more out of the power of the cold. In November, or December, when hard weather is approaching, let a piece of light ground, that lies warm, be trenched up in one or more sharp ridges two or three feet wide at bottom, and near as much in height, sideways to the sun, making the sides as steep as possible, that the wet may run quickly off; then, in a dry day, take up a quantity of your full grown plants,

Cichori-
um.

Cicindela. plants, with their roots entire, and divesting them of damaged leaves, gather each plant close in your hand, placing them horizontally in the sunny side of the ridge of earth almost to their tops, and about six or eight inches each way distant. In severe frost, it will be proper to bestow some covering on the plants.

Medicinal uses. The roots and leaves of the wild succory, and seeds of the endive, are articles of the *matéria medica*. The first has a moderately bitter taste, with some degree of roughness; the leaves are somewhat less bitter; and the darker coloured and more deeply jagged they are, the bitterer is their taste. Wild succory is an useful detergent, aperient, and attenuating medicine, acting without much irritation, tending rather to cool than to heat the body; and, at the same time, corroborating the tone of the intestines. All the parts of the plant, when wounded, yield a milky saponaceous juice. This, when taken in large quantities, so as to keep up a gentle diarrhœa, and continued for some weeks, has been found to produce excellent effects in scorbutic and other chronical disorders. The qualities of the endive are nearly of the same kind. The seeds are ranked among the four lesser cold ones.

CICINDELA, the SPARKLER, in zoology, a genus of insects belonging to the order of coleoptera. The antennæ are setaceous; the jaws are prominent, and furnished with teeth; the eyes are a little prominent; and the breast is roundish and marginated. There are 14 species. The *campestris*, or field-sparkler, is one of the most beautiful of the genus. The upper part of its body is of a fine green colour, rough, and rather bluish. The under side, as also the legs and antennæ, are of a spot colour, gold and red, of a copperish cast. The eyes are very prominent, and give the head a broad appearance. The thorax is angular, and narrower than the head; which constitutes the character of the *cicindelæ*. It is rough, and of a green colour tinged with gold, as well as the head. The elytra are delicately and irregularly dotted. Each of them has six white spots, viz. one on the top of the elytrum, at its outward angle: three more along the outward edge, of which the middlemost forms a kind of lunula: a fifth, on the middle of the elytra, opposite the lunula; and that one is broader, and tolerably round: lastly, a sixth, at the extremity of the elytra. There is also sometimes seen a black spot on the middle of each elytrum, opposite to the second white spot. The upper lip is also white, as is the upper side of the jaws, which are very prominent and sharp. This insect runs with great swiftness, and flies easily. It is found in dry sandy places, especially in the beginning of spring. In the same places its larva is met with, which resembles a long, soft, whitish worm, armed with six legs, and a brown scaly head. It makes a perpendicular round hole in the ground, and keeps its head at the entrance of the hole to catch the insects that fall into it; a spot of ground is sometimes entirely perforated in this manner. The insects belonging to this genus are in general very beautiful, and merit the attention of the curious in their microscopic observations; some are minute, though not inferior in splendor, therefore best suited for the amusement. Living subjects are ever preferable to dead ones. The larvæ of all this genus

live under ground; and are, as well as the perfect insects, tigers in their nature, attacking and destroying all they can overcome.

CICISBEO, an Italian term, which in its etymology signifies a *whisperer*; which has been bestowed in Italy both on lovers, and on those who to outward appearance act as such, attending on married ladies with as much attention and respect as if they were their lovers. This Italian custom has been spoken of very reproachfully by some writers: Mr Baretto has taken great pains to vindicate it. He ascribes it to a spirit of gallantry, derived from the ages of chivalry, and much heightened and refined by the revival of the Platonic philosophy in Italy, about the thirteenth century; and by the verses of Petrarch in compliment to the beautiful Laura, and his numerous imitators.

CICLUT, or *CICLUGH*, a strong frontier town of Dalmatia, situated on the river Narentia, in E. Long. 17. 40. N. Lat. 45. 20. It is surrounded with walls built in the ancient manner, and was taken by the Venetians from the Turks in 1694.

CICONES, a people of Thrace near the Hebrus. Ulysses at his return from Troy conquered them, and plundered their chief city Ismarus. They tore to pieces Orpheus for his obscene indulgences.

CICUTA, properly signifies an hollow intercepted between two knots, of the stalks or reeds of which the ancient shepherds used to make their pipes. It is now, however, generally used to signify the water hemlock, and also the common fort; but Linnæus has described the latter under the old name of *CONIUM*. See that article.

There are three species of water-hemlock; the *virosa*, the *bulbifera*, and the *maculata*. Of these the first is the only one remarkable, and that for the poisonous qualities of its roots, which have been often known to destroy children who eat them for parsnips.

CICUTA is also used, chiefly among the ancients, for the juice or liquor expressed from the above plant, being the common poison wherewith the state criminals at Athens were put to death: Though some have suggested, that the poisonous draught to which the Athenians doomed their criminals was an inspissated juice compounded of the juice of *cicuta* and some other corrosive herbs.

Socrates drank the *cicuta*.—Plato, in his dialogue on the immortality of the soul, observes, that “The executioner advised Socrates not to talk, for fear of causing the *cicuta* to operate too slowly.” M. Petit, in his *Observationes Miscellanæ*, remarks, that this advertisement was not given by the executioner out of humanity, but to save the *cicuta*: for he was only allowed so much poison *per ann.* which, if he exceeded, he was to furnish at his own expence. This construction is confirmed by a passage in Plutarch: the executioner who administered the *cicuta* to Phocion, not having enough, Phocion gave him money to buy more; observing by the way, “that it was odd enough, that at Athens a man must pay for every thing, even his own death.”

CID (Roderigo Dias le), a Castilian officer, who was very successful against the Moors, under Ferdinand II. king of Castile; but whose name would hardly have been remembered, if Corneille had not made

Cicisbee
||
Cid.

Plate
cxxxviii.

Barbut's
Insects.

Cidaris
||
Cilicia.

his passion for Chimene the subject of an admired tragedy, founded on a simple but affecting incident. The Cid is desperately in love with Chimene, daughter of the Count de Gomes: but he is at variance with the Count; and being challenged by him, kills him in a duel. The conflict between love and honour in the breast of Chimene, who at length pardons and marries the Cid, forms the beauty of the piece. He died in 1698.

CIDARIS, in antiquity, the mitre used by the Jewish high-priests. The Rabbins say, that the bonnet used by priests in general was made of a piece of linen cloth 16 yards long, which covered their heads like a helmet or turban: and they allow no other difference between the high-priest's bonnet and that of other priests, than that the one is flatter, and more in the form of a turban; whereas that worn by ordinary priests rose something more in a point.

CIGNANI (Carlo), an Italian painter, was born at Bologna in 1628; and was the disciple of Albani. He was esteemed by pope Clement XI. who nominated him prince of the academy of Bologna, and loaded him with favours. Cignani died at Forli in 1719. The cupola of la Madona del Fuoco at Forli, in which he represented Paradise, is an admirable work. His principal pictures are at Rome, Bologna, and Forli.

CIGOLI, or CIVOLI, the painter. See CIVOLI.

CILIA, the EYE-LASHES. See ANATOMY, p. 766. col. 1.

CILIATED LEAF, among botanical writers, one surrounded with parallel filaments somewhat like the hairs of the eye-lids.

CILICIA, an ancient kingdom of Asia, lying between the 36th and 40th degree of north latitude: bounded on the east by Syria, or rather by Mount Amanus, which separates it from that kingdom; by Pamphylia, on the west; by Isauria, Cappadocia, and Armenia Minor, on the north; and by the Mediterranean sea, on the south. It is so surrounded by steep and craggy mountains, chiefly the Taurus and Amanus, that it may be defended by a handful of resolute men against a numerous army, there being but three narrow passes leading into it, commonly called *Pyle Cilicia*, or the gates of Cilicia; one on the side of Cappadocia, called the *Pass of Mount Taurus*; and the other two called the *Pass of Mount Amanus*, and the *Pass of Syria*. The whole country was divided by the ancients into Cilicia Aspera, and Cilicia Campestris; the former called by the Greeks *Trachæa* or *Stony*, from its abounding so with stones; and to this day the whole province is called by the Turks, *Tas Wileieth*, or the *Stony Province*.

According to Josephus, Cilicia was first peopled by Tarshish the son of Javan, and his descendants, whence the whole country was named *Tarsus*. The ancient inhabitants were in process of time driven out by a colony of Phœnicians, who, under the conduct of *Cilix*, first settled in the island of Cyprus, and from thence passed into the country which, from the leader, they called *Cilicia*. Afterwards, several other colonies from different nations settled in this kingdom, particularly from Syria and Greece; whence the Cilicians in some places used the Greek tongue, in others the Syriac; but the former greatly corrupted by the Persian, the predominant language of the country be-

N^o 81.

ing a dialect of that tongue. We find no mention of the kings of Cilicia after their settlement in that country, till the time of Cyrus, to whom they voluntarily submitted, continuing subject to the Persians till the overthrow of that empire; but governed to the time of Artaxerxes Mnemon, by kings of their own nation. After the downfall of the Persian empire, Cilicia became a province of that of Macedon; and, on the death of Alexander, fell to the share of Seleucus, and continued under his descendants till it was reduced to a Roman province by Pompey. As a proconsular province, it was first governed by Appius Claudius Pulcher; and after him by Cicero, who reduced several strong holds on Mount Amanus, in which some Cilicians had fortified themselves, and held out against his predecessor. It was on this occasion that the division, formerly mentioned, into Trachæa and Campestris, took place. The latter became a Roman province; but the former was governed by kings appointed by the Romans, till the reign of Vespasian, when the family of Tracondementus being extinct, this part also made a province of the empire, and the whole divided into Cilicia *Prima*, Cilicia *Secunda*, and Isauria; the first took in all Cilicia Campestris, the second the coast of Cilicia Trachæa, and the last the inland parts of the same division. It is now a province of Asiatic Turkey; and is called *Caramania*, having been the last province of the Caramanian kingdom which held out against the Ottoman race.

That part of Cilicia called by the ancients *Cilicia Campestris*, was, if we believe Ammianus Marcellinus, one of the most fruitful countries of Asia; but the western part equally barren, though famous, even to this day, for an excellent breed of horses, of which 600 are yearly sent to Constantinople for the special use of the Grand Signior. The air in the inland parts is reckoned wholesome; but that on the sea-coast very dangerous, especially to strangers.

The rivers of any note are the Pyramus, which rises on the north side of mount Taurus, and empties itself into the Mediterranean between Issus and Magarassus; and the Cydnus, which springs from the Antitaurus, passes through Tarsus, and disembogues itself into the Mediterranean. This last is famous for the rapidity of its stream, and the coldness of its waters, which proved very dangerous to Alexander the Great.

The Cilicians, if we believe the Greek and Roman historians, were a rough unpolished race of people, unfair in their dealings, cruel, and liars even to a proverb. In the Roman times, they became greatly addicted to piracy. They first began, in the time of the Mithridatic war, to infest the neighbouring provinces along with the Pamphylians; and, being emboldened with success, they soon ventured as far as the coasts of Greece and Italy, where they took a vast number of slaves, whom they sold to the Cypriots and the kings of Egypt and Syria. They were, however, at last defeated and entirely suppressed by Pompey the Great. See (*History of*) ROME.

CILICIA Terra, in the natural history of the ancients, a bituminous substance improperly called an earth, which, by boiling, became tough like bird-lime, and was used instead of that substance to cover the stocks of the vines for preserving them from the worms. It probably served in this office in a sort of double ca-

Cilicia.

capacity,

Cilicium
Cimbri.

capacity, driving away these animals by its nauseous smell, and entangling them if they chanced to get amongst it.

CILICIUM, in Hebrew antiquity, a sort of habit made of coarse stuff, formerly in use among the Jews in times of mourning and distress. It is the same with what the Septuagint and Hebrew versions call sackcloth.

CILLEY, an ancient and famous town of Germany, in the circle of Austria, and in Upper Carniola. It is the capital of a county of the same name, and is situated on the river Saan, in E. Long. 15. 45. N. Lat. 46. 28.

CILURNUM, (Notitia;) a town of Britain: thought to be Collerton, or Collierford, in Northumberland; but Walwic, or Sciliceter, according to Camden.

CIMA, or **SIMA**, in architecture, the same with Cymatium, or **OGEE**.

CIMABUE (Giovani), a renowned painter, born at Florence in 1240, and the first who revived the art of painting in Italy. He painted, according to the custom of those times, in fresco and in distemper; colours in oil not being then found out. He excelled in architecture as well as in painting; and was concerned in the fabric of Sancta Maria del Fior at Florence: during which employment he died at the age of 60, and left many disciples.

CIMBRI, an ancient Celtic nation, inhabiting the northern parts of Germany. They are said to have been descended from the Asiatic *Cimmerians*, and to have taken the name of *Cimbri* when they changed their old habitations. When they first became remarkable, they inhabited chiefly the peninsula now called *Jutland*, and by the ancients *Cimbrica Chersonesus*. About 113 years before Christ, they left their peninsula with their wives and children; and joining the *Tuetoines*, a neighbouring nation, took their journey southward in quest of a better country. They first fell upon the *Boii*, a Gaulish nation situated near the *Hercynian forest*. Here they were repulsed, and obliged to move nearer the Roman provinces. The republic being then alarmed at the approach of such multitudes of barbarians, sent an army against them under the consul *Papirius Carbo*. On the approach of the Roman army, the *Cimbri* made proposals of peace. The consul pretended to accept it; but having thrown them into a disadvantageous situation, treacherously attacked their camp. His perfidy was rewarded as it deserved; the *Cimbri* ran to arms, and not only repulsed the Romans, but, attacking them in their turn, utterly defeated them, and obliged the shattered remains of their forces to conceal themselves in the neighbouring forests. After this victory the *Cimbri* entered *Transalpine Gaul*, which they quickly filled with slaughter and desolation. Here they continued five or six years, when another Roman army under the consul *Silanus* marched against them. This general met with no better success than *Carbo* had done. His army was routed at the first onset; in consequence of which, all *Narbonne Gaul* was exposed at once to the ravages of these barbarians.

About 105 years before Christ, the *Cimbri* began to threaten the Roman empire itself with destruction. The Gauls marched from all parts with a design to

join them, and to invade Italy. The Roman army was commanded by the proconsul *Cæpio*, and the consul *Mallius*; but as these two commanders could not agree, they were advised to separate, and divide their forces. This advice proved the ruin of the whole army. The *Cimbri* immediately fell upon a strong detachment of the consular army commanded by *M. Aurelius Scæurus*, which they cut off to a man, and made *Scæurus* himself prisoner. *Mallius* being greatly intimidated by this defeat, desired a reconciliation with *Cæpio*, but was haughtily refused. He moved nearer the consul, however, with his army, that the enemy might not be defeated without his having a share in the action. The *Cimbri*, by this movement, imagining the commanders had made up their quarrel, sent ambassadors to *Mallius* with proposals of peace. As they could not help going through *Cæpio's* camp, he ordered them to be brought before him; but finding they were empowered to treat only with *Mallius*, he could scarce be restrained from putting them to death. His troops, however, forced him to confer with *Mallius* about the proposals sent by the barbarians: but as *Cæpio* went to the consul's tent against his will, so he opposed him in every thing; contradicted with great obstinacy, and insulted him in the grossest manner. The deputies on their return acquainted their countrymen that the misunderstanding between the Roman commanders still subsisted; upon which the *Cimbri* attacked the camp of *Cæpio*, and the Gauls that of *Mallius*. Both were forced, and the Romans slaughtered without mercy. Eighty thousand citizens and allies of Rome, with 40,000 servants and sutlers, perished on that fatal day. In short, of the two Roman armies only 10 men, with the two generals, escaped to carry the news of so dreadful a defeat. The conquerors destroyed all the spoil, pursuant to a vow they had made before the battle. The gold and silver they threw into the *Rhone*, drowned the horses they had taken, and put to death all the prisoners.

The Romans were thrown into the utmost consternation on the news of so terrible an overthrow. They saw themselves threatened with a deluge of *Cimbri* and Gauls, numerous enough to over-run the whole country. They did not, however, despair. A new army was raised with incredible expedition; no citizen whatever who was fit to bear arms being exempted. On this occasion also, fencing-masters were first introduced into the Roman camp; by which means the soldiers were soon rendered in a manner invincible. *Marius*, who was at that time in high reputation on account of his victories in Africa, was chosen commander, and waited for the *Cimbri* in *Transalpine Gaul*: but they had resolved to enter Italy by two different ways; the *Cimbri* over the eastern, and the *Tuetoines* and other allies over the western Alps. The Roman general therefore marched to oppose the latter, and defeated the *Ambrones* and *Tuetoines* with great slaughter*. The *Cimbri*, in the mean time, * See *Ambrones and Tuetoines*. entered Italy, and struck the whole country with terror. *Catullus* and *Sylla* attempted to oppose them; but their soldiers were so intimidated by the fierce countenances and terrible appearance of these barbarians, that nothing could prevent their flying before them. The city of Rome was now totally defence-

Cimbri.

Cimbri,
Cimex.

less; and, had the Cimbri only marched briskly forwards, they had undoubtedly become masters of it; but they waited in expectation of being joined by their allies the Ambrones and Teutones, not having heard of their defeat by Marius, till the senate had time to recal him to the defence of his country. By their order he joined his army to that of Catullus and Sylla; and upon that union was declared commander in chief. The Roman army consisted of 52,300 men. The cavalry of the Cimbri were no more than 15,000, but their foot seemed innumerable; for, being drawn up in a square, they are said to have covered 30 furlongs. The Cimbri attacked the Romans with the utmost fury; but, being unaccustomed to bear the heats of Italy, they soon began to lose their strength, and were easily overcome. But they had put it out of their power to fly; for, that they might keep their ranks the better, they had, like true barbarians, tied themselves together with cords fastened to their belts, so that the Romans made a most terrible havock of them. The battle was therefore soon over, and the whole day employed only in the most terrible butchery. An hundred and twenty thousand were killed on the field of battle, and 60,000 taken prisoners. The victorious Romans then marched to the enemy's camp; where they had a new battle to fight with the women, whom they found more fierce than even their husband's had been. From their carts and waggons, which formed a kind of fortification, they discharged showers of darts and arrows on friends and foes without distinction. Then they first suffocated their children in their arms, and then they put an end to their own lives. The greatest part of them hanged themselves on trees. One was found hanging at a cart with two of her children at her heels. Many of the men, for want of trees and stakes, tied strings in running knots about their necks, and fastened them to the tails of their horses, and the horns and feet of their oxen, in order to strangle themselves that way; and thus the whole multitude was destroyed.

The country of the Cimbri, which, after this terrible catastrophe, was left a mere desert, was again peopled by the Scythians; who, being driven by Pompey out of that vast space between the Euxine and the Caspian sea, marched towards the north and west of Europe, subduing all the nations they met with in their way. They conquered Russia, Saxony, Westphalia, and other countries as far as Finland, Norway, and Sweden. It is pretended that Wodin their leader traversed so many countries, and endeavoured to subdue them, only with a view to excite the people against the Romans; and that the spirit of animosity which he had excited operated so powerfully after his death, that the northern nations combined to attack it, and never ceased their incursions till it was totally subverted.

Plate
xxxviii.

CIMEX, or BUG, in zoology, a genus of insects belonging to the order of hemiptera. The rostrum is inflected. The antennæ are longer than the thorax. The wings are folded together cross-wise; the upper ones are coriaceous from their base towards their middle. The back is flat; the thorax margined. The feet are formed for running.

This genus is divided into different sections, as follows: 1. Those without wings. 2. Those in which the

escutcheon is extended so far as to cover the abdomen and the wings. 3. The coleoprati, whose elytra are wholly coriaceous. 4. Those whose elytra are membranaceous; these are very much depressed like a leaf. 5. In which the thorax is armed on each side with a spine. 6. Those which are of an oval form, without spines on the thorax. 7. In which the antennæ become setaceous towards their point. 8. Those of an oblong form. 9. Those whose antennæ are setaceous, and as long as the body. 10. Those which have their thighs armed with spines. 11. Those whose bodies are long and narrow. Linnæus enumerates no fewer than 121 species, to which several have been added by other naturalists. A very peculiar species was discovered by Dr Sparman at the Cape, which he has named *Cimex paradoxus*. He observed it as at noon-tide he sought for shelter among the branches of a shrub from the intolerable heat of the sun. "Tho' the air (says he) was extremely still and calm, so as hardly to have shaken an aspen leaf, yet I thought I saw a little withered, pale, crumpled leaf, eaten as it were by caterpillars, flitting from the tree. This appeared to me so very extraordinary, that I thought it worth my while suddenly to quit my verdant bower in order to contemplate it; and I could scarcely believe my eyes, when I saw a live insect, in shape and colour resembling the fragment of a withered leaf, with the edges turned up and eaten away, as it were, by caterpillars, and at the same time all over beset with prickles. Nature, by this peculiar form, has certainly extremely well defended and concealed, as it were in a mask, this insect from birds and its other diminutive foes; in all probability with a view to preserve it, and employ it for some important office in the system of her economy; a system with which we are too little acquainted, in general too little investigate, and, in every part of it, can never sufficiently admire with that respect and veneration which we owe to the great Author of nature and Ruler of the universe."

The larvæ of bugs only differ from the perfect insect by the want of wings; they run over plants; grow and change to chrysalids, without appearing to undergo any material difference. They have only rudiments of wings, which the last transformation unfolds, and the insect is then perfect. In the two first stages they are unable to propagate their species. In their perfect state, the female, fecundated, lays a great number of eggs, which are often found upon plants, placed one by the side of another; many of which, viewed through a glass, present singular varieties of configuration. Some are crowned with a row of small hairs, others have a circular fillet; and most have a piece which forms a cap; this piece the larva pushes off when it forces open the egg. Released by nature from their prison, they overspread the plant on which they feed, extracting, by the help of the rostrum, the juices appropriated for their nourishment; even in this state, the larvæ are not all so peaceably inclined; some are voracious in an eminent degree, and spare neither sex nor species they can conquer. In their perfect state they are mere cannibals, glutting themselves with the blood of animals; they destroy caterpillars, flies, and even the coleopterous tribe, whose hardness of elytra one would imagine was proof against

Cimex.

Cimicifuga gainst their attacks, have fallen an easy prey to the sharp piercing nature of the rostrum of the bug, and the uncautious naturalist may experience a feeling feverity of its nature. The *cimex lectularius* or house-bug, is particularly acceptable to the palate of spiders in general, and is even fought after by wood-bugs; which is not indeed surprizing, when the general voracity of this genus is considered.

The methods of expelling house-bugs are various, as oil of turpentine, the smoke of corn-mint, of narrow-leaved wild crests, of herb-robert, of the reddish agaric, of mustard, Guinea pepper, peats or turf, &c. (See also BUG and CIMICIFUGA).

CIMICIFUGA, in botany: A genus of the polyandria order, belonging to the diccia class of plants. The male calyx is almost pentaphyllous; there is no corolla; the stamina are 20 in number: the female calyx is almost pentaphyllous; no corolla; the stamina 20, and barren; the capsules from 4 to 7, polyspermous. Mesfersehmidius, in the *Isis Siberica*, gives it the following character and name: *Cimicifuga fetida*, with the leaves of the herb Christopher, bearing a thyrsis of yellow male flowers with a red villous seed, the seed-vessel in form of a horn. This whole plant so resembles the *actea racemosa*, that it is difficult to distinguish them when not in flower; but in the fructification it greatly differs from it, the *cimicifuga* having four piths, the *actea* but one. Jacquin says, that it is a native of the Carpathian mountains. It has obtained the name of *cimicifuga*, or *bugbane*, both in Siberia and Tartary, from its property of driving away those insects; and the botanists of those parts of Europe which are infested by them, have long desired to naturalise it in their several countries. Gmelin mentions, that in Siberia the natives also use it as an evacuant in dropsy; and that its effects are violently emetic and drastic.

CIMMERII, anciently a people near the Palus Mæotis. They invaded Asia Minor 1284 years before Christ, and seized upon the kingdom of Cyaxares. After they had been masters of the country for 28 years, they were driven back by Alyattes king of Lydia.—The name also of another nation on the western coast of Italy. The country which they inhabited was supposed to be so gloomy, that to express a great obscurity the expression of *Cimmerian darkness* has proverbially been used; and Homer, according to Plutarch, drew his images of hell and Pluto from the gloomy and dismal country where they dwelt.

CIMMERIUM (anc. geog.), a town at the mouth of the Palus Mæotis; from which the Bosphorus Cimmerius is named; that strait which joins the Euxine and the Palus Mæotis. *Cimmerii* was the name of the people, (Homer): and here stood the Promontorium Cimmerium, (Ptolemy); and hence probably the modern appellation *Crim*.

CIMMERIUM (anc. geog.), a place near Baiae, in Campania, where formerly stood the cave of the sibyl. The people were called *Cimmerii*; who living in subterraneous habitations, from which they issued in the night to commit robberies and other acts of violence, never saw the light of the sun. (Homer). To give a natural account of this fable, Festus says, there was a valley surrounded with a pretty high ridge, which precluded the morning and evening sun.

CIMOLIA TERRA, in natural history; a name by

which the ancients expressed a very valuable medicinal earth; but which latter ages have supposed to be no other than our tobacco-pipe clay and fuller's earth.

The *cimolia terra* of the ancients was found in several of the islands of the Archipelago; particularly in the island of Cimolus, from whence it has its name. It was used with great success in the erysipelas, inflammations, and the like, being applied by way of cataplasm to the part. They also used, as we do, what we call *cimolia*, or fuller's earth, for the cleansing of clothes. This earth of the ancients, though so long disregarded, and by many supposed to be lost, is yet very plentiful in Argentiere (the ancient Cimolus), Sphanto, and many of those islands. It is a marl of a lax and crumbly texture, and a pure bright white colour, very soft to the touch. It adheres firmly to the tongue; and, if thrown into water, raises a little hissing and ebullition, and moulders to a fine powder. It makes a considerable effervescence with acids, and suffers no change of colour in the fire. These are the characters of what the ancients called simply *terra cimolia*: but besides this, they had, from the same place, another earth which they called by the same general name, but distinguished by the epithet purple, *purpurefens*. This they described to be fattish, cold to the touch, of a mixed purple colour, and nearly as hard as a stone. And this was evidently the substance we call *steatites*, or the *soap-rock*; common in Cornwall, and also in the island of Argentiere, or Cimolus.

CIMOLIA ALBA, the official name of the earth of which we now make tobacco-pipes. Its distinguishing characters are, that it is a dense, compact, heavy earth, of a dull white colour, and very close texture; it will not easily break between the fingers, and slightly stains the skin in handling. It adheres firmly to the tongue; melts very slowly in the mouth, and is not readily diffusible in water. It is found in many places. That of the isle of Wight is much esteemed for its colour. Great plenty of it is found near Pole in Dorsetshire, and near Wedensbury in Staffordshire.

CIMOLIA NIGRA, is of a dark lead colour, hard, dry, and heavy; of a smooth compact texture, and not viscid: it does not colour the hands; crumbles when dry; adheres to the tongue; diffuses slowly in water; and is not acted upon by acids. It burns perfectly white, and acquires a considerable hardness. The chief pits for this clay are near Northampton, where it is used in the manufacture of tobacco-pipes. It is also mixed with the criche clay of Derbyshire, in the proportion of one part to three, in the manufacture of the hard reddish brown ware.

CIMOLUS, (anc. geog.) one of the Cyclades, now called *Argentiere*.

CIMON, an Athenian, son of Miltiades and Hegisipyle. He was famous for his debaucheries in his youth, and the reformation of his morals when arrived to years of discretion. He behaved with great courage at the battle of Salamis, and rendered himself popular by his munificence and valour. He defeated the Persian fleet, took 200 ships, and totally routed their land army, the very same day, A. U. C. 284. The money that he obtained by his victories was not applied for his own private use, but with it he fortified and embellished the city. He some time after lost all

Cimolia
||
Cimon.

Cinaloa
||
Cinchona.

his popularity, and was banished by the Athenians, who declared war against the Lacedæmonians. He was recalled from his exile; and at his return he made a reconciliation between Lacedæmon and his countrymen. He was afterwards appointed to carry on the war against Persia in Egypt and Cyprus, with a fleet of 200 ships, and on the coast of Asia he gave battle to the enemy, and totally ruined their fleet, A. U. C. 304. He died as he was besieging the town of Citium in Cyprus. He may be called the last of the Greeks whose spirit and boldness defeated the armies of the barbarians. He was such an inveterate enemy to the Persian power, that he formed a plan of totally destroying it; and in his wars he had so reduced the Persians, that they promised in a treaty not to pass the Chelidonian islands with their fleet, or to approach within a day's journey of the Grecian seas. See ARTICHA.

CINALOA, a province of Mexico in South America, abounding in corn, cattle, and cotton; and rendered extremely picturesque, by a number of beautiful cascades of clear water that fall down from the mountains. It lies on the eastern coast of the sea of California, and has a town of the same name, situated in N. Lat. 26°.

CINARA, in botany, the ARTICHOKE. See CYNARA.

CINCHONA, in botany, a genus of the monogynia order, belonging to the pentandria class of plants; and in the natural method ranking with these plants, the order of which is doubtful. The corolla is funnel-shaped, with a woolly summit; the capsule inferior, bilocular, with a parallel partition. Linnæus describes two species: 1. The corymbifera, corymb-bearing cinchona, or white Peruvian bark, with oblong lanceolate leaves and axillary corymbs; and, 2. The officinalis, or coloured Peruvian bark, with elliptic leaves downy underneath, and the leaves of the corolla woolly. Both species are natives of Peru, where the trees attain the height of 15 to 20 feet. The former particularly abounds in the hilly parts of Quito, growing promiscuously in the forests, and is spontaneously propagated from its seeds. Both sorts have also been found in the province of Santa Fe.

The bark has some odour, to most people not unpleasant, and very perceptible in the distilled water, in which floating globules, like essential oil, have been observed. Its taste is bitter and astringent, accompanied with a degree of pungency, and leaving a considerably lasting impression on the tongue.

According to some, the Peruvians learned the use of the bark by observing certain animals affected with intermittents instinctively led to it; while others say, that a Peruvian having an ague, was cured by happening to drink of a pool which, from some trees having fallen into it, tasted of cinchona; and its use in gangrene is said to have originated from its curing one in an aguish patient. About the year 1640, the lady of the Spanish viceroy, the Comitissa del Cinchon, was cured by the bark, which has therefore been called *Cortex* or *Pulvis Comitissæ*, *Cinchona*, *Chinachina*, or *Chinchina*, *Kinakina* or *Kinkina*, *Quinaquina* or *Quinquina*; and from the interest which the Cardinal de Lugo and the Jesuit fathers took in its distribution, it has been called *Cortex* or *Pulvis Cardinalis de Lugo*, *Jesuiticus*, *Parum*, &c.

On its first introduction into Europe, it was reprobated by many eminent physicians; and at different periods long after, it was considered a dangerous remedy; but its character, in process of time, became very universally established. For a number of years, the bark which is rolled up into short thick quills, with a rough coat, and a bright cinnamon colour in the inside, which broke brittle, and was found, had an aromatic flavour, a bitterish astringent taste, with a degree of aromatic warmth, was esteemed the best; though some esteemed the large pieces as of equal goodness. During the time of the late war, in the year 1779, the Hussar frigate took a Spanish ship, loaded principally with Peruvian bark, which was much larger, thicker, and of a deeper reddish colour than the bark in common use. Soon after it was brought to London, it was tried in St Bartholomew's Hospital, and in other hospitals about town, and was said to be more efficacious than the quill bark. This put practitioners on examining into the history of the bark, on trying experiments with it, and on making comparative trials of its effects with those of the bark in common use on patients labouring under intermittent complaints. In July 1782, Dr William Saunders published an account of this red bark; in which he says, that the small quill bark used in England, is either the bark of young trees, or of the twigs or branches of the old ones; and that the large bark, called the *red bark* from the deep colour, is the bark of the trunk of the old trees: and he mentions a Mr Arnot, who himself gathered the bark from the trees in Peru; and Mons. Condaminé, who gives an account of the tree in the Memoirs of the Academy of Sciences at Paris in the year 1738; who both say, that taking the bark from an old tree effectually kills it; but that most of the young trees which are barked, recover, and continue healthy; and that for these reasons the Spaniards now barked the younger trees for foreign markets, though they still imported into Spain some of the bark of the old trees, which they esteemed to be much more efficacious than what was got from the young. From these accounts Dr Saunders concludes, that the large red bark brought to London in the year 1779 was of the same kind as that used by Sydenham and Morton, as it answers to the description of the bark used in their time, which is given by Dale and other writers on the materia medica, who were their contemporaries. Dr Saunders says, that it is not only stronger and more resinous, but likewise more efficacious and certain in its effect, than the common bark, and had cured many agues after the other had failed.

A species of cinchona has also been discovered in the West India islands, particularly in Jamaica: It is accurately described by Dr Wright, under the title of *Cinchona Jamaicensis*, in a paper published in the Philosophical Transactions. In Jamaica it is called the *sea-side beech*, and grows from 20 to 40 feet high. The white, furrowed, thick outer bark is not used; the dark-brown inner bark has the common flavour, with a mixed kind of a taste, at first of horse-radish and ginger, becoming at last bitter and astringent. It seems to give out more extractive matter than the cinchona officinalis. Some of it was imported from St Lucia, in consequence of its having been used with advantage in the army and navy during the late war; and it has lately been treated of at considerable length by

Cinchona. Dr Kentish, under the title of *St Lucia bark*. The fresh bark is found to be considerably emetic and cathartic, which properties it is said to lose on drying.

The pale and the red are chiefly in use in Britain. The pale is brought to us in pieces of different sizes, either flat or quilled, and the powder is rather of a lighter colour than that of cinnamon. The red is generally in much larger, thicker, flattish pieces, but sometimes also in the form of quills, and its powder is reddish like that of Armenian bole. As already observed, it is much more resinous, and possesses the sensible qualities of the cinchona in a much higher degree than the other sorts; and the more nearly the other kinds resemble the red bark, the better they are now considered. The red bark is heavy, firm, found, and dry; friable between the teeth; does not separate into fibres; and breaks, not shivery, but short, close, and smooth. It has three layers: the outer is thin, rugged, of a reddish brown colour, but frequently covered with mossy matter: the middle is thicker, more compact, darker coloured, very resinous, brittle, and yields first to the pestle: the inmost is more woody, fibrous, and of a brighter red.

The Peruvian bark yields its virtues both to cold and boiling water; but the decoction is thicker, gives out its taste more readily, and forms an ink with a chalybeate more suddenly than the fresh cold infusion. This infusion, however, contains at least as much extractive matter, but more in a state of solution; and its colour, on standing some time with the chalybeate, becomes darker, while that of the decoction becomes more faint. When they are of a certain age, the addition of a chalybeate renders them green; and when this is the case, they are found to be in a state of fermentation, and effete. Mild or caustic alkalies, or lime, precipitate the extractive matter, which in the case of the caustic alkali is redissolved by a farther addition of the alkali. Lime-water precipitates less from a fresh infusion than from a fresh decoction; and in the precipitate of this last some mild earth is perceptible. The infusion is by age reduced to the same state with the fresh decoction, and then they deposit nearly an equal quantity of mild earth and extractive matter; so that lime-water, as well as a chalybeate, may be used as a test of the relative strength and perishable nature of the different preparations, and of different barks. Accordingly cold infusions are found by experiments to be less perishable than decoctions; infusions and decoctions of the red bark than those of the pale; those of the red bark, however, are found by length of time to separate more mild earth with the lime-water, and more extracted matter. Lime-water, as precipitating the extracted matter, appears an equally improper and disagreeable menstruum.

Water is found to suspend the resin by means of much less gum than has been supposed. Rectified spirit of wine extracts a bitterness, but no astringency, from a residuum of 20 affusions of cold water; and water extracts astringency, but no bitterness, from the residuum of as many affusions of rectified spirit. The residua in both are insipid.

From many ingenious experiments made on the Peruvian bark by Dr Irvine, which are now published in a dissertation which gained the prize-medal given by the Harveian Society of Edinburgh for 1783, the

power of different menstrea, as acting upon Peruvian bark, is ascertained with greater accuracy than had before been done: and it appears, that with respect to comparative power, the fluids after mentioned act in the order in which they are placed.

Dulcified spirit of vitriol.

Caustic ley.

French brandy.

Rhenish wine.

Soft water.

Vinegar and water.

Dulcified spirit of nitre.

Mild volatile alkali.

Rectified spirit of wine.

Mild vegetable alkali.

Lime-water.

The antiseptic powers of vinegar and bark united are double the sum of those taken separately. The astringent power of the bark is increased by acid of vitriol; the bitter taste is destroyed by it.

The officinal preparations of the bark are, 1. The powder: of this, the first parcel that passes the sieve being the most resinous and brittle layer, is the strongest. 2. The extract: the watery and spirituous extract conjoined form the most proper preparations of this kind. 3. The resin: this cannot perhaps be obtained separate from the gummy part, nor would it be desirable. 4. Spirituous tincture: this is best made with proof-spirit. 5. The decoction: this preparation, tho' frequently employed, is yet in many respects inferior even to a simple watery infusion.

The best form is that of powder; in which the constituent parts are in the most effectual proportion. The cold infusion, which can be made in a few minutes by agitation, the spirituous tincture, and the extract, are likewise proper in this respect. For covering the taste, different patients require different vehicles; liquorice, aromatics, acids, port-wine, small beer, porter, milk, butter-milk, &c. are frequently employed; and those who dislike the taste of the bark itself, vary in their accounts to which the preference is due; or it may be given in form of electuary with currant-jelly, or with brandy or rum.

Practitioners have differed much with regard to the mode of operation of the Peruvian bark. Some have ascribed its virtues entirely to a stimulant power. But while the strongest and most permanent stimuli have by no means the same effect with bark in the cure of diseases, the bark itself shows hardly any stimulant power, either from its action on the stomach, or on other sensible parts to which it is applied. From its action on dead animal fibres, there can be no doubt of its being a powerful astringent; and from its good effects in certain cases of disease, there is reason to presume that it is a still more powerful tonic. To this tonic power some think that its action as an antiseptic is to be entirely attributed: but that, independently of this, it has a very powerful effect in resisting the septic process to which animal substances are naturally subjected, appears beyond all dispute, from its effects in resisting putrefaction, not only in dead animal solids, but even in animal fluids, when entirely detached from the living body.

But although it be admitted that the Peruvian bark acts powerfully as an astringent, as a tonic, and as an anti-

Cinchona. antiseptic; yet these principles will by no means explain all the effects derived from it in the cure of diseases. And accordingly, from no artificial combination in which these powers are combined, or in which they exist even to a higher degree, can the good consequences resulting from Peruvian bark be obtained. Many practitioners, therefore, are disposed to view it as a specific. If by a specific we mean an infallible remedy, it cannot indeed be considered as intitled to that appellation; but in as far as it is a very powerful remedy, of the operation of which no satisfactory explanation has yet been given, it may with great propriety be denominated a specific. But whatever its mode of operation may be, there can be no doubt that it is daily employed with success in a great variety of different diseases.

It was first introduced, as has already been said, for the cure of intermittent fevers; and in these, when properly exhibited, it rarely fails of success. Practitioners, however, have differed with regard to the best mode of exhibition; some prefer giving it just before the fit, some during the fit, others immediately after it. Some, again, order it in the quantity of an ounce, between the fits; the dose being the more frequent and larger according to the frequency of the fits; and this mode of exhibition, although it may perhaps sometimes lead to the employment of more bark than is necessary, we consider as upon the whole preferable, from being best suited to most stomachs. The requisite quantity is very different in different cases; and in many vernal intermittents it seems even hardly necessary.

It often pukes or purges, and sometimes oppresses the stomach. These, or any other effects that may take place, are to be counteracted by remedies particularly appropriated to them. Thus, vomiting is often restrained by exhibiting it in wine; looseness by combining it with opium; and oppression at stomach, by the addition of an aromatic. But unless for obviating particular occurrences, it is more successful when exhibited in its simple state than with any addition; and there seems to be little ground for believing that its powers are increased by crude sal ammoniac, or any other additions which have frequently been made.

It is now given, from the very commencement of the disease, without previous evacuations, which, with the delay of the bark, or under doses of it, by retarding the cure, often seem to induce abdominal inflammation, scirrhus, jaundice, hectic, dropsy, &c. symptoms formerly imputed to the premature or intemperate use of the bark, but which are best obviated by its early and large use. It is to be continued not only till the paroxysms cease, but till the natural appetite, strength, and complexion, return. Its use is then to be gradually left off, and repeated at proper intervals to secure against a relapse; to which, however unaccountable, independently of the recovery of vigour, there often seems to be a peculiar disposition; and especially when the wind blows from the east. Although, however, most evacuations conjoined with the Peruvian bark in intermittents are rather prejudicial than otherwise, yet it is of advantage, previous to its use, to empty the alimentary canal, particularly the stomach; and on this account good effects are often obtained from premising an emetic.

It is a medicine which seems not only suited to both formed and latent intermittents, but to that state of fibre on which all rigidly periodical diseases seem to depend; as periodical pain, inflammation, hemorrhagy, spasm, cough, loss of external sense, &c.

Bark is now used by some in all continued fevers: at the same time attention is paid to keep the bowels clean, and to promote when necessary the evacuation of redundant bile; always, however, so as to weaken as little as possible.

In confluent small-pox, it promotes languid eruption and suppuration, diminishes the fever through the whole course of it, and prevents or corrects putrescence and gangrene.

In gangrenous sore throats it is much used, as it is externally and internally in every species of gangrene.

In contagious dysentery, after due evacuation, it has been used by the mouth, and by injection with and without opium.

In all those hemorrhagies called *passive*, and which it is allowed all hemorrhagies are very apt to become, and likewise in other increased discharges, it is much used; and in certain undefined cases of hæmoptysis, some allege that it is remarkably effectual when joined with an absorbent.

It is used for obviating the disposition to nervous and convulsive diseases; and some have great confidence in it joined with the acid of vitriol, in cases of phthisis, scrophula, ill-conditioned ulcers, rickets, scurvy, and in states of convalescence.

In these cases in general, notwithstanding the use of the acid, it is proper to conjoin it with a milk diet.

In dropsy, not depending on any particular local affection, it is often alternated or conjoined with diuretics, or other evacuants; and by its early exhibition after the water is once drawn off, or even begins to be freely discharged, a fresh accumulation is prevented, and a radical cure obtained. In obstinate venereal cases, particularly those which appear under the form of pains in the bones, the Peruvian bark is often successfully subjoined to mercury, or even given in conjunction with it.

CINCINNATUS, the Roman dictator, was taken from the plough, to be advanced to the dignity of consul; in which office he restored public tranquillity, and then returned to his rural employments. Being called forth a second time to be dictator, he conquered the enemies of Rome, and, refusing all rewards, retired again to his farm, after he had been dictator only 16 days. The same circumstance appeared once more in the 80th year of his age. He died 376 years before Christ.

Order of CINCINNATUS, or the *Cincinnati*, a society which was established in America soon after the peace, and consists of the generals and officers of the army and navy of the United States. This institution, called after the name of the Roman dictator mentioned in the preceding article, was intended to perpetuate the memory of the revolution, the friendship of the officers, and the union of the states; and also to raise a fund for the relief of poor widows and orphans whose husbands and fathers had fallen during the war, and for their descendants. The society was subdivided into state societies, which were to meet on the

Cinchona,
Cincinnati.
tus.

Cincture ||
Cinnabar.

4th of July, and with other business depute a number of their members to convene annually in general meetings. The members of the institution were to be distinguished by wearing a medal, emblematical of the design of the society; and the honours and advantages were to be hereditary in the eldest male heirs, and, in default of male issue, in the collateral male heirs. Honorary members were to be admitted, but without the hereditary advantages of the society, and provided their number should never exceed the ratio of one to four of the officers or their descendants. Though the apparent designs of this society were harmless and honourable, it did not escape popular jealousy. Views of a deeper nature were imputed to the framers; and the institution was censured and opposed as giving birth to a military nobility, of a dangerous aristocratic power, which might ultimately prove ruinous to the liberties of the new empire. But the principal ground of apprehension was the supposed right of inheritance connected with this honour to render it hereditary; which, however, hath been given up and totally disclaimed by the society.

CINCTURE, in architecture, a ring, list, or orlo, at the top and bottom of the shaft of a column, separating the shaft at one end from the base, and at the other from the capital.

CINEAS, a Thessalian, minister and friend to Pyrrhus king of Epirus. He was sent to Rome by his master to sue for a peace, which he, however, could not obtain. He told Pyrrhus that the Roman senate was a venerable assembly of kings; and observed, that to fight with them was to fight against another Hydra. He was of such a retentive memory, that the day after his arrival at Rome he could call every senator and knight by his name.

CINERITIOUS, an appellation given to different substances, on account of their resembling ashes either in colour or consistence; hence it is that the cortical part of the brain has sometimes got this epithet.

CINNA (L. Corn.), a Roman who oppressed the republic with his cruelties. He was banished by Octavius for attempting to make the fugitive slaves free. He joined himself with Marius; and with him at the head of the slaves he defeated his enemies, and made himself consul even to a fourth time. He massacred so many citizens at Rome, that his name became odious; and one of his officers assassinated him at Ancona, as he was preparing war against Sylla.

CINNA (C. Helvius), a poet intimate with Cæsar. He went to attend the obsequies of Cæsar, and being mistaken by the populace for the other Cinna, he was torn to pieces.—Also a grandson of Pompey's. He conspired against Augustus, who pardoned him, and made him one of his most intimate friends. He was consul A. U. C. 758, and made Augustus his heir.

CINNABAR, in natural history, is either native or factitious.

The *native* cinnabar is an ore of quicksilver, moderately compact, very heavy, and of an elegant striated red colour.

Factitious cinnabar is a mixture of mercury and sulphur sublimed, and thus reduced into a fine red glebe. The best is of a high colour, and full of fibres like needles. See **CHEMISTRY**, n° 1404.

The chief use of cinnabar is for painting. Although

the body is composed of sulphur, which is of a light colour, and mercury which is white as silver, it is nevertheless of an exceeding strong red colour. Lumps of it are of a deep brown red without brilliancy; but when the too great intensity of its colour is diminished by bruising and dividing it into small parts, (which is a method generally used to lessen the intensity of all colours), the red of the cinnabar becomes more and more exalted, flame coloured, and exceedingly vivid and brilliant: in this state it is called *vermillion*.

Cinnabar is often employed as an internal medicine. Hoffman greatly recommends it as a sedative and antispasmodic: and Stahl makes it an ingredient in his *temperant powder*. Other intelligent physicians deny that cinnabar taken internally has any medicinal quality. Their opinion is grounded on the insolubility of this substance in any menstruum. This question concerning its internal utility cannot be decided without further researches and experiments; but cinnabar is certainly used with success to procure a mercurial fumigation, when that method of cure is proper in venereal diseases. For this purpose it is burnt in an open fire on red-hot coals, by which the mercury is disengaged and forms vapours, which, being applied to the body of the diseased person, penetrate through the pores of the skin, and produce effects similar to those of mercury administered by friction.

CINNAMON, the bark of two species of laurus. The true cinnamon is from the laurus cinnamomum; and the base cinnamon, which is often sold for the true, is from the laurus cassia. See **LAURUS**.

CINNAMON-Water, is made by distilling the bark first infused in spirit of wine, brandy, or white-wine.

Clove-CINNAMON, is the bark of a tree growing in Brazil, which is often substituted for real cloves.

White CINNAMON, called also *Winter's bark*, is the bark of a tree frequent in the isle of St Domingo, Guadalupe, &c. of a sharp biting taste like pepper. Some use it instead of nutmeg; and in medicine it is esteemed a stomachic and antiscorbutic. See **CANELLA**.

CINNAMUS, a Greek historian, wrote a history of the eastern empire, during the reigns of John and Manuel Commenes, from 1118 to 1143. His style is reckoned the best of the modern Greek authors. He died after 1183.

CINNERETH, **CINERETH**, *Chinnereth*, (Moses); or *Gennesareth*, (anc. geog.) a lake of the Lower Galilee; called the *Sea of Galilee*, (Matthew); of *Tiberius*, (John). Its name *Gennesareth* is from a small cognominal district upon it. In breadth 40 stadia, in length 140. The water fresh and fit to drink, and abounding in fish.

CINQUEFOIL, in botany. See **POTENTILLA**.

CINQUE-PORTS, five havens that lie on the east part of England, towards France; thus called by way of eminence on account of their superior importance, as having been thought by our kings to merit a particular regard for their preservation against invasion. Hence they have a particular policy, and are governed by a keeper with the title of *Lord-warden of the Cinque-ports*.

Cambden tells us, that William the Conqueror first

Cinque
||
Cinyras.

appointed a warden of the Cinque-ports: but King John first granted them their privileges; and that upon condition they should provide 80 ships at their own charge for 40 days, as often as the king should have occasion in the wars; he being then straitened for a navy to recover Normandy.

The five ports are, Hastings, Romney, Hythe, Dover, and Sandwich.—Thorn tells us, that Hastings provided 21 vessels, and in each vessel 21 men. To this port belong Seaford, Pevensey, Hedney, Winchelsey, Rye, Hamine, Wakesbourn, Creneth, and Forthcliffe.—Romney provided five ships, and in each 24 men. To this belong Bromhal, Lyde, Oswardstone, Dangemares, and Romenhal.—Hythe furnished five ships, and in each 21 seamen. To this belongs Westmeath.—Dover the same number as Hastings. To this belong Folkeston, Feversham, and Marge.—Lastly, Sandwich furnished the same with Hytlie. To this belong Fordiwic, Reculver, Serre, and Deal.

The privileges granted to them in consequence of these services were very great. Amongst others, they were each of them to send two barons to represent them in parliament; their deputies were to bear the canopy over the king's head at the time of his coronation, and to dine at the uppermost table in the great hall on his right hand; to be exempted from subsidies and other aids; their heirs to be free from personal wardship, notwithstanding any tenure; to be impleaded in their own towns, and not elsewhere; not to be liable to tolls, &c.

The Cinque-ports give the following titles: Hastings, a barony to the ancient family of Huntington; Romney, to the Marshams: Dover, new barony, to a branch of the York family; formerly a dukedom (now extinct) to the Queensberry family: Sandwich, an earldom to a branch of the Montagues.

CINTRA, a cape and mountain of Portugal, in the province of Estremadura, usually called the *Rock of Lisbon*. It lies on the north side of the entrance of the river Tajo; and there is a town of the same name situated thereon. W. Long. 10. 15. N. Lat. 59. 0.

CINUS, or CYNUS, a famous civilian of Pistoia in the 14th century. His commentary on the Code was finished in 1313: he also wrote on some parts of the digest. He was no less famous for his Italian poems; and is ranked among those who first gave graces to the Tuscan lyric poetry.

CINYRA, in the Jewish antiquities, a musical instrument. This, and the Hebrew *cinnor*, which is generally translated *cithera*, *lyra*, or *psalterium*, are the same. It was made of wood, and was played on in the temple of Jerusalem. Josephus says that the *cinyra* of the temple had ten strings, and that it was touched with a bow. In another place he says that Solomon made a great number of them with a precious kind of metal called *elestrum*; wherein he contradicts the scriptures, which inform us that Solomon's *cinnors* were made of wood.

CINYRAS, (fab. hist.) a king of Cyprus, son of Paphus. He married Cenchreis, by whom he had a daughter called *Myrrha*. Myrrha fell in love with her father, and in the absence of her mother she introduced herself into his bed by means of her nurse. Cinyras had by her a son called *Adonis*; and when he knew the incest he had committed, he attempted to stab his

daughter, who escaped his pursuit and fled to Arabia, where, after she had brought forth, she was changed into a tree which still bears her name. Cinyras, according to some, stabbed himself.

Cion
||
Cipher.

CION, or CYON, in gardening, a young shoot, sprout, or sprig, put forth by a tree. Grafting is performed by the application of the cion of one plant upon the stock of another. To produce a stock of cions for grafting, planting, &c. the gardeners sometimes cut off the bodies of trees a little above the ground, and only leave a stump or root standing: the redundant sap will not fail next spring to put forth a great number of shoots. In dressing dwarf-trees, a great many cions are to be cut off.

CIOTAT, a sea-port town of Provence in France; famous for Muscadine wine. It is seated on the bay of Laquea, between Marseilles and Toulon; and the harbour is defended by a strong fort. E. Long. 5. 30. N. Lat. 43. 10.

CIPHER, or CYPHER, one of the Arabic characters or figures used in computation, formed thus, 0. See ARITHMETIC.

CIPHER is also a kind of enigmatic character, composed of several letters interwoven, which are generally the initial letters of the persons names for whom the ciphers are intended. These are frequently used on seals, coaches, and other moveables.—Anciently, merchants and tradesmen were not allowed to bear arms: in lieu thereof, they bore their ciphers, or the initial letters of their names, artfully interwoven about a cross; of which we have divers instances on tombs, &c. See DEVISE.

CIPHER, denotes likewise certain secret characters disguised and varied, used in writing letters that contain some secret, not to be understood but by those between whom the cipher is agreed on.

De la Guilletiere, in his *Lacedæmon ancient and modern*, endeavours to make the ancient Spartans the inventors of the art of writing in cipher. Their scytala, according to him, was the first sketch of this mysterious art: these scytalæ were two rollers of wood, of equal length and thickness; one of them kept by the ephori; the other by the general of the army sent on any expedition against the enemy. Whensoever those magistrates would send any secret orders to the general, they took a slip of parchment, and rolled it very justly about the scytala which they had reserved; and in this state wrote their intentions, which appeared perfect and consistent while the parchment continued on the roll: when taken off, the writing was maimed, and without connection: but was easily retrieved by the general, upon his applying it to his scytala.

Polybius says, that Æneas Tacitus, 2000 years ago, collected together 20 different manners of writing so as not to be understood by any but those in the secret; part whereof were invented by himself, and part used before his time.—Trithemius, Cap. Porta, Vigenere, and P. Niceron, have written expressly on the subject of *ciphers*.

As the writing in *cipher* is become an art; so is the reading or unravelling thereof, called *deciphering*.—The rules of deciphering are different in different languages. By observing the following, you will soon make out any common cipher written in English.

Cipher.

1. Observe the letters or characters that most frequently occur; and set them down for the six vowels, including *y*; and of these the most frequent will generally be *e*, and the least frequent *u*.

2. The vowels that most frequently come together are *ea* and *ou*.

3. The consonant most common at the ends of words is *s*, and the next frequent *r* and *t*.

4. When two similar characters come together, they are most likely to be the consonants *f*, *l*, or *s*, or the vowels *e* or *o*.

5. The letter that precedes or follows two similar characters is either a vowel, or *l*, *m*, *n*, or *r*.

6. In deciphering, begin with the words that consist of a single letter, which will be either *a*, *I*, *o*, or *£*.

7. Then take the words of two letters, one of which will be a vowel. Of these words the most frequent are, *an*, *to*, *be*, *by*, *of*, *on*, *or*, *no*, *so*, *as*, *at*, *if*, *in*, *is*, *it*, *he*, *me*, *my*, *us*, *we*, *am*.

8. In words of three letters there are most commonly two consonants. Of these words the most frequent are, *the*, *and*, *not*, *but*, *yet*, *for*, *tho'*, *how*, *why*, *all*, *you*, *she*, *his*, *her*, *our*, *who*, *may*, *can*, *did*, *was*, *are*, *has*, *had*, *let*, *one*, *two*, *six*, *ten*, &c.—Some of these, or those of two letters, will be found in every sentence.

9. The most common words of four letters are, *this*, *that*, *then*, *thus*, *with*, *when*, *from*, *here*, *some*, *most*, *none*, *they*, *them*, *whom*, *nine*, *your*, *self*, *must*, *will*, *have*, *been*, *were*, *four*, *five*, *nine*, &c.

10. The most usual words of five letters are, *there*, *these*, *those*, *which*, *were*, *while*, *since*, *their*, *shall*, *might*, *could*, *would*, *ought*, *three*, *seven*, *eight*, &c.

11. Words of two or more syllables frequently begin with double consonants, or with a preposition; that is, a vowel joined with one or more consonants. The most common double consonants are *bl*, *br*, *dr*, *fl*, *fr*, *gl*, *gr*, *pl*, *pr*, *sb*, *sb*, *sp*, *st*, *th*, *tr*, *wh*, *wr*, &c. and the most common propositions are *com*, *con*, *de*, *dis*, *ex*, *in*, *in*, *int*, *mis*, *per*, *pre*, *pro*, *re*, *sub*, *sup*, *un*, &c.

12. The double consonants most frequent at the end of long words are, *ck*, *cl*, *lf*, *mn*, *nd*, *ng*, *rl*, *rm*, *rn*, *rp*, *rt*, *sm*, *st*, *xt*, &c. and the most common terminations are *ed*, *en*, *er*, *es*, *et*, *ing*, *ly*, *son*, *sion*, *tion*, *able*, *ence*, *ent*, *ment*, *full*, *less*, *ness*, &c.

On Plate CXXXVII.* fig. 7. is given an example of a cipher wrote in arbitrary characters as is commonly practised. It will be easily deciphered by observing the rules: but when the characters are all placed close together, as in the example fig. 8. and as they always should be, the deciphering is much more difficult.

To decipher a writing of this sort, you must first look for those characters that most frequently occur, and set them down for vowels as before. Then observe the similar characters that come together; but you must remember that two such characters may here belong to two words. You are next to remember the combinations of two or three characters that are most frequent; which will be some of the words in the seventh and eighth of the foregoing rules; and by observing the other rules, you will infallibly discover, with time and attention, any cipher wrote on these principles.

When the words are wrote all close together, if the key to the cipher were to be changed every word, according to a regular method agreed on be-

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tween the parties, as might be done by either of the methods mentioned in N^o II. below, with very little additional trouble, the writing would then be extremely difficult to decipher. The longer any letter wrote in cipher is, the more easy it is to decipher, as then the repetitions of the characters and combinations are the more frequent.

The following are the contents of the two foregoing ciphers; in which we have inverted the order of the words and letters, that they who are desirous of trying their talent at deciphering, may not, inadvertently, read the explanation before the cipher.

enil eno ton dna shtnom elohw eerht, suoidifrep dna leure o. noituac & ecnedurp fo klat lliw uoy: on, rotiaart, tcelgen & ecnerreffidni si ti. yltrohs rettel a em dnes ot snaem emof dnif rehtie, traeh eht morf semoc ti taht ees em tel &, erom ecaf ym ees ot erad reven ro.

evlewt fo ruoh eht ta thgin siht, ledatic eht fo etag eht erofeb elbmessa lliw sdneirf ruo lla. ruoh eht ot lautcnup eb: deraperp llew emoc dna, ytrebil ruoy niager ot, ylevarb eid ro. thgin eht si siht, su sekam rehtie taht, etinq su seodnu ro.

Contrivances for communicating intelligence by CIPHER.

I. By means of a pack of cards. The parties must previously agree in what manner the cards shall be first placed, and then how they shall be shuffled. Thus suppose the cards are to be first placed in the order as hereafter follows, and then shuffled by taking off 3 from the top, putting the next 2 over them, and the following 3 under them*, and so alternately. Therefore the party who sends the cipher first writes the contents of it on a separate paper, and then copies the first 32 letters on the cards, by writing one letter on every card; he then shuffles them, in the manner described, and writes the second 32 letters: he shuffles them a second time, and writes the third 32 letters, and so of the rest. An example will make this plain. Suppose the letter to be as follows:

I am in full march to relieve you; within three days I shall be with you. If the enemy in the mean time should make an assault, remember what you owe to your country, to your family, and yourself. Live with honour, or die with glory.

Order of the cards before the 1st shuffle.

Ace spade	i a d u y i
Ten diamonds	a l e u l
Eight hearts	m l m o i u
King spades	i s u m l
Nine clubs	n b l e o
Seven diamonds	f b m r i
Nine diamonds	u e a c t n
Ace clubs	l w k r y i
Knave hearts	l s e e a e
Seven spades	m i a r m w
Ten clubs	a i t h e r
Ten hearts	r r h o f
Queen spades	c b e e i
Eight diamonds	h a b y w
Eight clubs	t y o o o l
Seven hearts	o y a o h o
Queen clubs	r o n u y h
Nine spades	e u i y f y
King hearts	l e t e u o

C

Queen

Cipher.

* In Vol. IV.

* By shuffling the cards in this manner, there will remain only 2 to put under at last.

Cipher.

Queen diamonds	<i>i d s o e</i>
Eight spades	<i>e i n w s o</i>
Knave clubs	<i>v f a n t g</i>
Seven clubs	<i>e t s l y</i>
Ace hearts	<i>y r e b r</i>
Nine hearts	<i>o l n w o t</i>
Ace diamonds	<i>u h s t & d</i>
Knave spades	<i>w l m a l</i>
Ten spades	<i>i e y t r r</i>
King diamonds	<i>t t i b u r</i>
Queen hearts	<i>h h m m u</i>
King clubs	<i>i n a t h</i>
Knave diamonds	<i>n e u r o</i>

The person that receives these cards first places them in the order agreed on, and transcribes the first letter on every card. He then shuffles them, according to order, and transcribes the second letter on each card. He shuffles them a second time, and transcribes the third letters: and so of the rest.

If the cards were to be shuffled the second time by threes and fours, the third time by two and fours, &c. it would make the cipher still more difficult to discover: though as all ciphers depend on the combination of letters, there are scarce any that may not be deciphered with time and pains; as we shall show further on. Those ciphers are the best that are by their nature most free from suspicion of being ciphers; as for example, if the letters were there wrote with sympathetic ink, the cards might then pass for a common pack.

II. *By a dial.* On a piece of square pasteboard ABCD, fig. 3. 4. draw the circle EFGH, and divide it into 26 equal parts, in each of which must be wrote one of the letters of the alphabet.

On the inside of this there must be another circle of pasteboard, ILMN, moveable round the centre O, and the extremity of this must be divided into the same number of equal parts as the other. On this also must be wrote the letters of the alphabet, which, however, need not be disposed in the same order. The person with whom you correspond must have a similar dial, and at the beginning of your letter you must put any two letters that answer to each other when you have fixed the dial.

Exam. Suppose you would write as follows: "If you will come over to us, you shall have a pension, and you may still make a sham opposition." You begin with the letters *Ma*, which show how the dial is fixed: then for *If you*, you write *un juc*, and so for the rest, as you will see at fig. 6.

The same intention may be answered by a ruler, the upper part of which is fixed and the lower part made to slide; but in this case the upper part must contain two alphabets in succession, that some letter of that part may constantly correspond to one in the lower part. The divisions standing directly over each other in a straight line will be much more obvious than in the circumference of a circle. Or two straight pieces of pasteboard regularly divided, the one containing a single and the other a double alphabet, would answer exactly the same purpose. In this case a blank space may be left at each end of the single alphabet, and one or two weights being placed on both the pieces will keep them steady.

III. *The corresponding spaces.* Take two pieces of

pasteboard or stiff paper, through which you must cut long squares, at different distances, as you will see in the following example. One of these pieces you keep yourself, and the other you give to your correspondent. When you would send him any secret intelligence, you lay the pasteboard upon a paper of the same size; and in the spaces cut out, you write what you would have understood by him only, and then fill up the intermediate spaces with somewhat that makes with those words a different sense.

[I shall be] much obliged to you, as reading [alone]. engages my attention [at] present, if you will lend me any one of the [eight] volumes of the Spectator. I hope you will excuse [this] freedom, but for a winter's [evening] I [don't] know a better entertainment. If I [fail] to return it soon, never trust me for the time [to come].

A paper of this sort may be placed four different ways, either by putting the bottom at the top, or by turning it over; and by these means the superfluous words may be the more easily adapted to the sense of the others.

This is a very eligible cipher, as it is free from suspicion, but it will do only for short messages: for if the spaces be frequent, it will be very difficult to make the concealed and obvious meanings agree together: and if the sense be not clear, the writing will be liable to suspicion.

IV. *The musical cipher.* The construction of this cipher is similar to that of N^o II. The circle EFGH (fig. 3.) is to be divided into twenty-six equal parts, in each part there must be wrote one of the letters of the alphabet: and on the anterior circle ILMN, moveable round the centre O, there is to be the same number of divisions: the circumference of the inner circle must be ruled in the manner of a music paper; and in each division there is to be placed a note, differing either in figure or position. Lastly, within the musical lines place the three keys, and on the outer circle, the figures that are commonly used to denote the time.

Then provide yourself with a ruled paper, and place one of the keys, as suppose that of *ge resol*, against the time two-fourths at the beginning of the paper, which will inform your correspondent how to fix his circle. You then copy the notes that answer to the several letters of the words you intend to write, in the manner expressed at fig. 5.

A cypher of this sort may be made more difficult to discover by frequently changing the key, and that will not in the least embarrass the reader. You may likewise add the mark \otimes or h to the note that begins a word, which will make it more easy to read, and at the same time give the music a more natural aspect. This cipher is preferable to that of N^o II. above, as it may be inclosed in a letter about common affairs, and pass unsuspected.

CIPPUS, in antiquity, a low column, with an inscription, erected on the high roads, or other places, to show the way to travellers; to serve as a boundary; to mark the grave of a deceased person, &c.

CIP.

Cipher,
Cippus.

Cir
||
Circassia.

CIR (St), a village of France, two miles from Versailles, remarkable for a nunnery founded here by Louis XIV. The nuns are obliged to take care of the education of 250 girls, who must prove their families to have been noble from the 4th generation on the father's side. They cannot enter before 7, nor after 12 years of age: and they continue there till they are 20 years and 3 months old. The house is a most magnificent structure.

CIRCÆA, ENCHANTER'S NIGHT-SHADE: A genus of the monogynia order, belonging to the diandria class of plants; and in the natural method ranking under the 48th order, *Aggregate*. The corolla is dipetalous; the calyx diphyllous, superior, with one bilocular seed. There are two species, one of which is a native of Britain, and the other of Germany. They are low herbaceous plants with white flowers, and possessed of no remarkable property.

CIRCASSIA, a large country of Asia, situated between 45 and 50 degrees of north latitude, and between 40 and 50 of east longitude. It is bounded by Russia on the north; by Astracan and the Caspian sea on the east; by Georgia and Dagistan on the south; and by the river Don, the Palus Mæotis, and the Black Sea, on the west. This country has long been celebrated for the extraordinary beauty of its women; and here it was that the practice of inoculating for the small-pox first began. Terki, the principal city, is seated in a very spacious plain, very swampy, towards the sea-side, in 43 deg. 23 min. north latitude: it is about three wersts in compass, well fortified with ramparts and bastions in the modern style, well stored with cannon, and has always a considerable garrison in it, under the command of a governor. The Circassian prince who resides here, is allowed five hundred Russians for his guard, but none of his own subjects are permitted to dwell within any part of the fortifications. Ever since the reduction of those parts to the obedience of Russia, they have put in all places of strength, not only Russian garrisons and governors, but magistrates, and priests for the exercise of the Christian religion; yet the Circassian Tartars are governed by their own princes, lords, and judges; but these administer justice in the name of the emperor, and in matters of importance, not without the presence of the Russian governors, being all obliged to take the oath of allegiance to his imperial majesty. The apparel of the men of Circassia is much the same with that of the Nagayans: only their caps are something larger; and their cloaks being likewise of coarse cloth or sheep skins, are fastened only at the neck with a string, and as they are not large enough to cover the whole body, they turn them round according to the wind and weather. The men here are much better favoured than those of Nagaya, and the women extremely well shaped, with exceeding fine features, smooth clear complexions, and beautiful black eyes, which, with their black hair hanging in two tresses, one on each side the face, give them a most lovely appearance: they wear a black coil on their heads, covered with a fine white cloth tied under the chin. During the summer they all wear only a smock of divers colours, and that open so low before, that one may see below their navels: this, with their beautiful faces always uncovered (contrary to the custom of most of the other provinces in

these parts), their good humour and lively freedom in conversation, altogether render them very attracting: notwithstanding which they have the reputation of being very chaste, though they seldom want opportunity; for according to the accounts of a late traveller, it is an established point of good manners among them, that as soon as any person comes in to speak to the wife, the husband goes out of the house: but whether this continency of theirs proceeds from their own generosity, to recompence their husbands for the confidence they put in them, or has its foundation only in fame, he pretends not to determine. Their language they have in common with the other neighbouring Tartars, although the chief people among them are also not ignorant of the Russian: their religion is Paganism; for notwithstanding they use circumcision among them, they have neither priest, alcoraa, or mosque, like other Mahometans. Every body here offers his own sacrifice at pleasure; for which, however, they have certain days, established rather by custom than any positive command: their most solemn sacrifice is offered at the death of their nearest friends; upon which occasion both men and women meet in the field to be present at the offering, which is an he-goat; and having killed, they flay it, and stretch the skin with the head and horns on, upon a cross at the top of a long pole, placed commonly in a quickset hedge (to keep the cattle from it); and near the place the sacrifice is offered by boiling and roasting the flesh, which they afterwards eat. When the feast is over, the men rise, and having paid their adoration to the skin, and muttered over some certain prayers, the women withdraw, and the men conclude the ceremony with drinking a great quantity of aquavita; and this generally ends in a quarrel before they part. The face of the country is pleasantly diversified with mountains, valleys, woods, lakes, and rivers; and, though not much cultivated, is far from being unfruitful. In summer the inhabitants quit the towns, and encamp in the fields like the neighbouring Tartars; occasionally shifting their stations along with their flocks and herds. Besides game, in which the country greatly abounds, the Circassians eat beef and mutton; but that which they prefer to all others is the flesh of a young horse. Their bread consists of thin cakes of barley meal, baked upon the hearth, which they always eat new; and their usual drink is water or mare's milk; from the latter of which they distil a spirit, as most of the Tartar nations. They allot no fixed hours for the refreshments of the table or sleep, which they indulge irregularly, as inclination or convenience dictates. When the men make excursions into an enemy's country, they will pass several days and nights successively without sleeping; but, at their return, devote as much time to repose as the space in which they had before withheld from that gratification. When they eat, they sit cross-legged on the floor, the skin of some animal serving them instead of a carpet. In removing from one part of the country to another, the women and children are carried in waggons, which are a kind of travelling houses, and drawn by oxen or camels, they never using horses for draught. Their breed of the latter, however, is reckoned exceeding good; and they are accustomed to swim almost any river on horseback. The women and children smoke tobacco as well as the men; and this is the most accept-

Circassia.

Circe
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Circle.

table commodity which a traveller can carry with him into the Tartar countries. There are here no public inns, which indeed are unnecessary; for so great is the hospitality of the people, that they will contend with each other who shall entertain any stranger that happens to come among them.—The principal branch of their traffic is their own children, especially their daughters, whom they sell for the use of the seraglios in Turkey and Persia, where they frequently marry to great advantage, and make the fortune of their families. The merchants who come from Constantinople to purchase those girls, are generally Jews, who, as well as the mothers, are said to be extremely careful of preserving the chastity of the young women, knowing the value that is set by the Turks upon the marks of virginity. The greater part of the Circassians are Christians of the Greek church; but there are also both Mahometans and Pagans amongst them.

CIRCE (fab. hist.), a daughter of Sol and Perseis, celebrated for her knowledge of magic and venomous herbs. She was sister to Æetes king of Colchis, and to Pasiphae the wife of Minos. She married a Sarmatian prince of Colchis, whom she murdered to obtain the kingdom. She was expelled by her subjects, and carried by her father upon the coasts of Italy in an island called Ææa. Ulysses, at his return from the Trojan war, visited her coasts; and all his companions, who ran headlong into pleasure and voluptuousness, were changed by Circe's potions into filthy swine. Ulysses, who was fortified against all enchantments by an herb called *moly*, which he had received from Mercury, went to Circe, and demanded sword in hand the restoration of his companions to their former state. She complied, and loaded the hero with pleasures and honours. In this voluptuous retreat Ulysses had by Circe one son called Telegonus, or two, according to Hesiod, called Agrius and Latinus. For one whole year Ulysses forgot his glory in Circe's arms. At his departure the nymph advised him to descend to hell and to consult the manes of Tiresias concerning the fares that attended him. Circe showed herself cruel to Scylla her rival, and to Pegasus.

CIRCENSIAN GAMES, a general term under which was comprehended all combats exhibited in the Roman circus, in imitation of the Olympic games in Greece. Most of the feasts of the Romans were accompanied with Circensian games; and the magistrates, and other officers of the republic, frequently presented the people with them, in order to procure their favour. The grand games were held five days, commencing on the 15th of September. See CIRCUS.

CIRCLE, in geometry, a plane figure comprehended by a single curve line, called its circumference, to which right lines drawn from a point in the middle, called the centre, are equal to each other. See GEOMETRY.

CIRCLES of the Sphere, are such as cut the mundane sphere, and have their periphery either on its moveable surface, or in another immoveable, conterminous, and equidistant surface. See SPHERE. Hence arise two kinds of circles, moveable and immoveable. The first, those whose peripheries are in the moveable surface, and which therefore revolve with its diurnal motion; as, the meridians, &c. The latter having their

periphery in the immoveable surface, do not revolve; as the ecliptic, equator, and its parallels, &c. See GEOGRAPHY.

CIRCLES of Altitude, otherwise called *almucantars*, are circles parallel to the horizon, having their common pole in the zenith, and still diminishing as they approach the zenith. See ALMUCANTAR.

Diurnal CIRCLES, are immoveable circles, supposed to be described by the seven stars, and other points of the heavens, in their diurnal rotation round the earth; or rather, in the rotation of the earth round its axis. The diurnal circles are all unequal: the equator is the biggest.

Horary CIRCLES, in dialing, are the lines which show the hours on dials; though these be not drawn circular, but nearly straight. See DIALING.

CIRCLES of Latitude, or *Secondaries of the Ecliptic*, are great circles parallel to the plane of the ecliptic, passing through the poles thereof, and through every star and planet. They are so called, because they serve to measure the latitude of the stars, which is nothing but an arch of one of these circles intercepted between the star and the ecliptic. See LATITUDE.

CIRCLES of Longitude, are several lesser circles, parallel to the ecliptic; still diminishing, in proportion as they recede from it. On the arches of these circles, the longitude of the stars is reckoned.

CIRCLE of perpetual Apparition, one of the lesser circles, parallel to the equator; described by any point of the sphere touching the northern point of the horizon; and carried about with the diurnal motion. All the stars included within this circle never set, but are ever visible above the horizon.

CIRCLE of perpetual Occultation, is another circle at a like distance from the equator; and contains all those stars which never appear in our hemisphere. The stars situated between these circles alternately rise and set at certain times.

Polar CIRCLES, are immoveable circles, parallel to the equator, and at a distance from the poles equal to the greatest declination of the ecliptic. That next the northern pole is called the ARCTIC; and that next to the southern one the ANTARCTIC.

Fairy-CIRCLE. See FAIRY-CIRCLE.

Druidical CIRCLES, in British topography, a name given to certain ancient inclosures formed by rude stones circularly arranged, in the manner represented on Plate CXXXV.* These, it is now generally agreed, were temples, and many writers think also places of solemn assemblies for councils or elections, and seats of judgment. Mr Borlace is of this opinion. "Instead, therefore (says he), of detaining the reader with a dispute, whether they were places of worship or council, it may with great probability be asserted, that they were used for both purposes; and having for the most part been first dedicated to religion, naturally became afterwards the curiæ and foræ of the same community." These temples, though generally circular, occasionally differ as well in figure as magnitude: with relation to the first, the most simple were composed of one circle: Stonehenge consisted of two circles and two ovals, respectively concentric; whilst that at Botolph near St Just in Cornwall is formed by four intersecting circles. And the great temple at Abury in Wiltshire,

Circles.

Circle,
Circoncel-
liones.

Wiltshire, it is said, described the figure of a serpent or fiery flying serpent, represented by circles and right lines. Some besides circles have avenues of stone pillars. Most, if not all of them, have pillars or altars within their penetralia or centre. In the article of magnitude and number of stones, there is the greatest variety; some circles being only twelve feet diameter and formed only of twelve stones, whilst others, such as Stonehenge and Abury, contained, the first one hundred and forty, the second six hundred and fifty two, and occupied many acres of ground. All these different numbers and measures and arrangements had their pretended reference; either to the astronomical divisions of the year, or some mysteries of the druidical religion. Mr Borlace, however, supposes, that those very small circles, sometimes formed of a low bank of earth, sometimes of stones erect, and frequently of loose small stones thrown together in a circular form, enclosing an area of about three yards diameter, without any larger circle round them, were originally places of burial.

CIRCLE, in logic, or *Logical CIRCLE*, is when the same terms are proved *in orbem* by the same terms; and the parts of the syllogism alternately by each other, both directly and indirectly.

CIRCLES of the Empire, such provinces and principalities of the German empire as have a right to be present at diets. Maximilian I. divided the empire into six, and some years after into ten circles. This last division was confirmed by Charles V. The circles, as they stand in the Imperial Matricula, are as follow: Austria, Burgundy, the Lower Rhine, Bavaria, Upper Saxony, Franconia, Swabia, Upper Rhine, Westphalia, and the Lower Saxony.

CIRCELLIONES, a species of fanatics, so called because they were continually rambling round the houses in the country. They took their rise among the donatists, in the reign of the emperor Constantine. It is incredible what ravages and cruelties these vagabonds committed in Africa through a long series of years. They were illiterate, savage peasants, who understood only the Punic language. Intoxicated with a barbarous zeal, they renounced agriculture, professed continence, and assumed the title of "Vindicators of justice, and Protectors of the oppressed." To accomplish their mission, they enfranchised slaves, scourged the roads, forced masters to alight from their chariots, and run before their slaves, whom they obliged to mount in their place; and discharged debtors, killing the creditors if they refused to cancel the bonds. But the chief objects of their cruelty were the catholics, and especially those who had renounced donatism. At first they used no swords, because God had forbidden the use of one to Peter; but they were armed with clubs, which they called the *clubs of Israel*; and which they handled in such a manner as to break a man's bones without killing him immediately, so that he languished a long time and then died. When they took away a man's life at once, they looked upon it as a favour. They became less scrupulous afterwards, and made use of all sorts of arms. Their shout was *Praise be to God*. These words in their mouths were the signal of slaughter, more terrible than the roaring of a lion. They had invented an unheard of punishment; which was to cover with lime diluted with vinegar,

the eyes of those unhappy wretches whom they had crushed with blows, and covered with wounds, and to abandon them in that condition. Never was a stronger proof what horrors superstition can beget in minds destitute of knowledge and humanity. These brutes, who had made a vow of chastity, gave themselves up to wine and all sorts of impurities, running about with women and young girls as drunk as themselves, whom they called *sacred virgins*, and who often carried proofs of their incontinence. Their chiefs took the name of *Chiefs of the Saints*. After having glutted themselves with blood, they turned their rage upon themselves, and sought death with the same fury with which they gave it to others. Some scrambled up to the tops of rocks, and cast themselves down headlong in multitudes; others burned themselves, or threw themselves into the sea. Those who proposed to acquire the title of martyrs, published it long before; upon which they were seized and fattened like oxen for the slaughter; after these preparations they set out to be destroyed. Sometimes they gave money to those whom they met, and threatened to murder them if they did not make them martyrs. Theodorat gives an account of a stout young man, who meeting with a troop of these fanatics, consented to kill them, provided he might bind them first; and having by this means put it out of their power to defend themselves, whipped them as long as he was able, and then left them tied in that manner. Their bishops pretended to blame them, but in reality made use of them to intimidate such as might be tempted to forsake their sect; they even honoured them as saints. They were not, however, able to govern those furious monsters; and more than once found themselves under a necessity of abandoning them, and even of imploring the assistance of the secular power against them. The counts Ursacius and Taurinus were employed to quell them; they destroyed a great number of them, of whom the donatists made as many martyrs. Ursacius, who was a good catholic and a religious man, having lost his life in an engagement with the barbarians, the donatists did not fail to triumph in his death, as an effect of the vengeance of heaven. Africa was the theatre of these bloody scenes during a great part of Constantine's life.

CIRCUIT, in law, signifies a longer course of proceedings than is needful to recover the thing sued for.

CIRCUIT, also signifies the journey or progress, which the judges take twice every year, through the several counties of England and Wales, to hold courts and administer justice, where recourse cannot be had to the king's courts at Westminster: hence England is divided into six circuits, *viz.* the Home circuit; Norfolk circuit; Midland circuit; Oxford circuit; Western circuit, and Northern circuit. In Wales there are but two circuits, North and South Wales: two judges are assigned by the king's commission to every circuit.

In Scotland, the judges of the supreme criminal court, or court of justiciary, are divided into three separate courts, consisting of two judges each; and the kingdom into as many districts. In certain boroughs of every district, each of these courts by rotation

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Circuit
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Circulation.

tion are obliged to hold two courts in the year, in spring and autumn; which are called *circuit-courts*.

Electrical CIRCUIT, denotes the course of the electric fluid from the charged surface of an electric body, to the opposite surface into which the discharge is made. Some of the first electricians apprehended, that the same particles of the electric fluid, which were thrown on one side of the charged glass, actually made the whole circuit of the intervening conductors, and arrived at the opposite side: whereas Dr Franklin's theory only requires, that the redundancy of electric matter on the charged surface should pass into the bodies which form that part of the circuit which is contiguous to it, driving forward that part of the fluid which they naturally possess; and that the deficiency of the exhausted surface should be supplied by the neighbouring conductors, which form the last part of the circuit. On this supposition, a vibrating motion is successively communicated through the whole length of the circuit. This circuit is always formed of the best conductors, let the length of it be ever so great. Many attempts were made, both in France and England, at an early period in the history of electricity, to ascertain the distance to which the electric shock might be carried, and the velocity of its motion. The French philosophers, at different times, made it to pass through a circuit of 900 toises, and of 2000 toises, or about two English miles and a half; and they discharged the Leyden phial through a basin of water, the surface of which was about an acre. And M. Mounier found, that, in passing through an iron wire of 950 toises in length, it did not spend a quarter of a second; and that its motion was instantaneous through a wire of 1319 feet. In 1747, Dr Watson, and other English philosophers, after many experiments of a similar kind, conveyed the electric matter through a circuit of four miles; and they concluded from this and another trial, that its velocity is instantaneous.

CIRCULAR, in a general sense, any thing that is described, or moved in a round, as the circumference of a circle, or surface of a globe.

CIRCULAR Numbers, called also *spherical ones*, according to some, are such whose powers terminate in the roots themselves. Thus, for instance, 5 and 6, all whose powers do end in 5 and 6, as the square of 5 is 25; the square of 6 is 36, &c.

CIRCULAR Sailing, is the method of sailing by the arch of a great circle. See **NAVIGATION**.

CIRCULATION, the act of moving round, or in a circle; thus we say, the circulation of the blood, &c.

CIRCULATION of the Blood, the natural motion of the blood in a living animal, whereby that fluid is alternately carried from the heart into all parts of the body, by the arteries, from whence it is brought back to the heart again by the veins. See **ANATOMY**, n^o 125.

In a fœtus, the apparatus for the circulation of the blood is somewhat different from that in adults. The septum, which separates the two auricles of the heart, is pierced through with an aperture, called the *foramen ovale*; and the trunk of the pulmonary artery, a little after it has left the heart, sends out a tube into the descending aorta, called the *communicating canal*. The fœtus being born, the foramen ovale closes by degrees, and the canal of communication dries up, and becomes a simple ligament.

As to the velocity of the circulating blood, and the time wherein the circulation is completed, several computations have been made. By Dr Keil's account, the blood is driven out of the heart into the aorta with a velocity which would carry it twenty-five feet in a minute: but this velocity is continually abated in the progress of the blood, in the numerous sections or branches of the arteries; so that before it arrive at the extremities of the body, its motion is greatly diminished. The space of time wherein the whole mass of blood ordinarily circulates, is variously determined. Some state it thus: Supposing the heart to make two thousand pulses in an hour, and that at every pulse there is expelled an ounce of blood; as the whole mass of blood is not ordinarily computed to exceed twenty-four pounds, it must be circulated seven or eight times over in the space of an hour.

The curious, in microscopic observations, have found an easy method of seeing the circulation of the blood in the bodies of animals: for these inquiries it is necessary to choose such animals as are small, and easily manageable, and which are either wholly or in part transparent. The observations made by this means are preferable to any others we can have recourse to; since, in dissections, the animal is in a state of pain, or dying; whereas in animals small enough to be thus viewed, all is left in its usual course, and we see what nature does in her own undisturbed method. In these creatures also, after viewing, as long as we please, the natural state and current of the blood, we may, by pressure, and several other ways, impede its course; and by putting various mixtures into the creature's water, induce a morbid state, and finally see the creature die, either by means of this or by any other method; and we may thus accurately observe all the changes it undergoes, and see what occasions the trembling pulse, &c. of dying people.

The current of the blood in small animals, that is, its passing on through the vessels, either to or from the heart, is very easily seen by the microscope; but its circulation, that is, its running to the extremities of the parts, and thence returning, is more difficult; because the vessels where this should be seen are so extremely minute, as not easily to come under observation. The larger arteries are easily distinguished from the veins by the motion of the blood through them, which in the veins is always smooth and regular; but in the arteries by several propulsions after the manner of pulsation. But this difference is not to be found in the more minute vessels; in all which, as well arteries as veins, the motion of the blood is even and regular.

The transparent membrane, or web between the toes of a frog's hinder foot, is a very proper object to observe the circulation of the blood in. The tails or fins of fishes are also very fine objects; and when the fish is very small, these are manageable, and afford a view of a great number of veins and arteries, with a very quick and beautiful succession of blood through them. The tail of a flounder may be very conveniently placed before the double microscope on a plate of glass; and its body being supported by something of equal height, the fish will lie still, and the circulation may be seen very agreeably. In the minutest vessels thus examined, the blood always appears

Circulation.
Circulus.

pale or colourless, but in the large ones it is manifestly red. The arteries usually branch out extremely before they join the veins to carry the blood back to the heart: but this is not always the case; for Mr Lewenhoeck has observed, that on each side of the little gillfish which give a stiffness to the tail of a flounder, there may be seen a very open communication of the veins and arteries; the blood running towards the extremities through arteries, and returning back again through veins, which were evidently a continuation of those arteries, and of the same diameter with them. The whole fish on the tail of which this examination was made, was not more than half an inch in length; it is easy to conceive, therefore, how small the tail must be; and yet in it there were 68 vessels which carried and returned the blood; and yet these vessels were far from being the most minute of all. How inconceivably numerous then must the *circulations* in the whole human body be? Mr Lewenhoeck is of opinion, that a thousand different circulations are continually carried on in every part of a man's body in the breadth of a finger nail.

The tail of a newt or water-lizard affords also a very entertaining prospect of the circulation of the blood through almost numberless small vessels; but no object shows it so agreeably as one of these animals while so young as not to be above an inch long; for then the whole body is so very transparent, that the circulation may be seen in every part of it, as well as in the tail; and, in these objects, nothing is more beautiful than the course of the blood into the toes and back again, where it may be traced all the way with great ease. Near the head there are also found three small fins which afford a very delightful prospect: these are all divided like the leaves of polypody; and in every one of the branches of these, the blood may be very accurately traced, running to the end through the artery, and there returning back again by a vein of the same size, and laid in the same direction; and as the vessels are very numerous and large in this part, and the third or fourth magnifier may be used, there are sometimes seen 30 or 40 channels of running blood at once; and this the more as the globules of blood in the newt are large, and are fewer in number, in proportion to the quantity of serum, than in any other animal: and their figure, as they are protruded through the vessels, changes in a very surprising manner. The impetus occasioning the circulation, is great enough in some animals to raise the blood six, seven, or eight feet high from the blood-vessel it springs out at; which, however, is far exceeded by that of the sap of a vine in bleeding time, which will sometimes rise forty feet high.

CIRCULATION of the sap of Plants. See PLANTS, and SAP.

CIRCULATION of the Spirits, or Nervous Fluid. See ANATOMY, n^o 136.

CIRCULATION, in chemistry, is an operation whereby the same vapour, raised by fire, falls back, to be returned and distilled several times.

CIRCULATION of Money. See COMMERCE, and MONEY.

Subterranean CIRCULATION. See SPRINGS.

CIRCULUS, in chemistry, an iron instrument in form of a ring, which being heated red-hot, and ap-

plied to the necks of retorts and other glass vessels till they grow hot, a few drops of cold water thrown upon them, or a cold blast, will make the necks fly regularly and evenly off.

Another method of doing this is, to tie a thread, first dipt in oil of turpentine, round the place where you would have it break; and then setting fire to the thread, and afterwards sprinkling the place with cold water, the glass will crack exactly where the thread was tied.

CIRCUMAMBIENT, an appellation given to a thing that surrounds another on all sides; chiefly used in speaking of the air.

CIRCUMCELLIONES. See CIRCONCELLIONES.

CIRCUMCISION, the act of cutting off the prepuce; a ceremony in the Jewish and Mahometan religions, wherein they cut off the foreskin of their males, who are to profess the one or the other law.

Circumcision commenced in the time of Abraham; and was, as it were, the seal of a covenant stipulated between God and him. It was in the year of the world 2178, that Abraham, by divine appointment, circumcised himself, and all the males of his family; from which time it became an hereditary practice among his descendants.

The ceremony, however, was not confined to the Jews: Herodotus and Philo Judæus observe, that it obtained also among the Egyptians and Ethiopians. Herodotus says, that the custom was very ancient among each people; so that there was no determining which of them borrowed it from the other. The same historian relates, that the inhabitants of Colchis also used circumcision; whence he concludes, that they were originally Egyptians. He adds, that the Phœnicians and Syrians were likewise circumcised; but that they borrowed the practice from the Egyptians. Anâlasty, that a little before the time when he wrote, circumcision had passed from Colchis, to the people inhabiting near Thermoodon and Parthenius.

Marsham is of opinion, that the Hebrews borrowed circumcision from the Egyptians; and that God was not the first author thereof; citing Diodorus Siculus, and Herodotus, as evidences on his side. This latter proposition seems directly contrary to the testimony of Moses, who assures, Gen. xvii. that Abraham, tho' 99 years of age, was not circumcised till he had the express command of God for it. But as to the former proposition of Marsham, it will admit of more debate. The arguments on both sides may be seen in one view in *Spencer de Legibus Hebraeorum*, l. 2. c. 4.

Be this as it will, it is certain the practice of circumcision among the Hebrews differed very considerably from that of the Egyptians. Among the first it was a ceremony of religion, and was performed on the eighth day after the birth of the child. Among the latter, a point of mere decency and cleanliness; and, as some will have it, of physical necessity; and was not performed till the 13th year, and then on girls as well as boys.

Among the Jews, the time for performing this rite was the eighth day, that is, six full days, after the child was born: the law of Moses ordained nothing with respect to the person by whom, the instrument with which, or the manner how, the ceremony was to be performed;

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ed; the instrument was generally a knife of stone. The child is usually circumcised at home, where the father, or godfather, holds him in his arms, while the operator takes hold of the prepuce with one hand, and with the other cuts it off; a third person holds a porringer, with sand in it, to catch the blood; then the operator applies his mouth to the part, and, having sucked the blood, spits it into a bowl of wine, and throws a styptic powder upon the wound. This ceremony was usually accompanied with great rejoicings and feasting; and it was at this time that the child was named in presence of the company. The Jews invented several superstitious customs at this ceremony, such as placing three stools, one for the circumcisor, the second for the person who holds the child, and the third for Elijah, who, they say, assists invisibly at the ceremony, &c.

The Jews distinguished their profelytes into two sorts, according as they became circumcised or not: those who submitted to this rite were looked upon as children of Abraham, and obliged to keep the laws of Moses; the uncircumcised were only bound to observe the precepts of Noah, and were called *noachides*.

The Turks never circumcise till the seventh or eighth year, as having no notion of its being necessary to salvation. The Persians circumcise their boys at 13, and their girls from 9 to 15. Those of Madagascar cut the flesh at three several times; and the most zealous of the relations present, catches hold of the preputium and swallows it.

Circumcision is practised on women by cutting off the foreskin of the clitoris, which bears a near resemblance and analogy to the preputium of the male penis. We are told that the Egyptian captive-women were circumcised; and also the subjects of Prester John.

CIRCUMCISION is also the name of a feast, celebrated on the first of January, in commemoration of the circumcision of our Saviour.

CIRCUMDUCTION, in Scots law. When parties in a suit are allowed a proof of alledgeances; after the time limited by the judge for taking that proof is elapsed, either party may apply for circumduction of the time of proving; the effect of which is, that no proof can afterwards be brought, and the cause must be determined as it stood when circumduction was obtained.

CIRCUMFERENCE, in a general sense, denotes the line or lines bounding a plane figure. However, it is generally used in a more limited sense, for the curve line which bounds a circle, and otherwise called a *periphery*; the boundary of a right-lined figure being expressed by the term *perimeter*.

CIRCUMFERENTOR, an instrument used by surveyors for taking angles.

Plate
CXXXV.
in Vol. IV.

It consists of a brass index and circle, all of a piece. The index is commonly about 14 inches long, and an inch and a half broad; the diameter of the circle is about seven inches. On this circle is made a chart, whose meridian line answers to the middle of the breadth of the index, and is divided into 360 degrees. There is a brass ring soldered on the circumference of the circle, on which screws another ring, with a flat glass in it, so as to form a kind of box for the needle,
N^o 81.

suspended on the pivot in the centre of the circle. There are also two sights to screw on, and slide up and down the index; as also a spangle and socket screwed on the back side of the circle for putting the head of the staff in.

How to observe the Quantity of an Angle by the Circumferentor. Let it be required to find the quantity of the angle EKG; first place your instrument at K, with the flower-de-luce of the chart towards you; then direct your sights to E, and observe what degrees are cut by the fourth end of the needle, which let be 296; then, turning the instrument about, direct your sights to G, noting then also what degrees are cut by the fourth end of the needle, which suppose 247. This done, always subtract the lesser from the greater, as in this example, 247 from 296, the remainder is 49 degrees, which is the true quantity of the angle EKG.

A circumferentor is made by Mr Jones of Holburn on an improved construction. From a very simple contrivance, it is rendered sufficient to take angles with the accuracy of a common theodolite; and by its angles of altitude and depression may be observed as readily as horizontal ones. The improvement chiefly consists in an arm or index (G), so applied to the centre of the compass box, and within it, that, at the time of observing, by only slipping a pin (p) out, the circle of degrees alone may move round, and leave the index (G) fixed. This index will remain stationary, from its being attached to the socket that screws on the head of the staffs. On the end of this index, next the degrees in the box, there is graduated a nonius scale, by which the circle of 360 degrees is subdivided into 5 minutes or less if desired. To take angles of altitude or depressions, the instrument is turned down on its ball and socket into a perpendicular position, and adjusted to its level by a plumb line (l), that is hung on a pin at the back of the box, and made to coincide with a mark made thereon. Then by looking through the small sight holes (s) purposely made, the angles are shown on the circle of degrees by the nonius as before. The arms (A A) of the instrument slip off (at BB), and the whole packs into a case but 5½ inches square and 3 deep.

CIRCUMFLEX, in grammar, an accent, serving to note, or distinguish, a syllable of an intermediate sound between acute and grave; and generally somewhat long.—The Greeks had three accents, the acute, the grave, and the circumflex; formed thus, ´, ` , ¨. In Latin, English, French, &c. the circumflex is made thus ^.—The acute raises the voice, and the grave falls or lowers it: the circumflex is a kind of undulation, or wavering of the voice, between the two. It is seldom used among the moderns, unless to show the omission of a letter which made the syllable long and open; a thing much more frequent in the French than among us: thus they write *pâte* for *paste*; *tête* for *teste*; *fûmes* for *fumes*, &c. They also use the circumflex in the participles; some of their authors writing *commeu*, *peu*, others *commá*, *plá*, &c. Father Buffier is at a loss for the reason of the circumflex on this occasion.

The form of the Greek circumflex was anciently the same with that of ours, viz. ^; being a composition of the

Circumfe-
rentor,
Circumflex

Ibid.

Ibid.

Circumgy-
ration
||
Circum-
vallation.

the other two accents \wedge in one—But the copists, changing the form of the characters, and introducing the running-hand, changed also the form of the circumflex accent; and instead of making a just angle, rounded it off, adding a dash, through too much haste; and thus formed an s , laid horizontally, which produced this figure \sim , instead of this \wedge .

CIRCUMGYRATION, denotes the whirling motion of any body round a centre; such is that of the planets round the sun.

CIRCUMLOCUTION, an ambages, or tour of words, used either when a proper term is not at hand, to express a thing naturally and immediately by; or when one chooses not to do it, out of respect, or for some other reason. The word comes from *circumloquor*, "I speak about."

CIRCUMLOCUTION, in oratory, is the avoiding of something disagreeable or inconvenient to be expressed in direct terms; by intimating the sense thereof in a kind of paraphrase, so conceived as to soften or break the force thereof.

Thus Cicero, unable to deny that Clodius was slain by Milo, owns it, with this circumlocution, "Milo's servants being prevented from assisting their master, who was reported to be killed by Clodius; they, in his absence, and without his privity, or consent, did what every body would expect from their own servants on such an occasion."

CIRCUMPOLAR STARS, an appellation given to those stars, which, by reason of their vicinity to the pole, move round it without setting.

CIRCUMPOTATIO, in antiquity, a funeral feast provided in honour of the dead. This was very frequent among the ancient Romans, as well as among the Athenians. Solon at Athens, and the decemviri at Rome, endeavoured to reform this custom, thinking it absurd that mirth and drunkenness should mingle with sorrow and grief.

CIRCUMSCRIBED, in geometry, is said of a figure which is drawn round another figure, so that all its sides or planes touch the inscribed figure.

CIRCUMSCRIPTION, in natural philosophy, the termination, bounds, or limits, of any natural body.

CIRCUMSTANCE, a particularity, which, tho' not essential to any action, yet doth some way affect it.

CIRCUMSTANTIAL EVIDENCE, in law, or the doctrine of presumption, takes place next to positive proof: circumstances which either necessarily or usually attend facts of a particular nature, that cannot be demonstratively evinced, are called *presumptions*, and are only to be relied on till the contrary be actually proved.

CIRCUMSTANTIBUS, in law, a term used for supplying and making up the number of jurors (in case any impanelled appear not, or appearing are challenged by any party), by adding to them so many of the persons present as will make up the number, in case they are properly qualified.

CIRCUMVALLATION, or *Line of Circumvallation*, in the art of war, is a trench bordered with a parapet, thrown up quite round the besieger's camp, by way of security against any army that may attempt to relieve the place, as well as to prevent desertion.

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CIRCUMVOLUTION, in architecture, denotes the torus of the spiral line of the Ionic order.

CIRCUS, in antiquity, a large building, either round or oval, used for the exhibiting of shows to the people. Some derive the word from *Circe*, to whom Tertullian attributes the invention. Cassiodorus says, *Circus* comes à *circuitu*. The Romans, Servius observes, at first had no other circus but that made by the Tiber on one side, and a palisade of naked swords on the other. Hence, according to Isidore, came the term *ludi circenses*, *quasi circum enses*. But Scaliger ridicules that etymology.

The Roman circus was a large oblong edifice, arched at one end; encompassed with porticos, and furnished with rows of seats, placed ascending over each other. In the middle was a kind of foot-bank, or eminence, with obelisks, statues, and posts at each end. This served them for the courses of their *bigæ* and *quadrigæ*. There were no less than ten circuses at Rome: the largest was built by the elder Tarquin, called *Circus Maximus*, between the Aventine and Palatine mounts. It was so called, either because of its vast circumference, or because the great games were celebrated in it; or again, because it was consecrated to the great gods, viz. to Vertumnus, Neptune, Jupiter, Juno, Minerva, and the Dii Penates of Rome. Dionysius Halicarnassensis says that it was three stadia and a half in length, and four jugera broad; and these measures, according to Pliny, allowing to the Roman stadia 625 Roman feet, each of which is 12 inches, will give for the length 2187 Roman feet, or somewhat more than three English furlongs; and as to the breadth, allowing for each of the jugera 240 Roman feet, it will be 960 Roman feet. It was beautified and enlarged by the Roman emperors, so as to seat 250,000 spectators. The most magnificent circuses were those of Augustus and Nero. There are still some remains of the circuses at Rome, at Nismes, and other places. The Romans were excessively fond of the games exhibited in the circus: witness that verse in Juvenal,

Atque duas tantum res anxius optat,
Panem & circenses

The Games of the **CIRCUS**, which some call *Circensian Games*, were combats celebrated in the circus, in honour of Confus the god of councils; and thence also called *Consualia*. They were also called *Roman Games*, *Ludi Romani*, either on account of their antiquity, as being coeval with the Roman people, or because established by the Romans: and the games held there, the great games, *ludi magni*, because celebrated with more expence and magnificence than others; and because held in honour of the great god Neptune, who was their Confus.—Those who say they were instituted in honour of the sun, confound the *pompa circensis*, or procession of the circus, with the games.

The games of the circus were instituted by Evander, and re-established by Romulus: the pomp, or procession, was only a part of the games, making the prelude thereof, and consisting of a simple cavalcade of chariots. Till the time of the elder Tarquin, they were held in an island of the Tiber; and were called *Roman games*: after that prince had built the circus, they took their name thencefrom; as being constantly held there. There were six kinds of exercises in the

D

circus:

Circumve-
lution
Circus.

Cirencester circus: the first was wrestling, and fighting with swords, with staves, and with pikes; the second was racing; the third, saltatio, dancing; the fourth, disci, quoits, arrows, and cestus: all which were on foot: the fifth was horse-courfing; the sixth, courses of chariots, whether with two horses or with four. In this last exercise, the combatants were at first divided into two squadrons or quadrils; then into four; each bearing the names of the colours they wore; *factio alba, ruffea, &c.* At first there was only white and red; then green was added, and blue. Domitian added two more colours, but they did not continue. It was Oenomaus who first invented this method of distinguishing the quadrils by colours. The green was for those who represented the earth; the blue for the sea, &c.

CIRENCESTER, an ancient town of Gloucestershire in England. It was strongly fortified with walls and a castle in the time of the Romans. The ruins of the walls and street are, or were lately, to be seen in the adjacent meadows, where many Roman coins, chequered pavements, and inscriptions on marble, have been found. Two of the Roman consular ways cross each other at this town. The fosse-way, which comes from Scotland, passes through this county and town to Totness in Devonshire. The other, called *Irminstreet*, comes from Gloucester, and runs along to Southampton. Not many years ago they discovered, by digging in a meadow near the town, an ancient building under ground, 50 feet long, 40 broad, and 4 high, and supported by 100 brick pillars, curiously inlaid with stones of various colours, supposed to have been a Roman bath. Cirencester has now but one church, in the windows of which are the remains of very valuable painted glass. The town is governed by 2 high constables, and 14 wards-men, who govern 7 distinct wards; and it sends two members to parliament. It has a free school, a charity-school, with several almshouses; and is seated on the river Churn, 36 miles north-east of Bristol, and 88 west by north of London. W. Long. o. 2. N. Lat. 51. 42.

CIRENZA, a city of Naples, capital of the Basilicate, with an archbishop's see. It was formerly a considerable place, but is now of small consequence. It is seated on the river Brandano, at the foot of the Apennine mountains, in E. Long. 16. 44. N. Lat. 40. 48.

CIRO-FERRI, an excellent Italian painter and architect, was born at Rome in 1614, and was the disciple of Peter de Cortona, whose designs he imitated with such exactness, that it is difficult to distinguish them. He was esteemed by Pope Alexander VII. and his three successors, and died at Rome in 1689.

CIRRUS, or CIRRHUS, in botany, a clasper or tendril; that fine spiral string or fibre put out from the foot-stalks, by which some plants, as the ivy and vine, fasten themselves to walls, pales, or trees, for support. The term is synonymous to the capreolus, clavícula, and viticulus of other botanists: and is ranked by Linnæus among the fulcra, or parts of plants that serve for protection, support, and defence.

Tendrils are sometimes placed opposite to the leaves, as in the vine; sometimes at the side of the foot-stalk

of the leaf, as in passion-flower; and sometimes, as in winged pea, *pisum ochrus*, they are emitted from the leaves themselves. With respect to composition, they are either simple, that is, composed of one fibre or chord, as in the vetch; or compound, that is, consist of two, three, or more, as in the everlasting pea. Bitter sweet, solanum, dulcamara, bignonia, and ivy, send forth tendrils which plant themselves like roots in the adjacent walls, or the bark of the neighbouring trees. Claspers, says the ingenious Dr Grew, are like trunk-roots, a mean betwixt a root and a trunk, but a compound of both, as may be gathered from their circumvolutions, in which they mutually ascend and descend. In the mounting of the trunk, continues the same author, claspers serve for support. Thus, in vines, the branches being very long, fragile, and slender, would be liable to frequent breaking, unless, by means of their claspers, they were mutually contained together; so that the whole care is divided betwixt the gardener and nature: the former, with his ligaments of leather, secures the main branches; and nature, with those of her own providing, secures the less. Their aptitude to this end is seen in their convolutions, a motion not proper to any other part: and also in their toughness, which is so much the more remarkable, as they are slenderer than the branches from which they proceed. In the trailing of the trunk, tendrils serve for stabling and shade: thus, in cucumbers, the trunk and branches being long and fragile, would be driven to and fro by the winds, to the great prejudice both of themselves and their tender fruits, were they not, by these ligaments, held fast together, and preserved in association and good fellowship. The same claspers serve likewise for shade: so that a natural arbour is formed by the branches of the cucumber, in the same manner as an artificial one is made by tangling together the twigs of trees; for the branches, by the linking of their claspers, being couched together, the tender fruits lie under the umbrage of a bower made of their own leaves. Most of the pea-bloom flowers have twining claspers, that is, which wind to the right and back again.

CIRRI, in ichthyology, certain oblong and soft appendages, not unlike little worms, hanging from the under jaws or mouths of some fishes: these cirri, commonly translated *beards*, afford marks to distinguish the different species of the fishes on which they are found.

CIRTA, (anc. geog.) the metropolis and royal residence, not far from the river Ampfaga, in the inland parts of Numidia Propria: A colony, furnished *Colonia Sittianorum*, very rich, when in the hands of Syphax. The colony was led by one P. Sittius, under the auspices of Cæsar, and was surnamed *Julia*. Now called *Constantina*, in Algiers. E. Long. 7. o. Lat. 35. 30.

CISALPINE, any thing on this side the Alps. The Romans divided Gaul and the country now called *Lombardy*, into Cisalpine and Transalpine. That which was Cisalpine with regard to the Romans, is Transalpine with regard to us.

CISLEU, in Hebrew chronology, the ninth month of their ecclesiastical, and third of their civil, year, answering nearly to our November.

CISPADANA GALLIA, (anc. geog.) a district of Italy,

Cirrus
Cispadana.

Cissa
||
Cistercians.

to the south of the Po, occupied by the Gauls in the time of the kings of Rome, separated from Liguria on the west, as is thought by the Iria, running from south to north into the Po; bounded on the south by the Apennine, and on the east by the Adriatic. The term is formed analogically, there being much mention in Cicero, Tacitus, Suetonius, and ancient inscriptions, made of the *Transpadani*; which and *Cispadani* are terms used with respect to Rome. Ptolemy calls the *Cispadana* peculiarly *Gallia Togata*, extending between the Po and Apennine, to the Sapis and Rubicon.

CISSA, or CISSUM (anc. geog.), a town of the Hither Spain, in Lacetania, on the east side of the Iberus, (thought to be *Guiffona*.) Where the Carthaginians were first defeated by Scipio. Another *Cissa* of Thrace, situated on the river *Ægos Potamus*, which Scylax seems to call *Cressa*, or *Criffa*; so that the reading is doubtful.

CISSAMPELOS, in botany: A genus of the monodelphia order, belonging to the diœcia class of plants; and in the natural method ranking under the 11th order, *Sarmentacea*. The male calyx is tetraphyllous; no corolla; the nectarium wheel-shaped; four stamina with their filaments grown together. The female calyx is monophyllous and ligulated roundish, or like a piece of garter a little roundish. There is no corolla; three styles, and a monospermous berry. There are two species, the *pareira* and *caapeba*, both natives of the warmest parts of America. The root of the second, applied externally, is said to be an antidote against the bites of venomous serpents. The plant being infused in water, quickly fills the liquor with a mucilaginous substance, which is as thick as jelly; whence the name of *freezing-zoyth*, by which this genus of plants has been distinguished by the Brazilians.

CISSOID, in geometry, a curve of the second order, first invented by Diocles, whence it is called the *ovoid of Diocles*. See FLUXIONS.

CISSUS, the WILD-GRAPE: A genus of the monogynia order, belonging to the tetrandria class of plants; and in the natural method ranking under the 46th order, *Hederacea*. The berry is monospermous, surrounded by the calyx, and a quadripartite corolla. There are four species, all of them natives of the island of Jamaica, and some of the other islands in the warm parts of America. They send out slender branches, having tendrils at their joints, by which they fasten to the neighbouring trees, bushes, and any other support, mounting to a considerable height. The fruit of some of the species are eaten by the negroes.

CISTERCIANS, in church-history, a religious order founded in the 11th century by St Robert, a Benedictine. They became so powerful, that they governed almost all Europe, both in spirituals and temporals. Cardinal de Vitri describing their observances, says, they neither wore skins nor shirts; nor ever eat flesh, except in sickness; and abstained from fish, eggs, milk, and cheese: they lay upon straw-beds, in tunics and cowls: they rose at midnight to prayers: they spent the day in labour, reading, and prayer: and in all their exercises observed a continual silence. The habit of the cistercian monks is a white robe,

in the nature of a cassock, with a black scapulary and hood, and is girt with a wooden girdle. The nuns wear a white tunic, and a black scapulary and girdle.

Cistern
||
Citadella.

CISTERN, denotes a subterraneous reservoir of rain-water; or a vessel serving as a receptacle for rain or other water, for the necessary uses of a family. There are likewise lead-cisterns, jar-cisterns, &c.

Authors mention a cistern at Constantinople, the vaults of which are supported by two rows of pillars, 212 in each row, each pillar being two feet in diameter. They are planted circularly, and *in radii* tending to that of the centre.

Anciently there were cisterns all over the country in Palestine. There were some likewise in cities and private houses. As the cities for the most part were built on mountains, and the rains fell regularly in Judea at two seasons in the year only, in spring and autumn, people were obliged to keep water in cisterns in the country for the use of their cattle, and in cities for the conveniency of the inhabitants. There are still cisterns of very large dimensions to be seen in Palestine, some whereof are 150 paces long, and 54 wide. There is one to be seen at Ramah of 32 paces in length, and 28 in breadth. Wells and cisterns, springs and fountains, are generally confounded in scripture-language.

CISTUS, the ROCK-ROSE: A genus of the monogynia order, belonging to the polyandria class of plants; and in the natural method ranking under the 20th order, *Rotaceæ*. The corolla is pentapetalous; the calyx pentaphyllous, with two of its leaves smaller than the rest. The seeds are contained in a capsule. There are 37 species, most of them natives of the southern parts of Europe, but hardy enough to bear the open air in this country. They are beautiful evergreen shrubs, generally very branchy quite from the bottom, and forming diffused heads. They are very ornamental in gardens, not only as evergreens, making a fine variety at all seasons with their leaves of different figures, sizes, and shades of green and white, but also as first-rate flowering shrubs, being very profuse in most elegant flowers of white, purple, and yellow colours. These flowers only last for one day; but there is a continual succession of new ones for a month or six weeks on the same plant; and when there are different species, they will exhibit a constant bloom for near three months. They are propagated either by seeds or cuttings, and thrive best in a dry soil. Their proper situation in shrubbery works should be towards the front of the clumps and other compartments, in assemblage with the choicest shrubs of similar growth, disposing them so as to make a variety, and to have shelter from the other plants; but they ought by no means to be crowded. Gum labdanum is found upon a species of cistus which grows naturally in the Levant, and is therefore called *ladanifera*. See LABDANUM.

CITADEL, a place fortified with five or six bastions, built on a convenient ground near a city, that it may command it in case of a rebellion.

CITADELLA, the capital town in the island of Minorca, in the Mediterranean, with a new harbour. This, with the whole island, were taken by general Stanhope and the confederate fleet in 1708, and ceded

Citadinesca
||
Citium.

to Great Britain by the treaty of Utrecht in 1713: but it was taken by the French, after a brave defence, in 1756; and restored by the peace. In 1782, it was taken by the Spaniards, and confirmed to them at the subsequent peace. It is 27 miles west of Port-Mahon. E. Long. 3. 30. N. Lat. 39. 58.

CITADINESCA, in natural history, a name given by some writers to the Florentine marble, which is supposed to represent towns, palaces, ruins, rivers, &c. These delineations are merely accidental, and are commonly much assisted by the imagination, though the natural lines of a stone may sometimes luckily enough represent the ruins of some ancient building, or the course of a river. In England there is a kind of septaria, or ludus Helmontii, which has sometimes pretty beautiful, though very irregular, delineations of this kind. The Florentine marble, as we see it wrought up in the ornaments of cabinets, &c. owes a great deal to the skill of the workmen, who always pick out the proper pieces from the mass, and dispose them in the work so as to represent what they please.

CITATION, in ecclesiastical courts, is the same with summons in civil courts. See **SUMMONS**.

CITATION, is also a quotation of some law, authority, or passage of a book.

CITHÆRON (anc. geog.), a mountain and forest of Bœotia, celebrated both in fable and song. To the west it ran obliquely, a little above the Sinus Crisæus, taking its rise contiguous to the mountains of Megara and Attica; then levelled into plains, it terminates at Thebes, famous for the fate of Pentheus and Actæon; the former torn by the Bacchæ, the latter by his dogs; as also for the *orgia*, or revels of Bacchus.

CITHARA, in antiquity, a musical instrument, the precise structure of which is not known; some think it resembled the Greek delta Δ ; and others the shape of a half moon. At first it had only 3 strings, but the number was at different times increased to 8, to 9, and lastly to 24. It was used in entertainments and private houses, and played upon with a plectrum or quill, like the lyre.

CITHAREXYLON, **FIDDLE-WOOD**: A genus of the angiospermia order, belonging to the didynamia class of plants; and in the natural method ranking under the 40th order, *Personatæ*. The calyx is quinque-dentated, campannated, wheel-shaped, and inclining to be funnel-shaped, with its segments villous on the upper side, equal. The fruit a dispermous berry; the seeds bilocular. There are two species, both natives of the warm parts of America, where they grow to be large trees, and are adorned with white flowers growing in spikes. In Britain they appear only as shrubs, and must be constantly retained in the stove, where they make a fine appearance, being beautiful evergreens. They may be propagated either by seeds or cuttings.

CITIUM, **CETIUM**, or *Cittium* (anc. geog.), a town of Cyprus, situated in the south of the island; famous for the birth of Zeno, author of the sect called *Stoics*; distant two hundred stadia to the west of Salamis (Diodorus Siculus). A colony of Phœnicians, called *Chetim*: And hence it is that not only Cyprus, but the other islands and many maritime places, are called *Chetim* by the Hebrews; now called *Chiti*.

CITIZEN, a native or inhabitant of a city, vested with the freedom and liberties of it.

A citizen of Rome was distinguished from a stranger, because he belonged to no certain commonwealth subject to the Romans. A citizen is either by birth or election; and sons may derive the right from their fathers. To make a good Roman citizen, it was necessary to be an inhabitant of Rome, to be enrolled in one of the tribes, and to be capable of dignities. Those to whom were granted the rights and privileges of Roman citizens, were only honorary citizens. It was not lawful to scourge a citizen of Rome.

CITRINUS, in natural history, the name of a peculiar species of sprig crystal, which is of a beautiful yellow. Many of the common crystals, when in the neighbourhood of lead mines, are liable to be accidentally tinged yellow, by an admixture of the particles of that metal; and all these, whether finer or coarser, have been too frequently confounded together under the name *citrine*: but Dr Hill has ascertained this to be a peculiar species of crystal different from all the others in form as well as in colour; and distinguished by the name of *ellipomacrostylum lucidum flavescens, pyramide brevi*. It is never found colourless like the other crystals, but has great variety of tinges, from that of the deeper ochres to a pale lemon-colour. It is very plentiful in the West Indies, and is sometimes found in Bohemia. Our jewellers have learned from the French and Italians, who are very fond of it, to call it *citrine*; and often cut stones for rings out of it, particularly out of the pyramid, which is always finer than the column; and these, after they have passed through two or three hands, are generally mistaken for topazes.

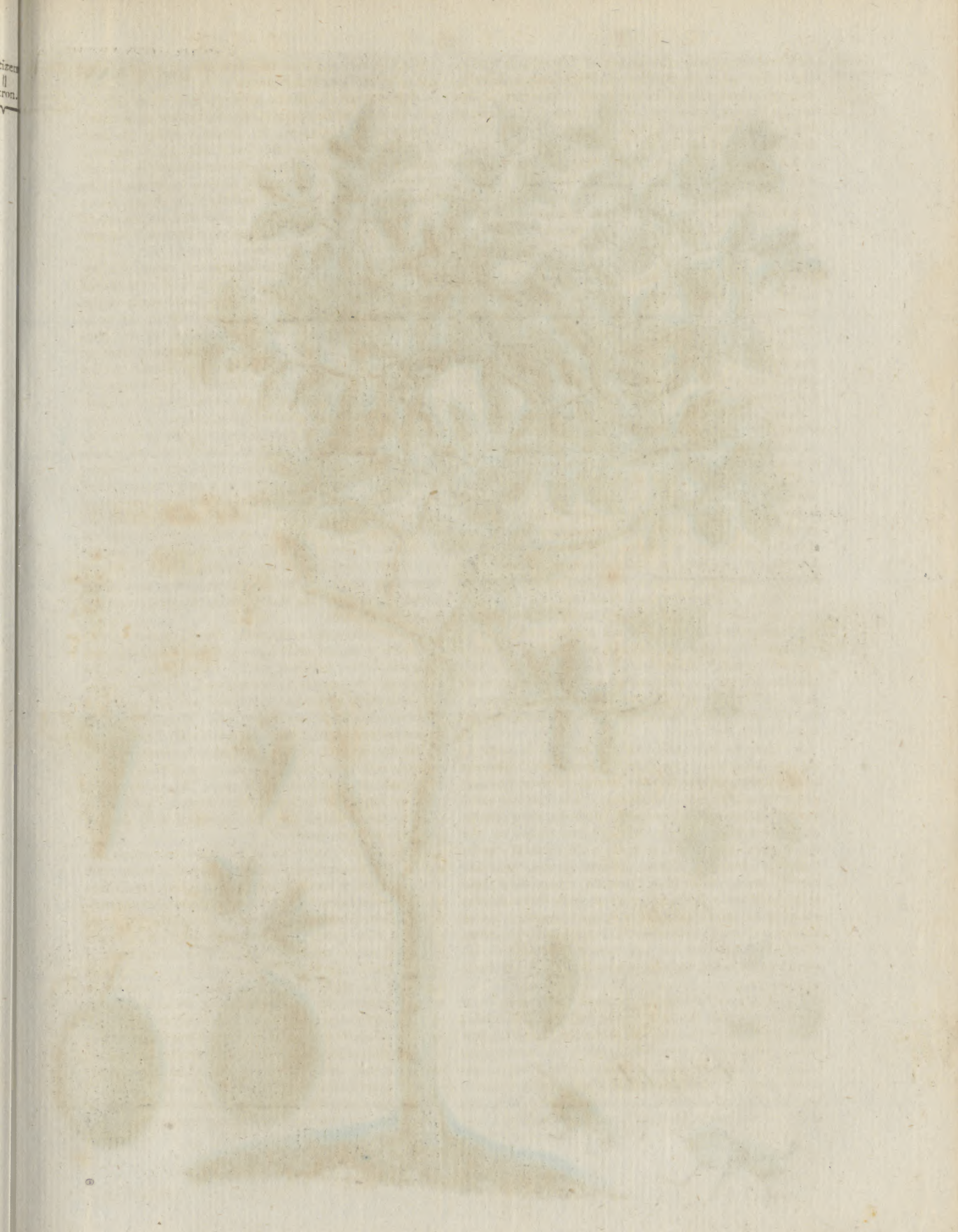
CITRON-TREE, in botany. See **CITRUS**.

CITRON-WATER, a well known strong water or cordial, which may be thus made: Take of fine thin lemon-peel, 18 ounces; of orange-peel, 9 ounces; perfect nutmegs, 4 ounces; the finest and best rectified spirit of wine, 2 gallons and a half. Digest in balneo-mariæ for one night: draw off with a slow fire; then add as much water as will just make the matter milky (which will be about 7 quarts or 2 gallons); and, lastly, add 2 pounds of fine sugar. This composition may be improved by fresh elder flowers, hung in a cloth in the head of the still, sprinkled with amber-grease in powder, or its essence.

CITRON-WOOD, the wood of an American tree, called by the natives *candle-wood*; because, being cut into splinters, it burns like a candle. The tree is frequent in the Leeward Islands, and grows to a considerable size: the leaves are like those of the bay-tree, but of a finer green; the flower is sweet, and much like those of the orange; the fruit succeeding these is black, and of the size of a pepper-corn. The trunk is so like the yellow saunders in colour, that there was once an opinion that it was the same tree, and much of it was imported into Europe, and sold as such: but they were soon found to be different; the saunders being of a sweet scent, and but moderately heavy and resinous; but the citron-wood considerably heavy, very oily, and of a strong smell. It is of no known use in medicine; but is used in France and Germany by the turners, being a fine firm-grained wood, and taking

Citizen
||
Citron

size
II
ron.





Cimex, various.

Chermes, various.

Cim. paradoxus.

Clio.

Chiton.

Coajotte.

Cicindela.

Citrus. taking a fine polish, and with age becoming of a very beautiful brown.

CITRUS, the **CITRON-TREE**: A genus of the polyadelphia order, belonging to the icofandria class of plants. The calyx is quinquesid; the petals oblong, and five in number; the antheræ 20, with their filaments grown together so as to form various pencils. The fruit is an unilocular berry.

Species. I. The Medica, or Citron-tree, hath an upright smooth trunk, divided at top into a branchy strong-shooting, full head, from about 5 to 15 feet high, adorned with large oval, spear-shaped, thick leaves, having linear foot-stalks, and numerous flowers from the sides of the branches, succeeded by very large oblong oval, pointed, rough-rinded fruit. The varieties are citron-tree with four fruit; with sweet fruit; with long fruit; with warted fruit; with recurved fruit; and with blotched leaves.

II. The Lima, or Lemon-tree, hath an upright smooth trunk, divided upward into a branchy regular head; from 12 to 15 feet high; large, oval, spear-shaped, pointed, slightly sawed leaves, on linear foot-stalks: and many flowers from the sides of the branches succeeded by large oval fruit prominent at the top. The varieties are, the lemon-tree with four fruit; with sweetish fruit; with very large fruit called *Imperial lemon*; with pear-shaped fruit; with furrowed fruit; with clustered fruit; with childing fruit; with whitish fruit; with tricolor striped fruit; with silver striped leaves; and with double flowers.

III. The Aurantium, or Orange-tree, hath an upright trunk dividing upward into a branchy, regular head, from 5 to 10 or 12 feet high; oval, spear-shaped, entire leaves, having winged foot-stalks and numerous white flowers at the sides of the branches, succeeded by globular fruit compressed at both ends. The most noted varieties are, 1. The Seville orange. This is a very handsome tree, and the hardiest of any; as in this country it shoots freely, produces large and beautiful leaves, flowers stronger, &c. The fruit is large, rough, rinded, and four, of excellent quality for economical uses. 2. The China orange. This tree has moderately sized leaves, and a smooth, thin-rinded, sweet fruit, of which there are several varieties in warm countries, where they grow in the open ground. 3. The great Shaddock orange, or pumplemoes, grows larger and stronger than the foregoing, with large, thick, and somewhat serrated leaves, and very large fruit, having a reddish pulp. It derives the name of Shaddock from one of that name that first brought it from the East Indies. 4. The Forbidden-fruit-tree, in trunk, leaves, and flowers, very much resembles the common orange-tree; but the fruit, when ripe, is larger and longer than the biggest orange. It has somewhat the taste of a shaddock; but far exceeds that, as well as the best orange, in its delicious taste and flavour. 5. The Horned orange is a tree of moderate size, producing fruit which divide, and the rind runs out into divisions like horns. 6. The Hermaphrodite orange is a common sized tree, producing fruit shaped partly like an orange and partly like a citron. 7. The Dwarf orange tree, or nutmeg orange, has a long stem and small bushy head, growing two or three feet high; small oval leaves in clus-

ters; and numerous flowers in clusters, covering the branches, succeeded by very small fruit. These are the most remarkable varieties of the three foregoing species of citrus: but besides these there are a great number of others; and indeed in those countries where they grow naturally, the varieties may be multiplied without end, like those of our apples and pears. The flowers of all the species and varieties are formed each of five spreading petals, appearing here principally in May and June; and the fruit continue setting in June and July, and ripen the year following.

IV. The Trifoliata, or Japanese citron, is a thorny shrub growing naturally in Japan, where it is likewise known by the names of Gees, and Karatals banna. The trunk, we are told by Kämpfer, acquires by age and culture the thickness of a tree. The branches and shoots are unequal; in some parts compressed, in others swelling, especially about the spines. These proceed singly from the stem and branches; are straight, run out from a broad base into a very sharp point; and are protruded from the wood, with the common bark of which they are likewise invested. The wood is loose and soft; the bark of a shining green, moist and easily parting from the wood. The leaves are few in number, sawed on the edges, veined, placed without order, but generally growing under the spines. They grow by threes, like those of trefoil, upon the extremity of a common foot-stalk which is furnished on each side with a membranaceous fringe or margin, somewhat resembling the pedicles of the orange. The upper surface of the leaves is of a bright lucid green, the lower dark and herbaceous. The flowers, which resemble those of the medlar, proceed singly from the arm-pits of the leaves; are white, possessed of no great degree of fragrance, and consist of five petals. The fruit is equally beautiful with a middle-sized orange; their internal structure is also pretty much the same; only the pulp is glutinous, of an unpleasant smell, and a harsh disagreeable taste. The seeds have the same taste with the pulp, and are shaped exactly like those of the orange.

Culture. The three first species merit particular attention. They are elegant evergreens, rising in this country from about 5 to 10 feet in height; forming full and handsome heads, closely garnished with beautiful large leaves all the year round, and putting forth a profusion of sweet flowers in spring and early in summer; which even in this climate are often succeeded by abundance of fruit that sometimes arrive at tolerable perfection. Though all the varieties were originally obtained by seed, yet the only certain method of continuing the approved varieties is by budding or inarching them on stocks raised from seed to a proper size. As the young trees, however, are brought in plenty from abroad, this method is seldom practised in this country: but for curiosity, it may be done by those who are so inclined, in the following manner: Early in the spring procure some kernels, which may be had in plenty from rotten fruits, or others that are properly ripened, observing that for stocks, the citron, lemon, and Seville-orange, as being the freest shooters, are to be preferred; and of these the citron is the strongest. Sow the kernels in March, in pots of rich light earth half an inch deep, and plunge them in a

Citrus. hot-bed under frames and glasses. Dung or tau may be used, but the latter is preferable, giving air, and frequent sprinklings of water. In two or three weeks, the plants will come up; and in six or eight weeks more, they will be advanced four or five inches or more in height. You must now give them more air and water; and about the middle of June harden them to the full air, in which let them remain till October; then move them into the green house, to stand till the spring, and in March or April plant them singly in small pots; being careful to shake them out of the seed pots with their roots entire. They must be watered immediately after planting, and the watering must be occasionally repeated. After this they are to be treated as woody exotics of the green-house; and in a year or two the largest of those designed for stocks will be fit for budding.

dried fibres. Then they are to be planted in pots filled with light rich earth; and plunged in a tan-bed, where they are to remain for three or four months; after which they are to be trained to the open air, but will not bear it longer than from the end of May till the middle or end of October.

Citrus

Sometimes these trees, instead of being kept in pots or tubs, are planted in the full ground; and where this can be done, it is by far the most eligible method. Where this is intended, there must be frames erected for the support of glass and other covers, to defend the plants during inclement weather; and in this situation the trees generally shoot strong, produce large fruit, and may be trained either as wall or standard trees. A south wall, in a dry situation, is proper for training them as wall-trees; against which may be erected wooden frame-work sloping, either fixed or moveable, for the support of glass frames for winter; likewise for the greater protection of the trees in severe frosts, there may be a fire-place with a flue or two carried alongst a low wall in the fronts and ends. To have the trees as standards, a more capacious and lofty glass-case should be erected against the wall, in the manner of a hot-house, but higher; in this one or two rows of orange-trees may be planted, suffering them to run up as standards with only some necessary pruning just to preserve their regularity. In some places there are lofty moveable glass-cases, so that two or three rows of trees are planted in a conspicuous part of the pleasure-ground. In winter the frame is put over them, and in summer wholly taken away; so that they appear like a little orange-grove growing in the open ground. The flowering and fruit-setting season of all the sorts of citrus is in June and July. They are often, especially the orange-trees, greatly loaded with blossoms; and when these stand very thick, it is proper to thin them a little, taking off the smallest. It is also to be observed, that as the trees continue blowing and setting their fruit for three months, when a full crop of fruit is set, it is of benefit to the trees and fruit to gather off the superabundant blossoms as they are produced; though some permit them to remain on account of their appearance.

Uses. The fruits of the citron, lemon, and orange trees, yield very agreeable acid juices; which, besides the uses to which they are commonly applied, answer considerable purposes in medicine. When Commodore Anson sailed round the world, his men were so surprisingly recovered from the scurvy by the oranges which they found at the island of Tinian, that it was afterwards thought worthy of the attention of government to inquire into the virtues of these fruits as an antiscorbutic medicine. In Captain Cook's last voyage, he was supplied with a quantity of orange and lemon juice inspissated to a rob; but his opinion of its efficacy is by no means great. The dearthness of it is a great objection; and, unless in conjunction with other things, he has not observed its good effects. Sir John Pringle, in his discourse before the Royal Society, when Captain Cook was presented with a medal by that respectable body, differs a little from the Captain's opinion, and thinks that in the sea-scurvy these fruits must necessarily be very efficacious. He approves, however, more of the

The operation for budding is performed in the month of August, and is done in the common way*; only the buds must be taken from trees of a good kind that bear well. As soon as the operation is finished, the pots with their plants must be placed in the green-house, or in a glass-case; or, where there is the convenience of a spare bark-pit, where the heat of the bark is almost exhausted, the pots may be plunged therein for two or three weeks. In either case, however, the air must be admitted freely by opening the front glasses; allowing also a slight shade of mats in the middle of hot sunshine days, and supplying them with water every two or three days during this kind of weather. In three or four weeks the buds will be united with the stock; when it will be proper to loosen the bandages, that they may have room to swell; the buds, however, will all remain dormant till the next spring. They may also be propagated by inarching, which is done in the common way†; but the method of budding is found to produce much handsomer trees, and therefore is to be preferred. But the most cheap and expeditious method of procuring a collection of these kinds of trees is by having recourse to such as are imported from Spain, Italy, and Portugal. These come over in chests, without any earth to their roots, having their roots and heads a little trimmed: they are commonly from one inch to two or three in diameter in the stem; from two to four or five feet in height: and by the assistance of a bark-bed they readily take root and grow freely; forming as good trees in two years, as could be raised here by inarching or budding in 15 or 20. They are sold in the Italian warehouses in London. Their price is from three shillings to a guinea each, according to their size; and they are generally advertised as soon as they arrive, which is early in the spring, and the sooner the better. In the choice of these trees, it must be observed, that they are commonly budded at such height in the stem, as to form heads from about two to four or five feet high; and as they are frequently furnished with two buds, one on each side of the stem, these should be chosen preferably to others; as they will form the most regular heads. Preparatory to their planting, they must be placed for a day or two in tubs of water to plump their bark and roots; after this they must be washed and cleaned, their branches trimmed to half a foot long, and the roots freed from diseased parts, and all the small

* See *Inoculation.*

† See *Inarching.*

Citrus
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City.

the juices themselves depurated, than the extract of them; as this cannot be prepared without dissipating many of the finer parts. The juice of lemons is very frequently used for neutralising alkaline salts for saline draughts. The citron is seldom used in this country; though its peel, as well as that of the lemon, is candied, and sold as a sweetmeat. The yellow peel of the lemon is an agreeable aromatic, as is also that of the orange; and in cold phlegmatic constitutions they prove excellent stomachics and carminatives, promoting appetite, warming the habit, and strengthening the tone of the viscera. Orange-peel, however, is very considerably warmer than that of lemons, and abounds more in essential oil: to this circumstance, therefore, due regard ought to be had in the use of these medicines. The flavour of orange-peel is likewise less perishable than that of lemons. Both are ingredients in many official preparations.

The young fruit of the Seville orange dried are used in medicine under the name of *aurantia curassaventia*. They are moderately warm bitterish aromatics, of a sufficiently agreeable flavour. The flowers of the orange-tree have been for some time past in great esteem as a perfume. They are highly odoriferous, of a somewhat warm and bitter taste. They yield their flavour by infusion to rectified spirit, and in distillation both to spirit and water. The bitter matter is dissolved in water, and on evaporating the decoction remains entire in the extract. The distilled water was formerly kept in the shops, but on account of the great scarcity of the flowers is now laid aside: it is called by foreign writers *aqua naphæ*. An oil distilled from these flowers is brought from Italy under the name of *oleum, or essentia neroli*.

CITTERN, a musical instrument much resembling the guitar, for which it has been frequently mistaken. Anciently it was called the *cistrum*, and till lately was held in great contempt both in France and Britain. The practice on it being very easy, it was formerly the amusement and recreation of lewd women and their visitors; inasmuch, that in many of the old English dramatic writers, it is made the symbol of a woman that lived by prostitution. It was also the common amusement of waiting customers in barbers shops, as being the most easy of all instruments to play on, and therefore it was thought that almost every body could make use of it.

CITY, according to Cowel, is a town corporate which hath a bishop and cathedral church; and is called *civitas, oppidum*, and *urbs*: *civitas*, in regard it is governed by justice and order of magistracy; *oppidum*, because it contains a great number of inhabitants; and *urbs*, because it is in due form surrounded with walls.

Kingdoms have been said to contain as many cities as they have seats of archbishops and bishops: but, according to Blount, *city* is a word that hath obtained since the conquest; for, in the time of the Saxons, there were no cities, but all the great towns were called *burghs*, and even London was then called *Londonburgh*, as the capital of Scotland is called *Edinburgh*. And long after the conquest the word *city* is used promiscuously with the *burgh*, as in the charter of Leicester, where it is both called *civitas* and *burgus*; which shows that those writers were mistaken who tell us

every city was, or is, a bishop's see. And though the word *city* signifies with us such a town corporate as hath usually a bishop and a cathedral church, yet it is not always so.

As to the ancient state of cities and villages, whilst the feudal policy prevailed, they held of some great lord on whom they depended for protection, and were subject to his arbitrary jurisdiction. The inhabitants were deprived of the natural and most unalienable rights of humanity. They could not dispose of the effects which their own industry had acquired, either by a latter-will or by any deed executed during their life. They had no right to appoint guardians for their children during their minority. They were not permitted to marry without purchasing the consent of the lord on whom they depended. If once they had commenced a law-suit, they durst not terminate it by an accommodation, because that would have deprived the lord, in whose court they pleaded, of the perquisites due to him on passing his sentence. Services of various kinds no less disgraceful than oppressive were exacted from them without mercy or moderation. The spirit of industry were checked in some cities by absurd regulations, and in others by unreasonable exactions: nor would the narrow and oppressive maxims of a military aristocracy have permitted it ever to rise to any degree of height or vigour.

The freedom of cities was first established in Italy, owing principally to the introduction of commerce. As soon as they began to turn their attention towards this object, and to conceive some idea of the advantages they might derive from it, they became impatient to shake off the yoke of their insolent lords, and to establish among themselves such a free and equal government as would render property secure and industry flourishing. The German emperors, especially those of the Franconian and Suabian lines, as the seat of their government was far distant from Italy, possessed a feeble and imperfect jurisdiction in that country. Their perpetual quarrels, either with the popes or their own turbulent vassals, diverted their attention from the interior police of Italy, and gave constant employment for their arms. These circumstances induced some of the Italian cities, towards the beginning of the 11th century, to assume new privileges; to unite together more closely; and to form themselves into bodies politic, under the government of laws established by common consent. The rights which many cities acquired by bold or fortunate usurpations, others purchased from the emperors, who deemed themselves gainers when they received large sums for immunities which they were no longer able to withhold; and some cities obtained them gratuitously from the facility or generosity of the princes on whom they depended. The great increase of wealth which the crusades brought into Italy, occasioned a new kind of fermentation and activity in the minds of the people, and excited such a general passion for liberty and independence, that, before the conclusion of the last crusade, all the considerable cities in that country had either purchased or had extorted large immunities from the emperors.

This innovation was not long known in Italy before it made its way into France. Louis the Gros, in order to create some power that might counterbalance these potent vassals who controlled or gave law to the crown,

City.

Robertson's
Charles V.

City.

crown, first adopted the plan of conferring new privileges on the towns situated within his own domaine. These privileges were called *charters of community*, by which he enfranchised the inhabitants, abolished all marks of servitude, and formed them into corporations or bodies politic, to be governed by a council and magistrates of their own nomination. These magistrates had the right of administering justice within their own precincts; of levying taxes; of embodying and training to arms the militia of the town, which took the field when required by the sovereign, under the command of officers appointed by the community. The great barons imitated the example of their monarch, and granted like immunities to the towns within their territories. They had wasted such great sums in their expeditions to the Holy Land, that they were eager to lay hold on this new expedient for raising money by the sale of those charters of liberty. Though the constitution of communities was as repugnant to their maxims of policy as it was adverse to their power, they disregarded remote consequences in order to obtain present relief. In less than two centuries, servitude was abolished in most of the cities of France, and they became free corporations, instead of dependent villages without jurisdiction or privileges. Much about the same period the great cities of Germany began to acquire like immunities, and laid the foundations of their present liberty and independence. The practice spread quickly over Europe, and was adopted in Spain, England, Scotland, and all the other feudal kingdoms.

The Spanish historians are almost entirely silent concerning the origin and progress of communities in that kingdom; so that it is impossible to fix with any degree of certainty the time and manner of their first introduction there. It appears, however, from Mariana, that in the year 1350 eighteen cities had obtained a seat in the Cortes of Castile. In Arragon, cities seem early to have acquired extensive immunities, together with a share in the legislature. In the year 1118, the citizens of Saragossa had not only obtained political liberty, but they were declared to be of equal rank with the nobles of the second class; and many other immunities, unknown to persons in their rank of life in other parts of Europe, were conferred upon them. In England, the establishment of communities or corporations was posterior to the conquest. The practice was borrowed from France, and the privileges granted by the crown were perfectly similar to those above enumerated. It is not improbable, that some of the towns in England were formed into corporations under the Saxon kings; and that the charters granted by the kings of the Norman race were not charters of enfranchisement from a state of slavery, but a confirmation of privileges which they had already enjoyed†. The English cities, however, were very inconsiderable in the 12th century. A clear proof of this occurs in the history just referred to. Fitz-Stephen, a contemporary author, gives a description of the city of London in the reign of Henry II. and the terms in which he speaks of its trade, its wealth, and the number of its inhabitants, would suggest no inadequate idea of its state at present, when it is the greatest and most opulent city in Europe. But all ideas of grandeur and magnificence are merely comparative. It appears from Peter of Blois, archdeacon of London, who flourished in the same reign,

N° 81.

and who had good opportunity of being informed, that this city, of which Fitz-Stephen gives such a pompous account, contained no more than 40,000 inhabitants. The other cities were small in proportion, and in no condition to extort any extensive privileges. That the constitution of the boroughs of Scotland in many circumstances resembled that of the towns of France and England, is manifest from the *Leges Burgorum* annexed to the *Regiam Majestatem*.

CIVET, a kind of perfume which bears the name of the animal it is taken from, and to which it is peculiar. See VIVERRA.

Good civet is of a clear, yellowish, or brownish colour; not fluid nor hard, but about the consistence of butter or honey, and uniform throughout; of a very strong smell, quite offensive when undiluted, but agreeable when only a small portion of civet is mixed with a large one of other substances. It unites easily with oils both expressed and distilled, but not at all with water or spirit of wine: nor can it be rendered miscible with water by the mediation of sugar. The yolk of an egg seems to dispose it to unite with water; but in a very little while the civet separates from the liquor, and falls to the bottom, though it does not prove of such a resinous tenacity as when treated with sugar and spirit of wine. It communicates, however, some share of its smell both to watery and spirituous liquors: hence a small portion of it is often added in odoriferous tinctures, and suspended in the still-head during the distillation of odoriferous waters and spirits. It is rarely if ever employed for medicinal purposes. The Italians make it an ingredient in perfumed oils, and thus obtain the whole of its scent; for oils wholly dissolve the substance of it. It is very rare, however, to meet with civet unadulterated. The substances usually mixed with it are lard and butter; which agreeing with it in its general properties, render all criteria for distinguishing the adulteration impossible. A great trade of civet is carried on at Calicut, Bassora, and other parts of the Indies, and in Africa, where the animal that produces the perfume is found. Live civet-cats are to be seen also in France and Holland. The French keep them only as a rarity; but the Dutch, who keep a great number, draw the civet from them for sale. It is mostly used by confectioners and perfumers.

CIVET-Cat, the English name of the animal which produces the civet. See VIVERRA.

CIVIC CROWN, was a crown given by the ancient Romans to any soldier who had saved the life of a citizen in an engagement.

The civic crown was reckoned more honourable than any other crown, though composed of no better materials than oak-boughs. Plutarch, in the life of C. M. Coriolanus, accounts as follows for using on this occasion the branches of this tree before all others: because, says he, the oaken wreath being sacred to Jupiter, the great guardian of their city, they thought it the most proper ornament for him who had preserved the life of a citizen. Pliny*, speaking of the honour and privileges conferred on those who had merited this crown, says, "They who had once obtained it, might wear it always. When they appeared at the public spectacles, the senate and people rose to do them honour, and they took their seats on these occasions among the senators. They were not only

Civet
Civic.

† See Lord
Lyttelton's
History of
Henry II.
Vol. II.
p. 317.

* Lib. xvi.
cap. 4.

Cividad ^{||}
Civil. personally excused from all troublesome offices, but procured the same immunity for their father and grandfather by the father's side.

CIVIDAD-DE-LAS-PALMAS, the capital town of the island of Canary, with a bishop's see, and a good harbour. The houses are well built, two stories high, and flat-roofed. The cathedral is a very handsome structure; and the inhabitants are gay and rich. The air is temperate, and free from extremes of heat and cold. It is defended by a small castle seated on a hill. W. Long. 14. 35. N. Lat. 28. 0.

CIVIDAD-Real, a town of Spain, in New Castile, and capital of La Mancha. The inhabitants are noted for dressing leather extremely well for gloves. W. Long. 4. 15. N. Lat. 39. 2.

CIVIDAD-Roderigo, a strong and considerable town of Spain, in the kingdom of Leon, with a bishop's see. It is seated in a fertile country, on the river Aquada, in W. Long. 6. 52. N. Lat. 40. 38.

CIVIDAD-di-Friuli, a small but ancient town of Italy, in Friuli, and in the territory of Venice; seated on the river Natifona. E. Long. 13. 25. N. Lat. 46. 15.

CIVIL, in a general sense, something that regards the policy, public good, or peace, of the citizens or subjects of the state; in which sense we say, civil government, civil law, civil right, civil war, &c.

CIVIL, in a popular sense, is applied to a complainant and humane behaviour in the ordinary intercourse of life. See **CIVILITY**.

CIVIL, in a legal sense, is also applied to the ordinary procedure in an action, relating to some pecuniary matter or interest; in which sense it is opposed to criminal.

Civil Death, any thing that cuts off a man from civil society; as a condemnation to the galleys, perpetual banishment, condemnation to death, outlawry, and excommunication.

Civil Law, is properly the peculiar law of each state, country, or city: but what we usually mean by the civil law, is a body of laws composed out of the best Roman and Grecian laws, compiled from the laws of nature and nations; and, for the most part, received and observed throughout all the Roman dominions for above 1200 years. See **LAW**, Part I. n^o 43, 44.

It was first brought over into England by Theobald a Norman abbot, who was elected to the see of Canterbury in 1138; and he appointed a professor, viz. Roger surnamed *Vicarius*, in the university of Oxford, to teach it to the people of this country. Nevertheless, it gained ground very slowly. King Stephen issued a proclamation, prohibiting the study of it. And though the clergy were attached to it, the laity rather wished to preserve the old constitution. However, the zeal and influence of the clergy prevailed; and the civil law acquired great reputation from the reign of King Stephen to the reign of King Edward III. both inclusive. Many transcripts of Justinian's Institute are to be found in the writings of our ancient authors, particularly of Bracton and Fleta; and Judge Blackstone observes, that the common law would have been lost and over-run by the civil, had it not been for the incident of fixing the court of common pleas in one certain spot, and the forming the profession of the municipal law into an aggregate body.

It is allowed, that the civil law contains all the principles of natural equity; and that nothing can be better calculated to form good sense and sound judgment. Hence, though in several countries it has no other authority but that of reason and justice, it is every where referred to for authority. It is not received at this day in any nation without some alterations: and sometimes the feudal law is mixed with it, or general and particular customs; and often ordinances and statutes cut off a great part of it.

In Turkey, the Basilics are only used. In Italy, the canon law and customs have excluded a good part of it. In Venice, custom hath almost an absolute government. In the Milanese, the feudal law, and particular customs, bear sway. In Naples and Sicily, the constitutions and laws of the Lombards are said to prevail. In Germany and Holland, the civil law is esteemed to be the municipal law: but yet many parts of it are there grown obsolete; and others are altered, either by the canon law or a different usage. In Friesland, it is observed with more strictness; but in the northern parts of Germany, the jus Saxonicum, Lubecense, or Culmense, is preferred before it. In Denmark and Sweden, it hath scarce any authority at all. In France, only a part of it is received, and that part is in some places a customary law; and in those provinces nearest to Italy it is received as a municipal written law. In criminal causes, the civil law is more regarded in France; but the manner of trial is regulated by ordinances and edicts. In Spain and Portugal, the civil law is connected with the jus regium and custom. In Scotland, the statutes of the federunt, part of the regie majestatis, and their customs, controul the civil law.

In England, it is used in the ecclesiastical courts, in the high court of admiralty, in the court of chivalry, in the two universities, and in the courts of equity; yet in all these it is restrained and directed by the common law.

Civil Society. See **LAW**, Part I. n^o 12.

Civil State, in the British polity, one of the general divisions of the **LAITY**, comprehending all orders of men from the highest nobleman to the meanest peasant that are not included under the **MILITARY** or **MARITIME** states: though it may sometimes include individuals of these as well as of the **CLERGY**; since a nobleman, a knight, a gentleman, or a peasant, may become either a divine, a soldier, or a seaman. The division of this state is into **NOBILITY** and **COMMONALTY**. See these articles.

Civil War, a war between people of the same state, or the citizens of the same city.

Civil Year, is the legal year, or annual account of time, which every government appoints to be used within its own dominions; and is so called in contradistinction to the natural year, which is measured exactly by the revolution of the heavenly bodies.

CIVILIAN, in general, denotes something belonging to the civil law; but more especially the doctors and professors thereof are called *civilians*.

CIVILITY, a term used in common life as synonymous with complaisance or good-breeding.

Civility is justly inculcated by didactic writers as a duty of no slight consideration. Without civility, or good-breeding, a court would be the seat of violence and de-

Civility.

foliation. There, all the passions are in fermentation, because all pursue what but few can obtain; there, if enemies did not embrace, they would stab; there, smiles are often put on to conceal tears; there, mutual services are professed, while mutual injuries are intended; and there, the guile of the serpent simulates the gentleness of the dove. To what a degree must good-breeding adorn the beauty of truth, when it can thus soften the deformity of falsehood? On this subject we have the following elegant observations in Knox's Essays, N^o 95.

"However just the complaints of the misery of life, yet great occasions for the display of beneficence and liberality do not often occur. But there is an hourly necessity for the little kind offices of mutual civility. At the same time that they give pleasure to others, they add to our own happiness and improvement. Habitual acts of kindness have a powerful effect in softening the heart. An intercourse with polished and humane company tends to improve the disposition, because it requires a conformity of manners. And it is certain, that a sense of decorum, and of a proper external behaviour, will restrain those whose natural temper would otherwise break out in acrimonious and petulant conversation. Even the affectation of philanthropy will in time contribute to realise it. The pleasure resulting from an act of kindness naturally excites a wish to repeat it; and indeed the general esteem which the character of benevolence procures, is sufficient to induce those to wish for it who act only from the mean motives of self-interest.

"As we are placed in a world where natural evil abounds, we ought to render it supportable to each other as far as human endeavours can avail. All that can add a sweet ingredient to the bitter cup must be infused. Amid the multitude of thorns, every flower that will grow must be cultivated with care. But neither pomp nor power are of themselves able to alleviate the load of life. The heart requires to be soothed by sympathy. A thousand little attentions from all around us are necessary to render our days agreeable. The appearance of neglect in any of those with whom we are connected, chills our bosom with chagrin, or kindles the fire of resentment. Nothing therefore seems so likely to ensure happiness as our mutual endeavours to promote it. Our single endeavours, originating and terminating in ourselves, are usually unsuccessful. Providence has taken care to secure that intercourse which is necessary to the existence of society, by rendering it the greatest sweetener of human life.

"By reciprocal attentions we are enabled to become beneficent without expence. A smile, an affable address, a look of approbation, are often capable of giving a greater pleasure than pecuniary benefits can bestow. The mere participation of the studies and amusements of others, at the same time that it gratifies ourselves, is often an act of real humanity; because others would not enjoy them without companions. A friendly visit in a solitary hour, is often a greater act of kindness than a valuable present.

"It is really matter of surprize, that those who are distinguished by rank and opulence should ever be unpopular in their neighbourhood. They must know the value of popularity; and surely nothing is more easily obtained by a superior. Their notice confers honour;

and the aspiring heart of man is always delighted with distinction. A gracious look from them diffuses happiness on the lower ranks. But it usually happens, that an overgrown rich man is not the favourite of a neighbouring country; and it is unfortunate, that pride or inadvertence often prevent men from acting the god-like part of making others happy, even when they might do it without inconvenience to themselves."

CIVITA-DI-PENNA, an ancient town of Italy, in the kingdom of Naples, and in the Farther Abruzzo, with a bishop's see. It is situated near the river Salino, 25 miles north east of Aquila. E. Long. 13. 3. N. Lat. 42. 25.

CIVITA-Castellana, a town of Italy, in St Peter's patrimony, seated on a river, which, seven miles from thence, falls into the Tiber. E. Long. 13. 5. N. Lat. 42. 15.

CIVITA Turchino, a place in Italy, about two miles north of the town of Corneto in the patrimony of St Peter. It is an hill of an oblong form, the summit of which is almost one continued plain. From the quantity of medals, intaglios, fragments of inscriptions, &c. that are occasionally found here, this is believed to be the very spot where the ancient and powerful city of Tarquinii once stood. At present it is only one continued field of corn. On the south-east side of it runs the ridge of a hill which unites it to Corneto. This ridge is at least three or four miles in length, and almost entirely covered with artificial hillocks, called by the inhabitants *monti rossi*. About twelve of these hillocks have at different times been opened; and in every one of them have been found several subterranean apartments cut out of the solid rock. These apartments are of various forms and dimensions: some consist of a large outer room, and a small one within; others of a small room at the first entrance, and a large one within: others are supported by a column of the solid rock left in the centre, with openings on every part. The entrance to them all is by a door about five feet high, by two and a half broad. Some of them have no light but from the door, while others seem to have had a small light from above, through a hole of a pyramidal form. Many of these apartments have an elevated port that runs all round the wall, being a part of the rock left for that purpose. The moveables found in these apartments consist chiefly of Etruscan vases of various forms: in some indeed have been found some plain sacrophagi of stone, with bones in them. The whole of these apartments are stuccoed, and ornamented in various manners: some indeed are plain; but others, particularly three, are richly adorned, having a double row of Etruscan inscriptions running round the upper part of the walls, and under them a kind of frieze of figures in painting: some have an ornament under the figures, which seems to supply the place of an architrave. The paintings seem to be in fresco; and in general resemble those which are usually seen upon Etruscan vases; though some of them are perhaps superior to any thing as yet seen of the Etruscan art in painting. In general they are slight, but well conceived; and prove, that the artist was capable of producing things more studied and better finished; though, in such a subterraneous situation, the delicacy of a finished work would in a great measure have been thrown

Civita
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Claget.

thrown away. It is probable, however, that among the immense number of these apartments that yet remain to be opened, many paintings and inscriptions may be found sufficient to form a very useful and entertaining work. At present this great scene of antiquities is almost entirely unknown, even in Rome. Mr Jenkins, resident at Rome, was the first Englishman who visited it.

Civita-Vecchia, a sea-port town of Italy in the patrimony of St Peter, with a good harbour and an arsenal. Here the Pope's galleys are stationed, and it has lately been made a free port; but the air is very unwholesome. E. Long. 12. 31. N. Lat. 45. 5.

CIVOLI, or **CIGOLI**, (Lewis), an Italian painter, whose family-name was *Cardi*, was born at the castle of Cigoli, in Tuscany, in the year 1559. His *ecce homo*, which he performed as a trial of skill with Barochio and Michael Angelo da Caravaggio, was judged better than those executed by them. He excelled in designing, and was employed by the popes and princes of his time. He died at Rome in 1613.

CIUS (anc. geog.) a town and river of Bithynia, which gave name to the Sinus Cianus. The town was afterwards called *Prusia*, Cius having been destroyed by Philip father of Perseus, and rebuilt by Prusias king of Bithynia. In the river, Hylas, the favourite boy of Hercules, was drowned; (Apollonius Rhodius).

CLAC, among countrymen. To clack wool, is to cut off the sheep's mark, which makes the weight less, and yields less custom to the king.

CLACKMANNAN, the name of a small shire in Scotland, not exceeding eight miles in length and five in breadth. It is bounded on the south by the frith of Forth; on the north and west by Perthshire; and on the east by Fife. The country is plain and fertile towards the frith, producing corn and pasture in abundance. It likewise yields great quantities of excellent coal, which is exported to England, France, and Holland. It is watered by the rivers Forth and Devan, and joins the shire of Kinross in sending a member alternately to parliament.

CLACKMANNAN, a small town of Scotland, and capital of the county of that name, is situated on the northern shore of the Forth, in W. Long. 3. 40. N. Lat. 56. 15. It stands on a hill, on the top of which is the castle, commanding a noble prospect. It was long the seat of the chief of the Bruces, who was hereditary sheriff of the county before the jurisdictions were abolished. The large square tower is called after the name of *Robert Bruce*; whose great sword and casque are still preserved here. The hill is prettily wooded; and, with the tower, forms a picturesque object. Clackmannan is still the seat of the Bruces of Kennet.

CLAGENFURT, a strong town of Germany, and capital of Carinthia, situated in E. Long. 13. 56. N. Lat. 46. 50.

CLAGET (William), an eminent and learned divine, born in 1646. He was preacher to the society of Gray's Inn; which employment he exercised until he died in 1688, being then also one of the king's chaplains. Archbishop Sharp gives him an excellent character; and bishop Burnet has ranked him among those worthy men whose lives and labours contributed to rescue the church from the reproaches which the follies of others had drawn upon it. Dr Claget pu-

blished several things; but his principal work is his "Discourse concerning the Operations of the Holy Spirit:" nor must it be forgotten that he was one of those excellent divines who made a noble stand against the designs of James II. to introduce popery. Four volumes of his sermons were published after his death by his brother Nicholas Claget, archdeacon of Sudbury, father of Nicholas Claget afterwards bishop of Exeter.

CLAIM, in law, a challenge of interest in any thing that is in the possession of another.

CLAIR, obscure. See *CLARO Obscuro*.

CLAIRAUT (ALEXIS), of the French academy of sciences, was one of the most illustrious mathematicians in Europe. He read to the academy in 1726, when he was not 13 years old, "a memoir upon four new geometrical curves of his own invention;" and supported the character he thus laid a foundation for by various publications from time to time. He published, *Elémens de Géométrie*, 1741, in 8vo; *Elémens d'Algebre*, 1746, in 8vo; *Théorie de la Figure de la Terre*, 1743, in 8vo; *Tables de la Lune*, 1754, in 8vo. He was concerned also in the *Journal des Sçavans*, which he furnished with many excellent extracts. He died in 1765. He was one of the academicians who were sent into the north to determine the figure of the earth.

CLAM, in zoology, a shell-fish. See *VENUS*.

CLAMP, a piece of wood joined to another.

CLAMP is likewise the term for a pile of unburnt bricks built up for burning. These clamps are built much after the same manner as arches are built in kilns, viz. with a vacuity betwixt each brick's breadth for the fire to ascend by; but with this difference, that instead of arching, they truss over, or over-span; that is, the end of one brick is laid about half way over the end of another, and so till both sides meet within half a brick's length, and then a binding brick at the top finishes the arch.

CLAMP in a ship, denotes a piece of timber applied to a mast or yard to prevent the wood from bursting; and also a thick plank lying fore and aft under the beams of the first orlop, or second deck, and is the same that the rising timbers are to the deck.

CLAMP-Nails, such nails as are used to fasten on clamps in the building or repairing of ships.

CLAMPETIA (anc. geog.), a town of the Brutii, one of those which revolted from Hannibal, (Livy); called *Lampetia* by Polybius. Now *Amantia*, or *Mantia*, a town of Calabria Ultra, near the bay of Euphemia. E. Long. 16. 20. N. Lat. 39. 15.

CLAMPING, in joinery, is the fitting a piece of board with the grain to another piece of board cross the grain. Thus the ends of tables are commonly clamped, to prevent their warping.

CLANDESTINE, any thing done without the knowledge of the parties concerned, or without the proper solemnities. Thus a marriage is said to be clandestine, when performed without the publication of bans, the consent of parents, &c.

CLANS, is history, and particularly in that of Scotland. The nations which over-ran Europe were originally divided into many small tribes; and when they came to parcel out the lands which they had conquered, it was natural for every chieftain to bestow a portion,

Claim
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Clans.

Clans
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Clare.

in the first place, upon those of his own tribe or family. These all held their lands of him; and as the safety of each individual depended on the general union, these small societies clung together, and were distinguished by some common appellation, either patronymical or local, long before the introduction of surnames or ensigns armorial. But when these became common, the descendants and relations of every chieftain assumed the same name and arms with him; other vassals were proud to imitate their example; and by degrees they were communicated to all those who held of the same superior. Thus clanships were formed; and, in a generation or two, that consanguinity, which was at first in a great measure imaginary, was believed to be real. An artificial union was converted into a natural one: men willingly followed a leader, whom they regarded both as the superior of their lands and the chief of their blood; and served him not only with the fidelity of vassals, but the affection of friends. In the other feudal kingdoms, we may observe such unions as we have described, imperfectly formed; but in Scotland, whether they were the production of chance, or the effect of policy, or strengthened by their preserving their genealogies both genuine and fabulous, clanships were universal. Such a confederacy might be overcome; it could not be broken; and no change of manners or government has been able, in some parts of the kingdom, to dissolve associations which are founded upon prejudices so natural to the human mind. How formidable were nobles at the head of followers, who, counting that cause just and honourable which their chief approved, were ever ready to take the field at his command, and to sacrifice their lives in defence of his person or of his fame! Against such men a king contended with great disadvantage; and that cold service, which money purchases, or authority extorts, was not an equal match for their ardour and zeal.

Some imagine the word *clan* to be only a corruption of the Roman *colonia*; but Mr Whittaker asserts it to be purely British, and to signify a *family*.

CLAP, in medicine, the first stage of the venereal disease, more usually called a GONORRHOEA.

CLAP-Net, in birding, a sort of net contrived for the taking of larks with the looking-glass, by the method called *daring* or *doring*. The nets are spread over an even piece of ground, and the larks are invited to the place by other larks fastened down, and by a looking-glass composed of five pieces, and fixed in a frame so that it is turned round very swiftly backwards and forwards, by means of a cord pulled by a person at a considerable distance behind a hedge. See DORING.

CLAR, or CLAER, in metallurgy, bone-ashes perfectly calcined, and finely powdered, kept purposely for covering the insides of COPPELS.

CLARAMONT-POWDER, a kind of earth, called *terra de Baira*, from the place where it is found; it is famous at Venice, for its efficacy in stopping hemorrhages of all kinds, and in curing malignant fevers.

PRECEPT of CLARE CONSTAT, in Scots law, the warrant of a superior for entering and infesting the heir of his former vassal, without the interposition of an iuquest.

Nuns of St CLARE, were founded at Assisa in Italy,

about the 1212. These nuns observed the rule of St. Francis, and wore habits of the same colour with those of the Franciscan friars: and hence were called *Menores*; and their house, without Aldgate, the Minories, where they were settled when first brought over into England, about the year 1293. They had only three houses besides this.

CLARE, a market-town of Suffolk, 13 miles south of Bury E. Long. 0. 35 N. Lat. 52. 15. It gives the title of Earl to the duke of Newcastle.

CLARE is also the capital of a county of the same name in the province of Connaught, in Ireland, situated about 17 miles north-west of Limerick. W. Long. 9. 0. N. Lat. 52. 40.

CLARENCE, the second king at arms, so called from the duke of Clarence, to whom he first belonged: for Lionel, 3d son to Edward III. having by his wife the honour of Clare in the county of Thomond, was afterwards declared duke of Clarence; which dukedom afterwards escheating to Edward IV. he made this earl a king at arms. His office is to marshal and dispose of the funerals of all the lower nobility, as baronets, knights, esquires, on the south side of the Trent; whence he is sometimes called *surroy* or *south-roy*, in contradistinction to *norroy*.

CLARENDON (Constitutions of), certain constitutions made in the reign of Henry II. A. D. 1164, in a parliament held at Clarendon; whereby the king checked the power of the Pope and his clergy, and greatly narrowed the total exemption they claimed from secular jurisdiction.

CLARENDON (Earl of.) See HYDE.

CLARENNA, *Tabulae* (anc. geog.); a town of Vindelicia, at the confluence of the Lycus and Danube. Now *Rain*, a town of Bavaria, on the south side of the Danube, at the confluence of the Lech. E. Long. 11. 0. N. Lat. 48. 45.

CLARENZA, the capital of a duchy of the same name in the Morea; it is a sea-port town, situated on the Mediterranean. E. Long. 21. 40. N. Lat. 37. 40.

CLARET, a name given by the French to such of their red wines as are not of a deep or high colour. See WINE.

CLARICHORD, or MANICHORD, a musical instrument in form of a spinet.

It has 49 or 50 stops, and 70 strings, which bear on five bridges; the first whereof is the highest, the rest diminishing in proportion. Some of the strings are in unison, their number being greater than that of the stops. There are several little mortises for passing the jacks, armed with brass-hooks, which stop and raise the chords instead of the feather used in virginals and spinets: but what distinguishes it most is, that the chords are covered with pieces of cloth, which render the sound sweeter, and deaden it so that it cannot be heard at any considerable distance: whence it comes to be particularly in use among the nuns, who learn to play, and are unwilling to disturb the silence of the dormitory.

CLARIFICATION, the act of cleaning or fining any fluid from all heterogeneous matter or feculencies.

The substances usually employed for clarifying liquors, are whites of eggs, blood, and isinglass. The two first are used for such liquors as are clarified whilst boiling.

Robertson's
History of
Scotland.

Clare
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Clarification.

Clarificatio
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Clarifies.

boiling hot; the last for those which are clarified in the cold, such as wines, &c. The whites of eggs are beat up into a froth, and mixed with the liquor, upon which they unite with and entangle the impure matters that floated in it; and presently growing hard by the heat, carry them up to the surface in form of a scum no longer dissoluble in the liquid. Blood operates in the same manner, and is chiefly used in purifying the brine from which salt is made. Great quantities of isinglafs are consumed for fining turbid wines. For this purpose some throw an entire piece, about a quarter of an ounce, into a wine cask; by degrees the glue dissolves, and forms a skin upon the surface, which at length subsiding, carries down with it the feculent matter which floated in the wine. Others previously dissolve the isinglafs; and having boiled it down to a slimy consistence, mix it with the liquor, roll the cask strongly about, and then suffer it to stand to settle. Neuman questions the wholesomeness of wines thus purified; and assures us that he himself, after drinking only a few ounces of sack thus clarified, but not settled quite fine, was seized with sickness and vomiting, followed by such a vertigo, that he could not stand upright for a minute together. The giddiness continued with a nausea and want of appetite for several days.

CLARIGATIO, in Roman antiquity, a ceremony that always preceded a formal declaration of war. It was performed in this manner: first four heralds crowned with vervain, were sent to demand satisfaction for the injuries done the Roman state. These heralds taking the gods to witnesses that their demands were just, one of them, with a clear voice, demanded restitution within a limited time, commonly 33 days; which being expired without restitution made, then the *pater patratus*, or prince of the heralds, proceeded to the enemies frontiers, and declared war.

CLARII APOLLINIS FANUM (Strabo, Pliny), a temple and grove of Apollo, situated between Colophon and Lebedos, in Ionia; called *Claros* (Thucydides, Ovid). The name also of a town and mountain there (Nicander); and of a fountain (Clemens Alexandrinus); the waters of which inspired with prophetic fury. *Clarissus* the epithet of Apollo (Strabo).

CLARION, a kind of trumpet, whose tube is narrower and its tone acuter and shriller than that of the common trumpet. It is said that the clarion, now used among the Moors and Portuguese, who borrowed it from the Moors, served anciently for a treble to several trumpets, which sounded tenor and bass.

CLARISSES, an order of nuns so called from their founder St Clara or St Clare. (See St CLARE). She was in the town of Assisa in Italy; and having renounced the world to dedicate herself to religion, gave birth to this order in the year 1212; which comprehends not only those nuns that follow the rule of St Francis, according to the strict letter, and without any mitigation, but those likewise who follow the same rule softened and mitigated by several popes. It is at present one of the most flourishing orders of nuns in Europe. After Ferdinand Cortez had conquered Mexico for the king of Spain, Isabella of Portugal, wife of the emperor Charles V. sent thither some nuns of the order of St Clara, who made several settlements

there. Near their monasteries were founded communities of Indian young women, to be instructed by the clarisses in religion, and such works as were suitable to persons of their sex. These communities are so considerable that they usually consist of four or five hundred.

CLARKE (Dr Samuel), a preacher and writer of considerable note in the reign of Charles II. was, during the inter-regnum, and at the time of the ejection, minister of St Bennet Fink in London. In November 1660, he, in the name of the Presbyterian ministers, presented an address of thanks to the king for his declaration of liberty of conscience. He was one of the commissioners of the Savoy; and behaved on that occasion with great prudence and moderation. He sometimes attended the church as an hearer and communicant; and was much esteemed by all that knew him, for his great probity and industry. The most valuable of his numerous works are said to be his Lives of the Puritan Divines and other persons of note, 22 of which are printed in his martyrology: the rest are in his Lives of sundry Eminent Persons in this latter Age, folio; and in his Marrow of Ecclesiastical History, in folio and quarto. He died in 1680.

CLARKE (Samuel), the son of the former, was fellow of Pembroke-hall in Cambridge; but was ejected from his fellowship for refusing to take the engagements, as he was also afterwards from his rectory of Grendon in Buckinghamshire. He applied himself early to the study of the scriptures; and his annotations on the Bible, printed together with the sacred text, is highly commended by Dr Owen, Mr Baxter, and Dr Calamy. He died in 1701, aged 75.

CLARKE (Dr Samuel), a very celebrated English divine, was the son of Edward Clarke, Esq; alderman of Norwich, and one of its representatives in parliament for several years; and born there October 11. 1675. He was instructed in classical learning at the free-school of that town; and in 1691 removed thence to Caius college in Cambridge, where his uncommon abilities soon began to display themselves. Though the philosophy of Des Cartes was at that time the established philosophy of the university, yet Clarke easily mastered the new system of Newton; and in order to his first degree of arts, performed a public exercise in the schools upon a question taken from it. He greatly contributed to the establishment of the Newtonian philosophy by an excellent translation of, and notes upon, Rohault's "Physics," which he finished before he was 22 years of age. The system of natural philosophy then generally taught in the university was that written by Rohault, founded altogether upon Cartesian principles, and very ill translated into Latin. Clarke gave a new translation, and added to it such notes as might lead students insensibly and by degrees to other and truer notions than could be found there. "And this certainly (says Bishop Hoadly) was a more prudent method of introducing truth unknown before, than to attempt to throw aside this treatise entirely, and write a new one instead of it. The success answered exceedingly well to his hopes; and he may justly be styled a great benefactor to the university in this attempt. For by this means the true philosophy has, without any noise, prevailed; and to this day his translation of Rohault is, generally speaking,

Clarke. ing, the standing text for lectures, and his notes the first direction to those who are willing to receive the reality and truth of things in the place of invention and romance." Whiston relates, that in 1697, while he was chaplain to Moore bishop of Norwich, he met young Clarke, then wholly unknown to him, at a coffeehouse in that city; where they entered into a conversation about the Cartesian philosophy, particularly Rohault's "Physics," which Clarke's tutor, as he tells us, had put him upon translating. "The result of this conversation was (says Whiston), that I was greatly surprized that so young a man as Clarke then was, should know so much of those sublime discoveries, which were then almost a secret to all, but to a few particular mathematicians. Nor did I remember (continues he) above one or two at the most, whom I had then met with, that seemed to know so much of that philosophy as Clarke." This translation of Rohault was first printed in 1697, 8vo. There have been four editions of it, in every one of which improvements have been made; especially in the last in 1718, which has the following title: *Jacobi Rohaulti Physica. Latine vertit, recensuit, et uberioribus jam Annotationibus, ex illustriissimi Isaacii Newtoni Philosophia maximam partem hausit, amplificavit et ornavit S. Clarke, S. T. P. Accedunt etiam in hac quarta editione novae aliquot tabulae aëri incise, et Annotationes multum sunt auctæ.* Dr John Clarke, late dean of Sarum, and our author's brother, translated this work into English, and published it in 2 vols 8vo.

Afterwards he turned his thoughts to divinity; and in order to fit himself for the sacred function, he studied the Old Testament in the original Hebrew, the New in the original Greek, and the primitive Christian writers. Having taken holy orders, he became chaplain to Moore bishop of Norwich, who was ever after his constant friend and patron. In 1699 he published two treatises: one intitled "Three practical Essays on Baptism, Confirmation, and Repentance;" the other, "Some Reflections on that part of a book called Amyntor, or a Defence of Milton's Life, which relates to the Writings of the Primitive Fathers, and the Canon of the New Testament." In 1701 he published "A Paraphrase upon the Gospel of St Matthew;" which was followed in 1702 by the "Paraphrases upon the Gospels of St Mark and St Luke," and soon after by a third volume "upon St John." They were afterwards printed together in 2 vols 8vo; and have since undergone several editions. He intended to have gone through the remaining books of the New Testament, but something accidentally interrupted the execution.

Mean while Bishop Moore gave him the rectory of Drayton near Norwich, and procured for him a parish in that city; and these he served himself in that season when the bishop resided at Norwich. In 1704 he was appointed to preach Boyle's lecture; and the subject he chose was, "The being and attributes of God." He succeeded so well in this, and gave such high satisfaction, that he was appointed to preach the same lecture the next year; when he chose for his subject "The evidences of natural and revealed religion." These sermons were first printed in two distinct volumes; the former in 1705, the latter in 1706. They have since been printed in one volume, under the ge-

neral title of "A Discourse concerning the Being and Attributes of God, the Obligations of natural Religion, and the Truth and Certainty of the Christian Revelation, in answer to Hobbes, Spinoza, the Author of the Oracles of Reason, and other Deniers of natural and revealed Religion." Clarke having endeavoured in the first part of this work to show, that the being of a God may be demonstrated by arguments *à priori*, is unluckily involved in the censure which Pope has passed upon this method of reasoning in the following lines. They are put into the mouth of one of his dunces, addressing himself to the goddess Dunces:

"Let others creep by timid steps and slow,
"On plain experience lay foundations low,
"By common sense to common knowledge bred,
"And lost to nature's cause through nature led.
"All-seeing in thy mists, we want no guide,
"Methers of arrogance, and source of pride!
"We nobly take the high *priori* road,
"And reason downward, till we doubt of God."

Dunciad, b. 4. l. 455.

Upon which we have the following note: "Those who, from the effects in this visible world, deduce the eternal power and Godhead of the first cause, though they cannot attain to an adequate idea of the Deity, yet discover so much of him as enables them to see the end of their creation and the means of their happiness: whereas they who take this high *priori* road, as Hobbes, Spinoza, Des Cartes, and some better reasoners, for one that goes right, ten lose themselves in mists, or ramble after visions, which deprive them of all sight of their end, and mislead them in the choice of wrong means." Clarke, it is probable, would not have denied this; and the poet perhaps would have spared his better reasoners, and not have joined them with such company, had he recollected our author's apology for using the argument *à priori*. "The argument *à posteriori* (says he) is indeed by far the most generally useful argument, most easy to be understood, and in some degree suited to all capacities; and therefore it ought always to be insisted upon: But for as much as atheistical writers have sometimes opposed the being and attributes of God by such metaphysical reasonings, as can no otherwise be objected than by arguing *à priori*; therefore this manner of arguing also is useful and necessary in its proper place." To this may be added the answer he made to Mr Whiston upon this occasion, as narrated by the latter in his Historical Memoirs. "When Clarke brought me his book, I was in my garden against St Peter's college in Cambridge, where I then lived. Now I perceived, that in these sermons he had dealt a great deal in abstract and metaphysical reasoning. I therefore asked him how he ventured into such subtleties which I never durst meddle with? and showing him a nettle, or some contemptible weed in my garden, I told him that weed contained better arguments for the being and attributes of a God than all his metaphysics. Clarke confessed it to be so; but alleged for himself, that since such philosophers as Hobbes and Spinoza had made use of those kind of subtleties against, he thought proper to show that the like way of reasoning might be made better use of on the side of, religion: which reason or excuse I allowed to be not inconsiderable." Undoubtedly, as the present editor of *Biographia Britannica* observes,

Clarke.

erves, the grand, the proper, the decisive proof of the existence, perfections, and providence of the Deity, must be drawn from his works. On this proof, as being equally satisfactory to the profoundest philosopher and the meanest peasant, the cause of religion will ever stand secure. Nevertheless, if there be such a thing as an argument *à priori*, why may not speculative men be employed in its examination? Several able divines and philosophers have thought, and still think, that this argument for the being and attributes of God, will stand the test of the severest scrutiny; and therefore they cannot be blamed for endeavouring to set it in a convincing light to others. As to the merit, indeed, of the whole work under consideration, including the evidences of natural and revealed religion, it is undoubtedly of the first order. Difficulties may be raised on particular points, and the ablest and most candid inquirers may sometimes see cause to hesitate with regard to the validity of the reasoning: but still, in general, the book reflects honour on the age as well as the author that produced it, and will descend, with distinguished reputation, to a late posterity. The defence, in particular, of the sacred original and authority of Christianity, is admirably conducted.

In 1706 he published "A Letter to Mr Dodwell;" wherein all the arguments in his epistolary discourse against the immortality of the soul are particularly answered, and the judgment of the fathers, to whom Mr Dodwell had appealed concerning that matter, truly represented. Bishop Hoadly observes, that in this letter he answered Mr Dodwell in so excellent a manner, both with regard to the philosophical part, and to the opinions of some of the primitive writers, upon whom these doctrines were fixed, that it gave universal satisfaction. But this controversy did not stop here; for the celebrated Collins, coming in as a second to Dodwell, went much farther into the philosophy of the dispute, and indeed seemed to produce all that could possibly be said against the immateriality of the soul, as well as the liberty of human actions. This enlarged the scene of the dispute; into which our author entered, and wrote with such a spirit of clearness and demonstration, as at once showed him greatly superior to his adversaries in metaphysical and physical knowledge; and made every intelligent reader rejoice, that such an incident had happened to provoke and extort from him that plenty of strong reasoning and perspicuity of expression, which were indeed very much wanted upon this intricate and obscure subject. "And I am persuaded (continues the bishop), that as what he has writ in this controversy comprehends the little that the ancients had said well, and adds still more evidence than ever clearly appeared before, and all in words that have a meaning to them, it will remain the standard of good sense on that side of the question, on which he spent so many of his thoughts, as upon one of his favourite points." Clarke's letter to Dodwell was soon followed by four defences of it, in four several letters to the author of "A Letter to the learned Mr Henry Dodwell; containing some Remarks on a pretended Demonstration of the Immateriality and natural Immortality of the Soul, in Mr Clarke's Answer to his late Epistolary Discourse, &c." They were afterwards all printed together; and the "Answer to Toland's Amyntor" added to them.

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In the midst of all these labours, he found time to show his regard to mathematical and physical studies, and exact knowledge and skill in them. And his natural affection and capacity for these studies were not a little improved by the friendship of Sir Isaac Newton; at whose request he translated his "Optics" into Latin in 1706. With this version Sir Isaac was so highly pleased, that he presented him with the sum of L. 500, or L. 100 for each child, Clarke having then five children.

This year also, bishop Moore, who had long formed a design of fixing him more conspicuously, procured for him the rectory of St Bennet's, Paul's Wharf, in London; and soon after carried him to court, and recommended him to the favour of queen Anne. She appointed him one of her chaplains in ordinary; and, in consideration of his great merit, and at the request of the bishop, presented him to the rectory of St James's, Westminster, when it became vacant in 1709. Upon his advancement to this station, he took the degree of D.D. when the public exercise which he performed for it at Cambridge was prodigiously admired. The questions which he maintained were these: 1. "Nullum fidei Christianæ dogma, in sacris scripturis traditum, est rectæ rationi dissentaneum;" that is, "No article of the Christian faith, delivered in the holy Scriptures, is disagreeable to right reason." 2. "Sine actionum humanarum libertate nulla potest esse religio;" that is, "Without the liberty of human actions there can be no religion." His thesis was upon the first of these questions; which being thoroughly sifted by that most acute disputant professor James, he made an extempore reply, in a continued discourse for near half an hour, with so little hesitation, that many of the auditors declared themselves astonished; and owned, that if they had not been within sight of him, they should have supposed him to have read every word of it from a paper. After this, through the course of the syllogistical disputation, he guarded so well against the arts which the professor was a complete master of; replied so readily to the greatest difficulties such an objector could propose; and pressed him so close and hard with clear and intelligible answers, that perhaps there never was such a conflict heard in those schools. The professor, who was a man of humour as well as learning, said to him at the end of the disputation, "Profecto, me probe exercuisti;" that is, "On my word, you have worked me sufficiently;" and the members of the university went away, admiring, as indeed they well might, that a man even of Clarke's abilities, after an absence of so many years, and a long discourse of business of quite another nature, should acquit himself in such a manner, as if this sort of academical exercise had been his constant employment; and with such fluency and purity of expression, as if he had been accustomed to no other language in conversation but Latin. The same year, 1709, he revised and corrected Whiston's translation of the "Apostolical Constitutions" into English. Whiston tells us, that his own studies having been chiefly upon other things, and having rendered him incapable of being also a critic in words and languages, he desired his great friend and great critic Dr Clarke to revise that translation; which he was so kind as to agree to.

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In 1712, he published a most beautiful and pompous edition of Cæsar's commentaries, adorned with elegant sculptures. It is intitled, "C. Julii Cæsaris quæ extant, accuratissime cum libris editis & mss. optimis collata, recognita, & correctâ; accesserunt annotationes Samuelis Clarke, S. T. P. item indices locorum, rerumque & verborum, utilissimæ." It was printed in 1712. folio; and afterwards in 1720, 8vo. It was dedicated to the great duke of Marlborough, "at a time," says Bishop Hoadly, "when his unequalled victories and successes had raised his glory to the highest pitch abroad, and lessened his interest and favour at home." In the publication of this book, the doctor took particular care of the punctuation. In the annotations, he selected what appeared the best and most judicious in former editors, with some corrections and emendations of his own interspersed. Mr Addison has spoken of this folio edition of Cæsar's commentaries in the following words: "The new edition, which is given us of Cæsar's commentaries, has already been taken notice of in foreign gazettes, and is a work that does honour to the English press. It is no wonder that an edition should be very correct, which has passed thro' the hands of one of the most accurate, learned, and judicious writers this age has produced. The beauty of the paper, of the character, and of the several cuts with which this noble work is illustrated, makes it the finest book that I have ever seen; and is a true instance of the English genius, which, though it does not come the first into any art, generally carries it to greater heights than any other country in the world." This noble work has risen in value from that time to the present. A copy of this edition in large paper, most splendidly bound in morocco, was sold at the Hon. Mr Beauclerk's sale for forty-four pounds; and it was said to be purchased by the Duke of Grafton. "To a prince or a nobleman (says Dr Harwood), it was a cheap purchase; for it was the most magnificent book I ever beheld. The binding cost Mr Beauclerk five guineas.

The same year, 1712, he published his celebrated book intitled, "The Scripture Doctrine of the Trinity, &c." which is divided into three parts. The first is, a collection and explication of all the texts in the "New Testament," relating to the doctrine of the Trinity: in the second, the foregoing doctrine is set forth at large, and explained in particular and distinct propositions; and in the third, the principal passages in the liturgy of the church of England, relating to the doctrine of the Trinity, are considered. Bishop Hoadly applauds our author's method of proceeding, in forming his sentiments upon so important a point: "He knew (says he), and all men agreed, that it was a matter of mere revelation. He did not therefore retire into his closet, and set himself to invent and forge a plausible hypothesis, which might fit easily upon his mind. He had not recourse to abstract and metaphysical reasonings to cover or patronize any system he might have embraced before. But, as a Christian, he laid open the New Testament before him. He searched out every text in which mention was made of the three persons, or any one of them. He accurately examined the meaning of the words used about every one of them; and by the best rules of grammar and critique, and by his skill in language, he endeavoured to fix plainly what was declared about every person, and what was not. And what he thought to be the truth, he pub-

lished under the title of 'The Scripture Doctrine of the Trinity.' "I am far (says the Bishop) from taking upon me to determine, in so difficult a question between him and those who made replies to him; but this I hope I may be allowed to say, that every Christian divine and layman ought to pay his thanks to Dr Clarke for the method into which he brought this dispute; and for that collection of texts of the New Testament, by which at last it must be decided, on which side soever the truth may be supposed to lie." Whiston informs us, that some time before the publication of this book, there was a message sent to him from lord Godolphin, and others of queen Anne's ministers, importing, "That the affairs of the public were with difficulty then kept in the hands of those that were for liberty; that it was therefore an unreasonable time for the publication of a book that would make a great noise and disturbance; and that therefore they desired him to forbear till a fitter opportunity should offer itself:" which message (says he) the doctor had no regard to, but went on according to the dictates of his own conscience with the publication of his book. The ministers, however, were very right in their conjectures; for the work made noise and disturbance enough, and occasioned a great number of books and pamphlets, written by himself and others.

Books and pamphlets, however, were not all which the "Scripture Doctrine of the Trinity" occasioned: it made its author obnoxious to the power ecclesiastical, and his book to be complained of by the Lower House of convention. The Doctor drew up a preface, and afterwards gave in several explanations, which seemed to satisfy the Upper House; at least the affair was not brought to any issue, the members appearing desirous to prevent dissensions and divisions.

In 1715 and 1716, he had a dispute with the celebrated Leibnitz, relating to the principles of natural philosophy and religion; and a collection of the papers which passed between them was published in 1717. This performance of the doctor's is inscribed to her late majesty queen Caroline, then princess of Wales, who was pleased to have the controversy pass through her hands. It related chiefly to the important and difficult subjects of liberty and necessity.

In 1718, Dr Clarke made an alteration in the forms of doxology in the singing psalms, which produced no small noise and disturbance, and occasioned some pamphlets to be written. The alteration was this:

To God, through Christ, his only Son,
Immortal glory be, &c.
and,
To God, through Christ, his Son, our Lord,
All glory be therefore, &c.

A considerable number of these select psalms and hymns having been dispersed by the Society for Promoting Christian Knowledge, before the alteration of the doxologies was taken notice of, he was charged with a design of imposing upon the society: whereas, in truth, the edition of them had been prepared by him for the use of his own parish only, before the society had thoughts of purchasing any of the copies: and as the usual forms of doxology are not established by any legal authority, ecclesiastical or civil, in this he had not offended.

About this time he was presented by the lord Lechmere,

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Clarke. mere, the chancellor of the duchy of Lancaster, to the mastership of Wigston's hospital in Leicester. In 1724, he published 17 sermons preached on several occasions, 11 of which were never before printed; and the year following, a sermon, preached at the parish-church of St James's, upon the erecting a charity-school for the education of women servants. In 1727, upon the death of Sir Isaac Newton, he was offered by the court the place of master of the Mint, worth *communibus annis* 1200 or 1500l. a year. But to this secular preferment he could not reconcile himself; and therefore absolutely refused it. Whiston seems to wonder, that Clarke's elogists should lay so little stress upon this refusal, as to mention it not at all, or at least very negligently; while "he takes it," he says, "to be one of the most glorious actions of his life, and to afford undeniable conviction, that he was in earnest in his religion." In 1728, was published, "A Letter from Dr Clarke to Mr Benjamin Hoadly, F. R. S. occasioned by the Controversy, relating to the Proportion of Velocity and Force in Bodies in Motion;" and printed in the "Philosophical Transactions, n^o 401.

In 1729, he published the 12 first books of "Homer's Iliad." This edition was printed in 4to, and dedicated to the duke of Cumberland. The Latin version is almost entirely new; and annotations are added to the bottom of the pages. Homer, Bishop Hoadly tells, was Clarke's admired author, even to a degree of something like enthusiasm, hardly natural to his temper; and that in this he went a little beyond the bounds of Horace's judgment, and was so unwilling to allow the favourite poet ever to nod, that he has taken remarkable pains to find out, and give a reason for every passage, word, and title, that could create any suspicion. "The translation," adds the Bishop, "with his corrections, may now be styled accurate: and his notes, as far as they go, are indeed a treasury of grammatical and critical knowledge. He was called to his task by royal command; and he has performed it in such a manner, as to be worthy of the young prince, for whom it was laboured." The year of its publication was the last of this great man's life. Though not robust, he had always enjoyed a firm state of health, without any indisposition bad enough to confine him, except the small-pox in his youth; till, on Sunday May 11. 1729, going out in the morning to preach before the judges at Serjeant's-inn, he was there seized with a pain in his side, which made it impossible for him to perform the office he was called to; and quickly became so violent, that he was obliged to be carried home. He went to bed, and thought himself so much better in the afternoon, that he would not suffer himself to be bled; against which remedy, it is remarkable that he had entertained strong prejudices. But the pain returning violently about two the next morning, made bleeding absolutely necessary; he appeared to be out of danger, and continued to think himself so, till the Saturday morning following; when, to the inexpressible surprize of all about him, the pain removed from his side to his head; and, after a very short complaint, took away his senses so, as they never returned any more. He continued breathing till between seven and eight of the evening of that day, which was May 17. 1729; and then died, in his 54th year.

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Clarke. Soon after his death were published, from his original manuscripts, by his brother Dr John Clarke, dean of Sarum, "An Exposition of the Church Catechism," and ten volumes of sermons, in 8vo. His "Exposition" is made up of those lectures he read every Thursday morning for some months in the year, at St James's church. In the latter part of his time he revised them with great care, and left them completely prepared for the press. As to the sermons, few discourses in the English language are more judicious; and fewer still are equally instructive. The reasoning and the practical parts are excellent, and the explanations of scripture are uncommonly valuable. Though Dr Clarke had not the turn of mind which qualified him for moving the passions, and indeed did not make it his object, his sentiments, nevertheless, are frequently expressed with such a clearness of conception and such a force of language, as to produce in well disposed readers all the effect of the pathetic. Several volumes of sermons have been published since his time, which are far superior in point of elegance and beauty, and we have the highest sense of their merit. But still, if we were called upon to recommend discourses, which abound with the most solid instruction, and promise the most lasting improvement, we should never forget a Clarke and a Jortin. Three years after the Doctor's death, appeared also the Twelve Last Books of the Iliad, published in 4to by his son, Mr Samuel Clarke, who informs us, in the preface, that his father had finished the annotations to the three first of those books, and as far as the 359th verse of the fourth; and had revised the text and version as far as verse 510 of the same book. Dr Clarke married Catharine, the daughter of the Rev. Mr Lockwood, rector of Little Missingham in Norfolk; in whose good sense and unblameable behaviour he was happy to his death. By her he had seven children, two of whom died before him, and one a few weeks after him.

Of the character of this great divine, the following short delineation appeared some years since in the Gentleman's Magazine: "Samuel Clarke, D. D. rector of St James's, Westminster: in each several part of useful knowledge and critical learning, perhaps without a superior; in all united, certainly without an equal: in his works, the best defender of religion; in his practice, the greatest ornament to it: in his conversation communicative, and in an uncommon manner instructive; in his preaching and writings, strong, clear, and calm; in his life, high in the esteem of the wise, the good, and the great; in his death, lamented by every friend to learning, truth, and virtue." In the same publication some not incurious anecdotes concerning him are printed, collected by the Rev. Mr Jones of Welwyn. We learn from them, that Dr Clarke was of a very humane and tender disposition. When his young children amused themselves with tormenting and killing flies upon the windows, he not only forbid such practices, but calmly reasoned with them, in such a familiar manner, as was calculated to make a powerful impression upon their minds. He was very ready and condescending in answering applications to him with respect to scruples; numberless instances of which occurred in the course of his life. One thing of which Dr Clarke was peculiarly cautious, was not to lose the least minute of his time. He al-

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ways carried some book about with him, which he would read whilst riding in a coach, or walking in the fields, or if he had any leisure moments free from company or his other studies. Nay, he would read even in company itself, where he might take such a liberty without offence to good manners. His memory was remarkably strong. He told Mr Pyle of Lyn, that he never forgot any thing which he had once thoroughly apprehended and understood. The Doctor, with his intimate friends, was perfectly free and easy; but if strangers were introduced, he behaved with much circumspection, conversing only upon common topics. When he visited Dr Sykes, his usual way was to sit with him upon a couch, and, reclining upon his bosom, to discourse with him, in the most familiar manner, upon such subjects as were agreeable to the taste and judgment of both. When Sir John Germaine lay upon his death-bed, and was in great confusion and trouble of mind, he sent for Dr Clarke, and requested to know of him whether he should receive the sacrament, and what he should do in his sad condition. The Doctor, who was well acquainted with Sir John's pursuits and course of life, sedately replied, that he could not advise him to receive the sacrament, and that he did not think it likely to be of any avail to him with respect to his final welfare. Having said this, he departed without administering the communion, having first recommended the dying man to the mercy of God.

Dr Clarke was of a cheerful, and even playful disposition. An intimate friend of his, the late Rev. Mr Bott, used to relate, that once when he called upon him, he found him swimming upon a table. At another time, when the two Dr Clarks, Mr Bott, and several men of ability and learning were together, and amusing themselves with diverting tricks, Dr Samuel Clarke, looking out of the window, saw a grave blockhead approaching to the house; upon which he cried out, "Boys, boys, be wise, here comes a fool." This turn of his mind hath since been confirmed by Dr Warton, who, in his observations on the following line of Mr Pope,

"Unthought of frailties cheat us in the wise."

says, "Who could imagine that Locke was fond of romances; that Newton once studied astrology; that Dr Clarke valued himself for his agility, and frequently amused himself, in a private room of his house, in leaping over the tables and chairs; and that our author himself was a great epicure?" With respect to what is here recorded of Dr Clarke, we can scarcely persuade ourselves to consider it as a frailty. To be possessed of such a temper as his was, must have been no small degree of happiness; as it probably enabled him to pursue his important and serious studies with greater vivacity and vigour. To be capable of deriving amusement from trivial circumstances, indicates a heart at ease, and may generally be regarded as the concomitant of virtue.

CLARKE (William), an English divine, was born at Haghmon-abbey in Shropshire, 1696; and after a grammar-education at Shrewsbury school, was sent to St John's college Cambridge, of which he was elected fellow, Jan. 17. 1716; B. A. 1731, M. A. 1735. He was presented by archbishop Wake in 1724 to the rec-

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tory of Buxted in Suffex, at the particular recommendation of Dr Wotton, whose daughter he married. In 1738, he was made prebendary and residentiary of the cathedral church of Chichester. Some years before this he had given to the public a specimen of his literary abilities, in a preface to his father-in-law Dr Wotton's *Leges Walliæ Ecclesiasticæ et Civiles Hoeli Boni, et aliorum Walliæ Principum*; or, Ecclesiastical and Civil Laws of Howel, D Da, and other princes of Wales. There is reason likewise to surmise, that an excellent Discourse on the Commerce of the Romans, which was highly extolled by Dr Taylor in his Elements of the Civil Law, might have been written by our author. It came either from his hand or from that of his friend Mr Bowyer, and is reprinted in that gentleman's Miscellaneous Tracts. But Mr Clarke's chief work was, *The Connection of the Roman, Saxon, and English Coins*; deducing the Antiquities, Customs, and Manners of each people to modern times; particularly the Origin of Feudal Tenures, and of Parliaments: Illustrated throughout with critical and historical Remarks on various Authors, both sacred and profane. This work was published, in one volume quarto, in 1767; and its appearance from the press was owing to the discovery made by Martin Folkes, Esq; of the old Saxon pound. It was dedicated to the duke of Newcastle, whose beneficent disposition is celebrated for having conferred obligations upon the author, which were not the effects of importunity. Mr Clarke's performance was perused in manuscript by Arthur Onslow, Esq; speaker of the house of commons, who honoured him with some useful hints and observations: but he was chiefly indebted to Mr Bowyer, who took upon him all the care of the publication, drew up several of the notes, wrote part of the dissertation on the Roman sesterce, and formed an admirable index to the whole. By this work our author acquired a great and just reputation. Indeed, it reflects honour upon the country by which it is produced; for there are few performances that are more replete with profound and curious learning. Mr Clarke's last promotions were the chancellorship of the church of Chichester, and the vicarage of Amport, which were bestowed upon him in 1770. These preferments he did not long live to enjoy, departing this life on the 21st of October, in the following year. He had resigned, in 1768, the rectory of Buxted to his son Edward. In Mr Nichols's Anecdotes of Bowyer, there are several letters and extracts of letters, written to that learned printer by Mr Clarke, which display him to great advantage as a man of piety, a friend, and a scholar.

In a sketch of his character in the *Biographia Britannica*, furnished by Mr Hayley, who was his intimate acquaintance, he is represented as not only a man of extensive erudition, but as possessed of the pleasing talent of communicating his various knowledge in familiar conversation, without any appearance of pedantry or presumption. Antiquities were the favourite study of Mr Clarke, as his publications sufficiently show: but he was a secret, and by no means an unsuccessful, votary of the muses. He wrote English verse with ease, elegance, and spirit. Perhaps there are few better epigrams in our language than the following, which

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which he composed on seeing the words *Domus ultima* inscribed on the vault belonging to the dukes of Richmond in the cathedral of Chichester.

Did he, who thus inscrib'd the wall,
Not read, or not believe St Paul,
Who says there is, where'er it stands,
Another house not made with hands?
O, may we gather from these words,
That hoase is not a house of Lord!

Among the happier little pieces of his sportive poetry, there were some animated stanzas, describing the character of the twelve English poets, whose portraits, engraved by Vertue, were the favourite ornament of his parlour: but he set so modest and humble a value on his poetical compositions, that they were seldom committed to paper, and are therefore very imperfectly preserved in the memory of those to whom he sometimes recited them. His taste and judgment in poetry appears indeed very striking in many parts of his learned and elaborate *Connection of Coins*. His illustration of Nestor's cup, in particular, may be esteemed as one of the happiest examples of that light and beauty which the learning and spirit of an elegant antiquarian may throw on a cloudy and mistaken passage of an ancient poet. In strict attention to all the duties of his station, in the most active and unwearied clarity, he might be regarded as a model to the ministers of God. Though his income was never large, it was his custom to devote a shilling in every guinea that he received to the service of the poor. As a master, as a husband, and a father, his conduct was amiable and endearing; and to close this imperfect sketch of him with his most striking feature, he was a man of genuine unaffected piety."

CLARO-OBSCURO, or CLAIR-OBSCURE, in painting, the art of distributing to advantage the lights and shadows of a piece, both with respect to the easing of the eye and the effect of the whole piece. See PAINTING.

CLARO-Obscuro, or *Chiaro-scuro*, is also used to signify a design consisting only of two colours, most usually black and white, but sometimes black and yellow; or it is a design washed only with one colour, the shadows being of a dusky brown, and the lights heightened up by white.

The word is also applied to prints of two colours taken off at twice: whereof there are volumes in the cabinets of those who are curious in prints.

CLARUS, or CLAROS (anc. geog.), a town of Ionia, famous for an oracle of Apollo. It was built by Manto, daughter of Tiresias, who fled from Thebes after it had been destroyed by the Epigoni. She was so afflicted with her misfortunes, that a lake was formed with her tears, where she first founded the oracle. Apollo was from thence surnamed *Clarius*. Also an island of the *Ægean*, between Tenedos and Scios.

CLARY, in botany. See SALVIA.

CLARY-Water, is composed of brandy, sugar, clary-flowers, and cinnamon, with a little ambergris dissolved in it. It helps digestion, and is cardiac. This water is rendered either purgative or emetic, by adding resin of jalap and scammony, or *crocus metallorum*. Some make clary-water of brandy, juice of cherries, strawberries, and gooseberries, sugar, cloves, white pepper, and coriander seeds; infused, sugared, and strained.

CLASMIUM, in natural history, the name of a genus of fossils, of the class of the gypsums; the characters of which are, that they are of a soft texture, and of a dull opaque look, being composed, as all the other gypsums, of irregularly arranged flat particles.

The word is derived from the Greek *κλασμος*, a fragment or small particle; from the flaky small particles of which these bodies are composed. Of this genus there is only one known species: this is of a tolerably regular and even structure; though very coarse and harsh to the touch. It is of a very lively and beautiful red in colour; and is found in thick roundish masses, which, when broken, are to be seen composed of irregular arrangements of flat particles; and emulate a striated texture. It will neither give fire with steel nor ferment with acids; but calcines very freely and easily, and affords a very valuable plaster of Paris, as do all the purer gypsums. It is common in Italy, and is greatly esteemed there; it is also found in some parts of England, particularly Derbyshire, but there it is not much regarded.

CLASPERS, or TENDRILS. See CARRHUS.

CLASS, an appellation given to the most general subdivisions of any thing: thus, *animal* is subdivided into the classes quadrupeds, birds, fishes, &c. which are again subdivided into serieses or orders; and these last into genera. See BOTANY and ZOOLOGY.

CLASS, is also used in schools, in a synonymous sense with *form*, for a number of boys all learning the same thing.

CLASSIC, or CLASSICAL, an epithet, chiefly applied to authors read in the classes at schools.

This term seems to owe its origin to Tullius Servius, who, in order to make an estimate of every person's estate, divided the Roman people into six bands, which he called *classes*. The estate of the first class was not to be under 200 l. and these by way of eminence were called *classici*, "classics": hence authors of the first rank came to be called *classics*, all the rest being said to be *infra classem*: thus Aristotle is a classic author in philosophy; Aquinas in school divinity, &c.

CLASSICUM was the alarm for battle, given by the Roman generals; and sounded by trumpets and other martial music throughout the army.

CLATHRI, in antiquity, bars of wood or iron, used in securing doors and windows. There was a goddess called *Clathra*, that presided over the clathri.

CLAVARIA, CLUB-TOP: A genus belonging to the cryptogamia class of plants, and of the order of fungi; the 58th in the natural method. The fungus is smooth and oblong. The hemotades, or oak leather club-top, exactly resembles tanned leather, except that it is thinner and softer. It is of no determinate form. It grows in the clefts and hollows of old oaks, and sometimes on ash in Ireland and in some places of England, &c. In Ireland it is used to dress ulcers, and in Virginia to spread plasters upon, instead of leather. The militaris, and one or two other species, are remarkable for growing only on the head of a dead insect in the nymphal state.

A modern writer on natural history (Mr Miller), has asserted the whole genus of clavaria to belong to the tribe of *zoophytes*, that is, to the animal, and not to the vegetable kingdom. According to his method, he ranks them among the Vermes, under a subdivision

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Clavaria.

Clavarium
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Claude.

which he terms *Fungosa osculis atomiferis*; thereby understanding them to be compound animals with many orifices on their surface, from which are protruded atoms or animalcules which have a visible spontaneous motion, something similar to what is now acknowledged to be a fact with regard to a numerous class of marine bodies termed *corallines*. This motion, however, has not been observed by other naturalists. Schaeffer has figured the seeds of several clavariæ as they appeared to him through the microscope; and none of these fungi, when burnt, emit the strong disagreeable smell peculiar to animal substances.

CLAVARIUM, in antiquity, an allowance the Roman soldiers had for furnishing nails to secure their shoes with. They raised frequent mutinies, demanding largesses of the emperors under this pretence.

CLAVATA VESTIMENTA, in antiquity, habits adorned with purple clavi, which were either broad or narrow. See CLAVUS.

CLAUBERGE (John), a learned professor of philosophy and divinity at Duisburg, was born at Solingen in 1622. He travelled into Holland, France, and England, and in each country obtained the esteem of the learned. The elector of Brandenburg gave him public testimonies of his esteem. He died in 1665. His works were printed at Amsterdam in 2 vols 4to. The most celebrated of these is his treatise, entitled *Logica vetus et nova*, &c.

CLAUDE of LORRAIN, or *Claude Gelee*, a celebrated landscape painter, and a striking example of the efficacy of industry to supply, or at least to call forth, genius. Claude was born in 1600; and being dull and heavy at school, was put apprentice to a pastry-cook: he afterwards rambled to Rome to seek a livelihood; but being very ill-bred, and unacquainted with the language, no body cared to employ him. Chance threw him at last in the way of Augustino Trasso, who hired him to grind his colours, and to do all his household drudgery, as he kept no other servant. His master hoping to make him serviceable to him in some of his greatest works, taught him by degrees the rules of perspective and the elements of design. Claude at first did not know what to make of those principles of art; but being encouraged, and not failing in application, he came at length to understand them. Then his soul enlarged itself apace, and cultivated the art with wonderful eagerness. He exerted his utmost industry to explore the true principles of painting by an incessant examination of nature, that genuine source of excellence; for which purpose, he made his studies in the open fields; where he very frequently continued from sun rise till the dusk of the evening compelled him to withdraw himself from his contemplations. It was his custom to sketch whatever he thought beautiful or striking; and every curious tinge of light, on all kinds of objects, he marked in his sketches with a similar colour; from which he perfected his landscapes with such a look of real nature, and gave them such an appearance of truth, as proved superior to any artist that ever painted in that style.

The beauties of his paintings are derived from nature herself, which he examined with uncommon assiduity; and Sandrat relates, that Claude used to explain to him, as they walked through the fields, the causes of the different appearances of the same prospect

at different hours of the day, from the reflections or refractions of light, from dews or vapours, in the evening or morning, with all the precision of a philosopher. He worked on his pictures with great care, endeavouring to bring them to perfection, by touching them frequently over again; and if any performance did not answer his idea, it was customary with him to alter, to deface, and repaint it again several times over, till it corresponded with that image pictured in his mind. But whatever struck his imagination, while he observed nature abroad, it was so strongly impressed on his memory, that on his return to his work, he never failed to make the happiest use of it.

His skies are warm and full of lustre, and every object is properly illumined. His distances are admirable, and in every part a delightful union and harmony not only excite our applause but our admiration. His invention is pleasing, his colouring delicate, and his tints have such an agreeable sweetness and variety, as have been but imperfectly imitated by the best subsequent artists, but were never equalled. He frequently gave an uncommon tenderness to his finished trees by glazing; and in his large compositions which he painted in fresco, he was so exact that the distinct species of every tree might readily be distinguished. As to his figures, if he painted them himself, they are very indifferent; and he was so conscious of his deficiency in this respect, that he usually engaged other artists who were eminent to paint them for him; of which number were Courtois and Philippo Laura. His pictures are now very rare, especially such as are undamaged; and those are at this time so valued, that no price, however great, is thought to be superior to their merit. In order to avoid a repetition of the same subject, and also to detect such copies of his works as might be injurious to his fame, by being sold for originals, it was his custom to draw (in a paper-book prepared for his purpose) the designs of all those pictures which were transmitted to different countries; and on the back of the drawings, he wrote the name of the person who had been the purchaser. That book, which he titled *Libro di Verita*, is now in the possession of the duke of Devonshire.

CLAUDE (John), a Protestant divine, born in the province of Angenois in 1619. Mess. de Port Royal using their utmost endeavours to convert M. de Turenne to the catholic faith, presented him with a piece calculated to that end, which his lady engaged Mr. Claude to answer; and his performance gave rise to the most famous controversy that was ever carried on in France between the Roman Catholics and Protestants. On the revocation of the edict of Nantz, he retired to Holland, where he met with a kind reception, and was honoured with a considerable pension by the prince of Orange. He died in 1687; and left a son Isaac Claude, whom he lived to see minister of the Walloon church at the Hague, and who published several excellent works of his deceased father.

CLAUDIA, a vestal virgin at Rome, who being suspected of unchastity, is said to have been cleared from that imputation in the following manner: the image of Cybele being brought out of Phrygia to Rome in a barge, and it happening to stick so fast in the river Tyber that it could not be moved, she tying her girdle, the badge of chastity, to the barge, drew

Claudia,
Claudia.

Claudia, it along to the city, which a thousand men were unable
 laudianus. to do.

CLAUDIA Aqua (Frontinus), water conveyed to Rome by a canal or aqueduct of eleven miles in length, the contrivance of Appius Claudius the censor, and the first structure of the kind, in the year of Rome 441. Called also *Aqua Appia*.

CLAUDIA Copia (Inscriptions), a name of *Lugdunum*, or Lyons in France; the birth-place of the emperor Claudius: A Roman colony, called *Claudia*, from its benefactor the emperor; and *Copia*, from its plenty of all necessaries, especially corn. See *LUGDUNUM*.

CLAUDIA, or *Clodia Via* (Ovid), was that road which, beginning at the Pons Milvius, joined the Flaminia, passing through Etruria, on the south side of the Lacus Sabatinus, and striking off from the Cassia, and leading to Luca (Antonine): large remains of it are to be seen above Bracciano (Hollstenius).

CLAUDIA Lex, de Comitibus, was enacted by M. Cl. Marcellus in the year of Rome 702. It ordained, that at public elections of magistrates no notice should be taken of the votes of such as were absent. Another, *de Usurâ*, which forbid people to lend money to minors on condition of payment, after the decease of their parents. Another, *de Negotiatione*, by Q. Claudius the tribune, 535. It forbid any senator or father of a senator to have any vessel containing above 300 amphoræ, for fear of their engaging themselves in commercial schemes. The same law also forbid the same thing to the scribes and the attendants of the questors, as it was naturally supposed that people who had any commercial connections could not be faithful to their trust nor promote the interest of the state. Another, 576, to permit the allies to return to their respective cities, after their names were enrolled. Liv. 41. c. 9. Another, to take away the freedom of the city of Rome from the colonists which Cæsar had carried to Novicomum.

CLAUDIANTUS (Claudius), a Latin poet, flourished in the 4th century, under the emperor Theodosius, and under his sons Arcadius and Honorius. It is not agreed of what country he was a native; but he came to Rome in the year of Christ 395, when he was about 30 years old; and there insinuated himself into Stilicho's favour; who being a person of great abilities both for civil and military affairs, though a Goth by birth, was so considerable a person under Honorius, that he may be said for many years to have governed the western empire. Stilicho afterwards fell into disgrace, and was put to death; and it is more than probable that the poet was involved in the misfortunes of his patron, and severely persecuted in his person and fortunes by Hadrian, an Egyptian by birth, who was captain of the guards to Honorius, and succeeded Stilicho. There is reason, however, to think that he rose afterwards to great favour; and obtained several honours both civil and military. The princess Serena had a great esteem for Claudian, and recommended and married him to a lady of great quality and fortune in Libya. There are a few little poems on sacred subjects, which through mistake have been ascribed by some critics to Claudian; and so have made him be thought a Christian. But St Austin, who was cotemporary with him, expressly says that he was a Heathen. The time of Claudian's death is uncertain,

nor do we know any further particulars of his life than what are to be collected from his works, and which we have already related above. He is thought to have more of Virgil in his style than all the other imitators of him.

CLAUDIUS I. Roman emperor, A. D. 41. The beginning of his reign was very promising; but it was soon discovered that little better than an ideot filled the throne, who might easily be made a tyrant: accordingly he became a very cruel one, through the influence of his empress, the infamous Messalina: after her death, he married his niece Agrippina, who caused him to be poisoned to make way for Nero, A. D. 54. See (*History of*) *ROME*.

CLAUDIUS II. (Aurelius), surnamed *Gothicus*, dignalized himself by his courage and prudence under the reigns of Valerian and Julian; and on the death of the latter was declared emperor in 268. He put to death Aureolus, the murderer of Galienus; defeated the Germans; and in 269 marched against the Goths, who ravaged the empire with an army of 300,000 men, which he at first harassed, and the next year entirely defeated: but a contagious disease, which had spread through that vast army, was caught by the Romans; and the emperor himself died of it a short time after, aged 56. Pollio says that this prince had the moderation of Augustus, the virtue of Trajan, and the piety of Antoninus.

CLAVES INSULÆ, a term used in the isle of Man; where all weighty and ambiguous causes are referred to a jury of twelve, who are called *claves insulæ*, the keys of the island.

CLAVICHORD, and *CLAVICITHERIUM*, two musical instruments used in the 16th century. They were of the nature of the spinet, but of an oblong figure. The first is still used by the nuns in convents; and that the practitioners may not disturb the sisters in the dormitory, the strings are muffled with small bits of fine woollen cloth.

CLAVICLE. See *ANATOMY*, n° 46.

CLAVICYMBALUM, in antiquity, a musical instrument with 30 strings. Modern writers apply the name to our harpsichords.

CLAVI VESTIUM, were flowers or studs of purple interwoven with or sewed upon the garments of knights or senators; only, for distinction, the former used them narrow, the latter broad.

CLAVIS properly signifies a *KEY*; and is sometimes used in English to denote an explanation of some obscure passages of any book or writing.

CLAVIUS (Christopher), a German Jesuit born at Bamberg, excelled in the knowledge of the mathematics, and was one of the chief persons employed to rectify the kalendar; the defence of which he also undertook against those who censured it, especially Scaliger. He died at Rome in 1612, aged 75. His works have been printed in five volumes folio; the principal of which is his commentary on Euclid's elements.

CLAUSE, in grammar, denotes a member of a period or sentence.

CLAUSE signifies also an article or particular stipulation in a contract, a charge or condition in a testament, &c.

CLAUSENBURG, a large city of Transilvania, situated.

Claudius,
 Clausen-
 burg.

Clavus,
||
Clay.

situated on the river Samos, in E. Long. 20. 50. N. Lat. 47. 10.

CLAVUS, in antiquity, an ornament upon the robes of the Roman senators and knights; which was more or less broad, according to the dignity of the person: hence the distinction of tunica angust-clavia and lat-clavia.

CLAVUS, in medicine and surgery, is used in several significations: 1. Clavus hystericus, is a shooting pain in the head, between the pericranium and cranium, which affect such as have the green-sickness. 2. Clavus oculorum, according to Celsus, is a callous tubercle on the white of the eye, taking its denomination from its figure. 3. Clavus imports indurated tubercles of the uterus. 4. It also imports a surgical instrument of gold, mentioned by Amatus Lusitanus, designed to be introduced into an excoriated palate, for the better articulation of the voice. And, 5. It signifies a callus, or corn on the foot.

CLAVUS Annalis, in antiquity. So rude and ignorant were the Romans towards the rise of their state, that the driving or fixing a nail was the only method they had of keeping a register of time; for which reason it was called *clavus annalis*. There was an ancient law, ordaining the chief prætor to fix a nail every year on the Ides of September; it was driven into the right side of the temple of Jupiter Opt. Max. towards Minerva's temple. This custom of keeping an account of time by means of fixing nails, was not peculiar to the Romans; for the Etrurians used likewise to drive nails into the temple of their goddess Nortia with the same view.

CLAW, among zoologists, denotes the sharp-pointed nails with which the feet of certain quadrupeds and birds are furnished.

CLAY, in natural history, a genus of earths, the characters of which are these: They are firmly coherent, weighty, and compact; stiff, viscid, and ductile to a great degree, while moist, smooth to the touch; not easily breaking between the fingers, nor readily diffusible in water; and, when mixed, not readily subsiding from it. See CHEMISTRY, n^o 647, &c.

Clay shrinks remarkably when drying; in so much that Dr Lewis observes, the purity of it may be known by the degree to which it shrinks. He made experiments on it pure, and when mixed with various proportions of sand. Pure clay he found shrunk one part in 18 while drying; but, when mixed with twice its weight of sand, only one part in 30.

The common clays are never free from siliceous earth: the best method of obtaining the argillaceous earth in perfect purity is, by dissolving Roman alum in water, filtering the solution, and precipitating it by mild volatile alkali. When procured by this method, its specific gravity is about 1305; it is soluble in acids with a little effervescence; it forms alum with the vitriolic acid; and deliquescent salts with the nitrous and marine. When dry it absorbs water greedily, and becomes soft, and acquires such a tenacity that it may be moulded at pleasure; it contracts, however, greatly in the fire, by which numerous cracks are occasioned. With a certain degree of heat it becomes so hard as to strike fire with steel, and by thus burning it loses its tenacity, the water being excluded by the approach of its particles towards each other. Af-

ter having lost this property, it cannot be made to assume it again without being dissolved in an acid, and then precipitated from it. Fixed alkalies also dissolve it in the dry way, as acids do in the moist; but of these last the vitriolic is the most proper, as it may be most easily concentrated.

According to Mr Kirwan, the specific gravity of this earth, when pure, does not exceed 2000. It is exceedingly diffusible in water, though scarcely more soluble than magnesia. It is combinable with acids, from whence it may be separated like magnesia, but can scarce be precipitated by the vitriolic acid, with which it forms alun, a salt that always contains an excess of acid, and has an astringent taste. When in combination with any of these acids, it cannot be precipitated by acid of sugar; a criterion by which it is distinguished from all the other earths; every one of which (terra ponderosa alone excepted, which when united to the vitriolic acid, is not affected by any other excepting that of fluor) is precipitated from the vitriolic, nitrous, and marine acids, by that of sugar. The precipitation of these earths, however, does not take place if there be an excess of the mineral acids, nor does it always appear before the liquors are evaporated. Though clay is hardened by a very strong heat, it cannot be made thereby to assume the properties of lime. By a mixture with calcareous earth it readily melts; and hence M. Gerhard has found it fusible in a crucible of chalk, though not in one of clay. Its fusion is not promoted by fixed alkali, but borax and microcosmic salt dissolve it; the former with a very slight effervescence, but the latter with a more perceptible one. It is less affected by calces of lead than the calcareous earths are.

M. Beaulme has formed a new hypothesis concerning this earth; supposing the basis of alum, or pure argillaceous earth, to be nothing else than flint; and common clay to be siliceous earth combined with a little vitriolic acid. This opinion has been examined by Mr Scheele, who began by trying, in the following manner, whether the siliceous earth be in reality soluble in vitriolic acid. He took an ounce of mountain crystal reduced to powder, and mixing it with three ounces of salt of tartar, melted the whole by a strong fire. The mass was then dissolved in 20 ounces of water, and as much diluted vitriolic acid poured upon it as was more than sufficient for saturation. The liquor being then filtered and evaporated, yielded a drachm and an half of alum, besides a quantity of subacid vitriolated tartar. It now remained therefore to determine whether the precipitated siliceous earth, by a repetition of the same process, would still continue to yield alum. The operation was therefore repeated seven times, and a quantity of alum procured at each operation. But when our author was about to be confirmed in his opinion that M. Beaulme was in the right, he happened to inspect his crucibles, and perceived them to be full of little cavities, and every where rough and uneven on the inside. Thus he began to suspect that the alkali had dissolved part of the clay of his crucibles, by which means the alum had been produced; and this supposition was verified by his afterwards using a crucible of iron, when he could not obtain a single particle of alum, nor perceive the smallest mark of solution on the siliceous earth.

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M. Beume also pretends that clay contains a little vitriolic acid, and is therefore soluble in a large quantity of boiling water. Mr Scheele likewise tried this experiment; but found, that of several kinds of argillaceous earth not the smallest quantity was dissolved; and he likewise made several experiments in order to obtain vitriolic acid from pure clay, but without success: neither was he able to obtain any hear either by means of alkali of tartar or with charcoal; nor could he obtain with clay a vitriolic neutral salt from the residuum of the distillation of muriatic and nitrous acid.

The contraction of clay by heat has afforded Mr Wedgwood an opportunity of constructing by its means an instrument for measuring those degrees of heat which are above the reach of the scale of common thermometers, as described under the article THERMOMETER.

Mr Scheele has made several experiments to discover the properties of alum when mixed with other substances. A solution of alum, he finds, is decomposed by lime-water; and if no more of the water be added than is exactly requisite for the precipitation, the earth of alum forms a transparent precipitate like boiled starch; and if the clear water be filtered, it is found to be a solution of gypsum. On adding more lime-water than is necessary for precipitation, the precipitated matter is destitute of the gelatinous appearance just mentioned. If the whole be allowed to stand for a quarter of an hour, and frequently agitated during this time, no gypsum, nor even lime, is found in the filtered liquor, unless too much lime-water has been used. On examining the precipitate in this case, our author found it to consist of earth of alum, selenite, and lime. This was discovered first by treating it with muriatic acid, which dissolved the aluminous earth, leaving the gypsum behind. The addition of caustic volatile alkali threw down a transparent gelatinous mass, which was the earth of alum; and on straining it again, and then adding a fixed alkaline lixivium, the lime was thrown down; whence it appeared, that the lime and gypsum had separated from the water, and united with the earth of alum.

To understand the reason of this uncommon precipitation, Mr Scheele next poured into a solution of alum a quantity of caustic volatile alkali more than sufficient to saturate the acid, in order to be certain of having it all taken off. The precipitated earth was then edulcorated, and mixed with a solution of gypsum, that he might observe whether the gypsum would separate from the water, and precipitate with the earth of alum; which, however, did not take place. On mixing lime-water with the precipitate, he found that the former very soon lost its caustic taste, and that the earth of alum became opaque. Some part of the water was strained, and lixivium tartari dropped into it; but it remained clear, nor was any precipitate formed by a solution of corrosive sublimate. He afterwards added muriatic acid to the last precipitate, which it dissolved entirely without leaving any gypsum behind; whence our author concludes, that the earth of alum had united with the lime into a peculiar kind of compound.

Lastly, he now imagined, that this compound of earth of alum and lime might be capable of separating gypsum from water. To try this, he prepared a large

Clay.

quantity of the compound earth, mixed it with a solution of gypsum, and let it rest for a quarter of an hour; when he found, to his surprise, that the gypsum still remained suspended in the water, and that the precipitate was entirely soluble in muriatic acid. He now mixed a solution of gypsum with lime-water, adding earth of alum at the same time; when he found, that the whole was precipitated as before, the lime and aluminous earth having fallen to the bottom along with the gypsum, leaving the water pure. On the whole, our author concludes, 1. That the vitriolic acid in gypsum is capable of combining with more lime than is necessary to an exact saturation. 2. That calcareous earth is capable of forming an union with the earth of alum. 3. That gypsum cannot combine with the earth of alum; but that if a superfluous quantity of lime be united with vitriolic acid, it will then serve as a bond of union to combine gypsum with the earth of alum, and thus form a new compound consisting of three earths. Pure clay has no effect upon limewater.

Cronstedt is of opinion, that common clay, especially the blue, grey, and red kinds, may derive their origin from mud; and as the mud proceeds from vegetables, it will thence follow, that the varieties of clay just mentioned are nothing else but the common mould altered, after a length of time, by means of water. This opinion, he thinks, receives considerable strength from the following circumstances; viz. that a great quantity of sea-plants rot every year in the lakes, and are changed into mud; very little of which, however, is seen upon the shores after the water is dried in the summer-time; and that the clay begins where the mud ceases. Professor Bergman has likewise hinted, that pure clay may be a calcareous earth combined with some acid not yet discovered; "but (says he) compositions of this kind ought to be considered as primitive substances, with respect to our knowledge of them, till they shall be experimentally decomposed: for no sound knowledge in natural philosophy can be obtained from the consideration of mere possibilities; since daily experience shows, that even the most probable suppositions have proved false, when the means of putting them to the test have afterwards been found out."— "Now, therefore, (says M. Magellan), that the *argillaceous* is acknowledged to be a simple primitive earth, which cannot be decomposed into any other principles, nor formed by the combination of any other simple substances we know, we ought to rest satisfied at present without endeavouring to account for its formation."

The principal species of the argillaceous earths or clays are,

1. The *argilla acuta*, or *lac lune*. It is generally found in small cakes of the hardness of chalk; like which, also, it marks white. Its hardness is nearly like that of the steatites, and it feels less fat than clays commonly do. It is of a snow-white colour, and about the specific gravity of 1.669. When examined with a microscope, it is found to consist of small transparent crystals; and, from Mr Schreber's experiments, appears to be an argillaceous earth saturated with fixed air, in consequence of which it effervesces with acids. It contains also a small quantity of calcareous earth, and sometimes of gypsum, with some slight traces of iron. It is found at Halles.

2. The *argilla apyra*, porcelain clay, the kaolin of the

Clay.

the Chinese, is very refractory in the fire, and cannot in any common strong fire be brought into fusion farther than to acquire a tenacious softness without losing its form. When broken, it has then a dim shining appearance, and is of a solid texture; strikes fire with steel; and has consequently the best chemical properties of any substance whereof vessels can be made. It is found of an excellent quality in Japan, and likewise in different parts of Europe. In Sweden it is met with in coal-pits between the strata of coal. Cronstedt informs us, that he has seen the root of a tree entirely changed into this kind of earth.

M. Magellan remarks, that we must be careful to distinguish between the pipe-clay of which there is plenty in Devonshire, and that used in the porcelain manufactures. The former, in a strong fire, burns to a bluish grey or pigeon colour, the latter remains white. The porcelain clay, according to our author, seems to be only a decayed feldt-spar; and, consequently, according to Mr Bergman, contains magnesia. Our porcelain clay contains likewise quartz, crystals, and mica, parts of the granite which it originally composed. Before it is used, the quartz must be separated, but the mica remains.

3. Combined with phlogiston, and including the white tobacco-pipe clay, with others of a grey, black, or violet colour. Mr Kirwan observes, that many of the white clays become grey in a low degree of heat, because the mineral oil with which they are mixed burns to a kind of coal, and tinges them; but this being consumed in a stronger heat, they again become white. The other clays evidently contain phlogiston; in consequence of which, they become quite black internally on being exposed to a quick and strong fire, assuming the appearance of common flints both in colour and hardness; but if heated by degrees, they are first white, and afterwards of a pearl colour. They contain a larger quantity of the inflammable principle in proportion to their apparent fatness; which may be judged of both by their smoothness and unctuousity, and by their shining when scraped with the nail. "It is difficult (says M. Magellan) to determine whether this strongly adherent phlogiston is the cause of the above-mentioned pearl-colour, or prevents them from being burned white in a strong fire; yet no heterogeneous substance can be extracted from them except sand, which may be separated from some by means of water, but does not form any constituent part of clay. If they be boiled in aqua-regis in order to extract their iron, they lose their viscosity." In the less unctuous clays, our author has found pure quartz in greater and smaller grains, and he has likewise found that clays of this kind sometimes attract phlogiston in the fire.

4. The *lithomarga*, or stone-marrow, when dry, feels as fat and slippery as soap, but is not wholly diffusible in water. When mixed with this fluid, it falls to pieces either in larger or smaller masses, so as to assume the appearance of curds. In the fire it readily melts into a white or reddish frothy slag; which, in consequence of its internal vacuities, is then of a larger volume than it formerly was. In the mass it breaks into irregular scaly pieces. This kind is called fuller's earth (*waklera*) in Sweden. In Crim Tartary it is called *keffekil*; and is said to be used there instead of soap, for washing. It is found also in the Austrian Flanders in the barony of Hierges, near Niverle, belong-

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ing to the Duke of Arenberg. It was showed to M. Magellan by the Duke's chancellor; who, from the uprightnes of his behaviour, has obtained the honourable appellation of *Jean de Bien*. At present it is only found in separate masses; but M. Magellan is of opinion, that some considerable strata of it might be met with, if properly searched for on the spot, by digging the ground to a considerable depth.

To this species also belongs the yellowish-brown earth called *terra lemnia*; which is of a shining texture, and falls to pieces in water with a crackling noise. According to Mr Bergman, this is a compound of the argillaceous, siliceous, and magnesian earths. Its component parts are the same as those of the talc, but looser, and in different proportions. M. Cronstedt remarks, that "the terra lemnia cannot properly be called a fuller's earth, as it is never used in the fulling business, nor is likely to be applicable to it, as being besides very scarce. The true fuller's earth of England agrees entirely with the description of the stone-marrow already given, and in colour and texture resembles that from Sweden, which is composed of coarse particles. The Hampshire fuller's earth is of a dusky brown, inclining to green, with veins of a faint yellow; and contains a small portion of muriatic acid, and of a yellow oily matter. Every fine clay that does not communicate a colour, is in general fit for the business of fulling; even the excrements of hogs, mixed with human urine, are used for this purpose in various woollen manufactures. The properties required in a good fuller's earth are, that it shall carry off the oily impurities of the woollen cloth, and at the same time thicken it by causing the hairs or fibres to curl up. The best is composed of fine siliceous earth with argilla, and a little calcareous earth without vitriolic acid; a little martial calx, however, is not hurtful, if unattended with any active menstruum.

The terra lemnia is so called from the island of Lemnos, now Statimane, in the Ægean Sea, from whence it is procured. It is likewise called the *Turkish earth*, on account of its being impressed with the seal of the Grand Signior.

The Swedish fuller's earth is found in a mountain named *Osmund* at Ratwick in East Dalecarlia. The stratum is three feet thick, and the mountain itself is chiefly calcareous. It is of an ash colour; harder, and of finer particles, than the Lemnian earth.

"All these substances (the fuller's earths)," says M. Magellan, "are akin to zeolites, and likewise resemble some marles. But in the Osmundian earths, the connection of the parts is not merely mechanical, as in marles; which on that account effervesce strongly with acids, though they often contain a smaller quantity of calcareous earth or magnesia than the litho marga."

The following table shows the proportion of ingredients in each of the fuller's earths.

	Terra lemnia.	Osmund fuller's earth.	Hampshire do.
100 parts contain } Siliceous earth, 47.0	60.0	51.8	
	Chalk, 5.4	5.7	3.3
	Magnesia, 6.2	0.5	0.7
	Argilla, 19.0	11.1	25.0
	Calx of iron, 5.4	4.7	3.7
	Water or volatile matter, 17.0	18.0	15.5

5.

Clay.

5. *Bolus*, bole, or iron clay, is a fine and dense clay of various colours, containing a large quantity of iron, so that it is very difficult, or even impossible, to know the natural and specific qualities of the bole itself. It is not so easily softened in water when indurated as the porcelain and common clays; but either falls to pieces in the form of small grains, or repels the water, and cannot be made ductile. In the fire it grows black, and is then attracted by the loadstone.

M. Kirwan thinks the term *bole* a word of such uncertain signification, that it ought to be banished from common use, or at least from every mineralogical treatise. "Some (says he) bestow this name upon very smooth compact clays, consisting of the finest particles: others require besides, that their colour should be red, yellow, or brown, and that they should contain iron." The red generally blacken in the fire; but, according to Rinman, without becoming magnetic. The yellow, when heated, become first red; and, in a strong heat, brown or black. What the Italians call *Calamita Bianca*, according to Ferber, is a white bole striated like asbestos. The true *figillata rubra* contains calcareous earth; and, according to Rinman, becomes magnetic after torrefaction. The yellow, red, and brown clays contain most iron, sometimes dispersed through their substance, and sometimes united to the siliceous part: in this case they are fusible with greater difficulty. The yellow calx of iron is more dephlogisticated than the red, and the red than the brown. These clays do not become magnetic after calcination, unless they contain 14 or 15 *per cent.* of iron.

The soft boles are of various colours, as red, yellow, green, grey, and bluish grey. The red kind is that used in medicine under the name of *Armenian bole*; an indurated kind of which affords the material for the red pencils. Formerly, when the *terra figillata* were esteemed in medicine, the druggists endeavoured to have them of all different colours; for which reason they not only sealed up all the natural sorts of clay, but such as had been mixed and coloured artificially; whence the class of boles was supposed to be much more numerous than it really is. Cronstedt concludes, that "since the greatest part of these *terra figillata* contain iron, the bole must be a martial clay; and as such it seems to be more fit for medical uses than other clays, if any dead earth must be used internally, when there is such an abundance of finer substances.

The indurated bole or slate is of a reddish brown or grey colour; and is found in most coalleries between the seams of coal. It is met with frequently in pieces like nuts of various sizes; which, when broken, exhibit impressions of plants as the nodules of copper slate from Ilmenäus contain fish.

6. With scaly particles, the *horn-blende* of the Swedes. This is called *horn rock-stone* by Wallerius, who places it among the apyrous stones; but Linnaeus has put it among the calcareous stones by the name of *horn-slag*, *talcum corneum*. It is named *talcum striatum* by Rinman, and has the following properties: 1. Its specific gravity is never less than 2.660, and frequently rises to 3.880. 2. It has a strong earthy smell, which is particularly sensible on breathing upon it, or pouring hot water on it. 3. A toughness or

vifcidity is perceived on pounding it in a mortar, as is the case with mica and horn; from which last it derives its name. 4. When pounded it affords a greenish-grey powder. 5. It is said to be fusible *per se*; though Mr Kirwan informs us, that he could never melt this stone even by the assistance of a blow-pipe. This stone is frequently mixed with pyrites. It is distinguished from the martial glimmer or mica by the scales being less shining, thicker, and rectangular. It is of two kinds, black, and greenish. The former, when rubbed fine, affords a green powder. It is the *corneum nitens* of Wallerius, and is either of a lamellar or granular texture; the former being sometimes so soft as to be scraped with the nail, and its surface frequently as glossy as if it had been greased; the specific gravity being from 3600 to 3880. It does not detonate with nitre, but becomes of a snuff-colour when heated, and then slightly effervesces with diluted nitrous acid; the solution assuming a greenish colour. In order to discover the principle on which the smell of this stone depends, Mr Kirwan boiled its powder in water; but could not discover, either by the taste or by any other method, that any thing had been communicated to the fluid. An hundred parts of the lamellar sort contain 37 of siliceous earth, 22 of pure argillaceous earth, 16 of magnesia, and two of calcareous earth, both in a mild state, together with 23 of calx of iron not much dephlogisticated. The greenish kind is of a granular texture, or striated; the specific gravity of a specimen examined by Mr Kirwan was 2683. The common pale, greenish-grey whetstone seems to belong to this species.

7. The *zeolite* was first discovered by Cronstedt, and by him reckoned a genus distinct from every other; but on a proper chemical analysis, both Kirwan and Bergman have reckoned them among the argillaceous earths; and here M. Magellan observes, that, "it is not so much the quantity as the intensity or predominancy of property that should in general direct us in the classification of mineral bodies; not to mention, that if the rule respecting *quantity* were rigorously adhered to, the two primitive earths, magnesia and argill, would not be found among the earths; which would doubtless be an absurdity, as Bergman has rightly observed."

The properties of zeolite are, 1. It is a little harder than the fluors, and other calcareous spars; but is scratched by steel, and does not strike fire with it. 2. It melts easily in the fire, with an ebullition like borax, into a white frothy slag, which cannot, without great difficulty, be brought into a solid transparent state. 3. It dissolves more readily in the fire by the help of mineral alkali, than that of borax or microcosmic salt. 4. It does not ferment with the latter as lime does, nor with the former as those of the gypsum kind. 5. It dissolves very slowly, and without effervescence, in acids, as oil of vitriol and spirit of nitre. With the former a great heat arises, and the powder unites into a mass. By distillation with nitrous acid, some fixed and dephlogisticated airs are procured. Some sorts of zeolite, however, found in Sweden, do not melt by themselves in the fire, but are readily dissolved by the acid of nitre into a kind of jelly. 7. The fusible kinds, in the very moment of fusion, emit a phosphoric light.

Clay.

Clay.

With regard to the component parts of zeolite, M. Bayen is of opinion that it consists of equal parts of siliceous and argillaceous earths, which is also confirmed by M. Guettard; but according to Mr Bergman's analysis, the red zeolite of Adelfores contains 80 *per cent.* of siliceous earth; 9.5 of argillaceous; 6.5 of pure calcareous earth; and four of water. The white, oval, radiated zeolite of *Feroe* in Iceland, contains, according to M. Pelletier, 50 of filix; 20 of argillaceous earth; 8 of pure calcareous earth; and 22 of water. According to Mr Mayer's analysis, a radiated zeolite yielded 58.33 *per cent.* of filix: 17.5 of argill; 6.66 of lime; and 17.5 of water. In general the crystallized kind contain more water than the other. At any rate, though the proportions of ingredients are various, filix always seems to predominate.

In general the zeolites are of a crystalline form, composed of imperfect pyramids turned towards a common centre; their form is sometimes globular, but seldom prismatic. Messrs Faujas and Rome de l'Isle mention zeolites, of a cubic and other forms, found in Iceland, the Cyclops Islands near Etna in Sicily, the island of Bourbon, &c. their specific gravity is from 2.100 to 3.150; but this last is very rare. Fabroni mentions a semitransparent zeolite from Garphyttan in Sweden, which has an electric power. To the species of zeolite also belongs the lapis lazuli, from which ultramarine is made. See *Lapis Lazuli*, and *ULTRAMARINE*.

The sparry zeolite resembles a calcareous spar; but is of a more irregular figure, as well as more brittle. It is found in Sweden of a light red or orange colour.

The crystallized zeolites are met with in greater plenty than the other kinds; and are found in Sweden of various forms and colours. Brunich informs us, that in the north, the countries of the zeolites and of the chalcedony and casbolong, pieces are shown as curiosities, in which the zeolite is inclosed in the chalcedony; but this is not sufficient to prove that the one was produced from the other.

Cronstedt observes, that the zeolites have nearly the same qualities in the fire as the boles. The property of swelling in the fire, like borax, is peculiar to the crystallized kind; the others rise only in some small blisters, which are of a white colour at their edges, and instantly cover themselves with a white glassy skin, after which they become quite refractory. According to Bergman they have a great affinity to the schoerls; but their component parts are not so strongly connected as to hinder the action of acids, which can destroy their combination, without being previously treated with fixed alkali; this last being a necessary requisite for analysing schoerls. Mr Pazumot is of opinion that the zeolites cannot be a volcanic production, but only a secondary one formed by the decomposition of volcanic earths. Pure basalt and volcanic lavas have indeed the same component parts with the zeolites: and these last have not yet been found but among volcanic matters: but, as M. Faujas observes, there are many instances of true zeolites being quite buried within the bodies of solid basalt, some being only fragments, and others complete zeolites; "which," (says M. Magellan), undeniably proves, that the lat-

Clay.

ter have been completely formed before these volcanic masses were produced by subterraneous fires.

8. *Tripoli* used in polishing hard substances. See *TRIPOLI*.

9. The common or *brick clay*, has the following properties. 1. It acquires a red colour, more or less deep, in the fire. 2. It melts pretty easily into a greenish glass. 3. It consists of a mixture of pure clay, siliceous and martial earth, containing also a small quantity of vitriolic acid. It is found in a state of purity of various colours, as red, pale-red, grey, and blue. In some provinces of Sweden a white kind is met with, often in a slaty form, with fine sand between its strata; which when burnt is of a paler colour than any of the preceding, and does not cake well in the fire; it is also more fusible than any of them. In this country also is found a species called, by Cronstedt, *fermenting clay*, *argilla intumescens*. It is very like the preceding as to the external appearance and other qualities: but, when both are found in the same place, they seem to be different in regard to the fermenting property of this variety. "This fermentation (says our author) cannot be the effect of the sand mixed with it, because sand is found in them both: and besides, this kind ferments in the same manner when it is mixed with gravel or stones; and then it ferments later in the spring than the other, since by the stones, perhaps, the frost is longer retained in it.

This kind of clay is also found mixed with calcareous earth, in which case it is called *MARLE*. It is also found in an indurated state, and that either pure or mixed with phlogiston and a large quantity of vitriolic acid; in which case it constitutes the ores of alum. It is also found in this state mixed with calcareous earth, forming stone marle.

10. *Argillaceous fossil stones*. The most remarkable of these are, 1. The *schistus tegularis*, or common house-slate. It is of a bluish purple colour, does not strike fire with steel, and may be slightly scraped with the nail. It is very brittle, of a lamellar texture, and of the specific gravity 2.876; giving a clear sound when in pieces of half an inch thick. It is never transparent, but has a moderately fine grain, effervescing slightly with acids when powdered, but not otherwise. In the fire it loses upwards of 2 *per cent.* of its weight; detonates slightly with nitre, and then assumes a brownish red colour; however, it is not rendered magnetic by calcination. By a vehement heat it is fusible *per se*, and melts into a black scoria. It melts with difficulty in the dry way with mineral alkali, but more easily with borax and microcosmic salt, with little effervescence; and it melts with equal ease in chalk or clay vessels. By digestion for two months in dephlogisticated spirit of nitre, the menstruum assumes a green colour. According to Mr Kirwan, it contains 26 parts of argillaceous earth; 46 of siliceous; 8 of magnesia; 4 of calcareous earth; and 14 of iron. Part of the iron seems to be phlogisticated by a mineral oil united with it; and part dephlogisticated, or in a red calx. This last is united to the argillaceous part as well as to the siliceous, and cannot be separated without great difficulty. The colour of this slate varies to the pale, to the slightly purple, and to the bluish. The laminæ of the last are thicker, their texture coarser, and they contain more siliceous earth

and

Clay. and less iron than the foregoing. Other stones are also made use of for covering houses; but their laminæ are much thicker, their surface more uneven, and their texture coarser. They belong chiefly to the sand-stones, or to the calcareous kinds. The dark blue *schistus scriptorius* contains more magnesia and less iron than the foregoing, and therefore effervesces more briskly with acids. Its specific gravity is 2701. 2. The *pyriticous schistus*, to which also belongs that from which alum is made, is of a grey, blue, brown, or black colour; and is more or less decomposable by its exposure to air, according to the quantity of the pyrites, and the state of the iron in it. When the iron is in a semiphlogisticated state, the schistus will be easily decomposed; but much more slowly, if at all, when the calx is much dephlogisticated. 3. The *bituminous schistus* is generally black, of a lamellar texture, and various degrees of hardness. It never gives fire with steel, but emits a strong smell when heated, and sometimes without being heated. When scraped it does not produce any white mark like the other schistus. M. Magellan mentions a specimen found in Yorkshire which burned like coal, with a strong smell of bitumen.

There are various other species of argillaceous earths, as the flag-stone, sand or free stone, toad-stone, &c. for a description of which see these articles.

Clays are of very extensive use in common life. Some varieties of the porcelain clay become perfectly white in the fire; and it is not to be doubted but these are used in the porcelain manufactories. The indurated porcelain clay, however, cannot be easily heated without cracking; and therefore we can go no great length in hardening it. The boles have almost lost their value as medicines; but are still employed to make bricks, potter's ware, &c. Tripoli is of indispensable use in the business of polishing, and is likewise, on many occasions, used for making moulds to cast metals in.

In agriculture, clay is indispensably necessary; excepting, however, according to Cronstedt, the white and fermenting clays above mentioned, for which no use has yet been discovered. By its coherency clay retains humidity; on which perhaps its chief power of promoting vegetation depends.

Dr Black observes, that clay, when mixed with a large proportion of water, and kneaded a little, becomes a remarkable ductile adhesive mass, which is not easily dissolved in more water, and to render it thin and fluid requires great trouble. Hence it is employed for confining large quantities of water, as in making canals and dykes: but the soil must either contain a great quantity of clay naturally, or some quantity of it must be spread on the bottom; or the water itself must deposit a quantity of clay sufficient to render it tight. Hence also we see the bad effects of allowing cattle to tread much in clay-grounds when wet; for the clay is reduced to such an adhesive mass as not to admit the roots to penetrate the soil, or the water to enter to the roots.

Clay is used in the refining of sugar; for which no other property is requisite than that it may not dry too soon: but that species used in fulling must, if we were to judge *à priori*, besides the fineness of its par-

ticles, be of a dry nature, or such as attracts oils; tho' this quality perhaps may not be found in all those clays that are now employed in the business. According to Fabroni, the pure white clay being calcined in a strong heat, acquires a phosphorecent quality.

CLAY, a town of Norfolk in England, seated on an arm of the sea between two rivers, in E. Long. o. 30. N. Lat. 47. 28.

CLAY-Lands, those abounding with clay, whether black, blue, yellow, white, &c. of which the black and the yellow are the best for corn.

All clay-soils are apt to chill the plants growing on them in moist seasons, as they retain too much water: in dry seasons, on the contrary, they turn hard and choke the plants. Their natural produce is weeds, goose-grass, large daisies, thistles, docks, poppies, &c. Some clay-soils will bear clover and rye-grass; and, if well manured, will produce the best grain: they hold manure the best of all lands; and the most proper for them are horse-dung, pigeon's dung, some kinds of marie, folding of sheep, malt-dust, ashes, chalk, lime, foot, &c.

CLAYTON (Dr Robert), a prelate of great learning, of distinguished worth and probity, and a respectable member of the Royal and Antiquarian Societies at London, was advanced to the bishopric of Killala, Jan. 23. 1729; translated to the see of Cork, Dec. 19. 1735; to that of Clogher, Aug. 26. 1745; and died much lamented, Feb. 25. 1758. His publications are, 1. A Letter in the Philosophical Transactions, n^o 461, p. 813. giving an account of a Frenchman 70 years old (at Inishanan, in his diocese of Corke), who said he gave suck to a child.—2. The Chronology of the Hebrew Bible vindicated, &c. 1751, 4to.—3. An impartial Inquiry into the Time of the Coming of the Messiah; 1751, 8vo.—4. An Essay on Spirit, 1751, 8vo.—5. A Vindication of the Histories of the Old and New Testament, in Answer to the Objections of the late lord Bolingbroke; in Two Letters to a young Nobleman, 1752, 8vo, reprinted in 1753.—6. A defence of the Essay on Spirit, with Remarks on the several pretended Answers; and which may serve as an Antidote against all that shall ever appear against it, 1753, 8vo.—7. A Journal from Grand Cairo to Mount Sinai, and back again, translated from a Manuscript written by the Prefetto of Egypt, in Company with some Missionaries *de propaganda fide* at Grand Cairo: to which are added, Remarks on the Origin of Hieroglyphics, and the Mythology of the ancient Heathens, 1753, 8vo, two editions 4to and 8vo. It was soon after this publication that his Lordship became (in March 1754) a fellow of the Society of Antiquaries.—8. Some Thoughts on Self-love, Innate Ideas, Free-will, Taste, Sentiments, Liberty, and Necessity, &c. occasioned by reading Mr Hume's Works, and the short Treatise written in French by Lord Bolingbroke on Compassion, 1754, 8vo.—9. A Vindication of the Histories of the Old and New Testament, Part II. Adorned with several Explanatory Cuts, 1754, 8vo.—10. Letters between the bishop of Clogher and Mr William Penn, concerning Baptism, 1755, 8vo.—11. A Speech made in the House of Lords in Ireland, on Monday, Feb. 2. 1756, for omitting the Ni-

Clay.
Clayton.

Claytonia
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Cleats.

cene and Athanasian Creeds out of the Liturgy, &c. 1756, 8vo.—12. A Vindication, part III. 1758, 8vo. The three parts of the "Vindication, with the Essay on Spirit, were reprinted by Mr Bowyer, in one vol. 8vo, 1759; with some additional notes, and an index of texts of scripture illustrated or explained.

CLAYTONIA, in botany: A genus of the monogynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 13th order, *Succulenta*. The calyx is bivalved; the corolla pentapetalous; the stigma trifid; the capsule trivalved, unilocular, and trispermous. There are two species, natives of America. They are very low herbaceous plants, with white flowers; and are possessed of no remarkable property.

CLAZOMENÆ ARUM, (Herodotus, Strabo, Velieus, Pliny); *Clazomena, æ*, (Mela); one of the twelve ancient cities of Ionia. The country of Anaxagoras; situated in the neighbourhood of Colophon. The city was small, its port on the N. N. W. side of the island. Traces of the walls, Dr Chandler informs us, are found by the sea, and in a hill are vestiges of a theatre. Three or four trees grow on it; and by one is a cave hewn in the rock, and affording water. A vaulted room with a chimney at one end, and a hovel or two made with stones piled, are all the present structures; and these are chiefly frequented by fishermen and by persons employed to watch and to drive away birds when the grain ripens. Referring to this confined situation of Clazomenæ, a famous sophist, when importuned to adorn his native city by residing in it rather than at Smyrna, replied, *The nightingale refuses to sing in a cage.*

CLEANTHES, a stoic philosopher, disciple of Zeno, flourished 240 years before Christ. He maintained himself in the day by working in the night: being questioned by the magistrates how he subsisted, he brought a woman for whom he kneaded bread, and a gardener for whom he drew water; and refused a present from them. He composed several works, of which there are now only a few fragments remaining.

CLEAR, as a naval term, is variously applied to the weather, the sea-coasts, cordage, navigation, &c. The weather is said to be clear when it is fair and open, as opposed to cloudy or foggy. The sea-coast is called clear when the navigation is not interrupted, or rendered dangerous by rocks, sands, or breakers, &c. It is expressed of cordage, cables, &c. when they are unembarrassed or disentangled, so as to be ready for immediate service. It is usually opposed to *foul* in all these senses.

CLEARCHUS, a tyrant of Heraclea in Pontus, who was killed by Chion and Leonidas, Plato's pupils, during the celebration of the festivals of Bacchus. He had enjoyed the sovereign power during 12 years. A Lacedæmonian sent to quiet the Byzantines. He was recalled, but refused to obey, and fled to Cyrus the younger, who made him captain of 13,000 Greek soldiers. He obtained a victory over Artaxerxes; who was so enraged at the defeat, that when Clearchus fell into his hands by the treachery of Tissaphernes, he put him immediately to death.

CLEATS, in naval affairs, pieces of wood having one or two projecting ends whereby to fasten the ropes: some of them are fastened to the shrouds below

for this purpose, and others nailed to different places of the ship's deck or sides.

CLECHE, in heraldry, a kind of cross, charged with another cross of the same figure, but of the colour of the field.

CLEDGE, among miners, denotes the upper stratum of fuller's earth.

CLEDONISM, CLEDONISMUS, a kind of divination, in use among the ancients. The word is formed from *κλδων*, which signifies two things, *rumor*, "a report," and *avis*, "a bird." In the first sense, cledonism should denote a kind of divination drawn from words occasionally uttered. Cicero observes, that the Pythagoreans made observation not only of the words of the gods, but of those of men; and accordingly believed the pronouncing of certain words, v. g. *incendium*, at a meal, very unhappy. Thus, instead of prison, they used the word *domicilium*; and to avoid *erinyes*, furies, said *eumenides*. In the second sense, *cledonism* should seem a divination drawn from birds; the same with *ornithomantia*.

CLEEVERS. See CLIVERS.

CLEF, or CLIFF, in music, derived from the Latin word *clavis*, a *key*; because by it is expressed the fundamental sound in the diatonic scale, which requires a determined succession of tones or semitones, whether major or minor, peculiar to the note from whence we set out, and resulting from its position in the scale. Hence, as it opens a way to this succession, and discovers it, the technical term *key* is used with great propriety. But clefs rather point out the position of different musical parts in the general system, and the relations which they bear one to another.

A clef, says Rousseau, is a character in music placed at the beginning of a stave, to determine the degree of elevation occupied by that stave in the general claviary or system, and to point out the names of all the notes which it contains in the line of that clef.

Anciently the letters by which the notes of the gamut had been signified were called *clefs*. Thus the letter A was the clef of the note *la*, C the clef of *ut*, E the clef of *mi*, &c. In proportion as the system was extended, the embarrassment and superfluity of this multitude of clefs were felt.

Gui d'Arezzo, who had inverted them, marked a letter or clef at the beginning of each line in the stave; for as yet he had placed no notes in the spaces. In process of time they marked no more than one of the seven clefs at the beginning of one of the lines only; and this was sufficient to fix the position of all the rest, according to their natural order: at last, of these seven lines or clefs they selected four, which were called *claves signate*, or *discriminating clefs*; because they satisfied themselves with marking one of them upon one of the lines, from which the powers of all the others might be recognized. Presently afterwards they even retrenched one of these four, viz. the gamma, of which they made use to mark the *sol* below, that is to say, the hypoproslambanomena added to the system of the Greeks.

In reality Kircher asserts, that if we understood the characters in which ancient music was written, and examined minutely the forms of our clefs, we should find that each of them represents the letter a little altered in its form.

Cleche
||
Clef.

Clef. form, by which the note was originally named. Thus the clef of *sol* was originally a G, the clef of *ut* a C, and the clef of *fa* an F.

Plate
cxxxviii.
fig. 9.

We have then three clefs, one a fifth above the other: the clef of F, or *fa*, which is the lowest; the clef of *ut*, or C, which is a fifth above the former; and the clef of *sol*, or G, which is a fifth above that of *ut*. These clefs, both as marked by foreigners and in Britain, may be seen in art. 170 of Music; upon which it is necessary to remark, that by a remain of ancient practice, the clef is always placed upon a line, and never in a space. It deserves notice, that the clef of *fa* is marked in three different manners: one in music which is printed; another in music which is written or engraven; and a third in the full harmony of the chorus.

By adding four lines above the clef of *sol*, and three lines beneath the clef of *fa*, which gives both above and below the greatest extent of permanent or established lines, it appears, that the whole scale of notes which can be placed upon the gradations relative to these clefs amounts to 24; that is to say, three octaves and a fourth from the F, or *fa*, which is found beneath the first line, to the *fi*, or B, which is found above the last, and all this together forms what we call the *general claviary*; from whence we may judge, that this compass has, for a long time, constituted the extent of the system. But as at present it is continually acquiring new degrees, as well above as below, the degrees are marked by leger lines, which are added above or below as occasion requires.

Instead of joining all the lines, as has been done by Rousseau in his Dictionary, (plate A, fig. 5.) to mark the relation which one clef bears to another, they separate them five by five; because it is pretty nearly within the degrees to which the compass of ordinary voices extends. This collection of five lines is called a *stave*; and in these they place a clef, to determine the names of the notes, the positions of semitones, and to show what station the stave occupies in the claviary or general scale.

In whatever manner we take five successive lines in the claviary, we shall find one clef comprehended; nay, sometimes two; in which case one may be retrenched as useless. Custom has even prescribed which of the two should be retrenched, and which retained; it is this likewise which has determined the number of positions assigned to each clef.

If I form a stave of the first five lines in the claviary, beginning from below, I find the clef of *fa* in the fourth line. This then is one position of the clef, and this position evidently relates to the lowest note; thus likewise it is that of the bass clef.

If I wish to gain a third in ascent, I must add a line above; I must then obliterate one below, otherwise the stave will contain more than five lines. The clef of *fa* then is found transferred from the fourth to the third, and the clef of *ut* is likewise found upon the fifth; but as two clefs are useless, they retrench here that of *ut*. It is evident, that the stave of this clef is a third higher than the former.

By throwing away still one line below to gain another above, we have a third kind of stave, where the clef of *fa* will be found upon the second line, and that of *ut* upon the fourth. Here we leave out the clef of

fa, and retain that of *ut*. We have now gained another third above, and lost it below.

Clef.

By continuing these alterations from line to line, we pass successively through four different positions of the clef of *ut*. Having arrived at that of *sol*, we find it placed upon the second line, and then upon the first. This position includes the five highest lines, and gives the sharpest diapason which the clefs can signify.

The reader may see in Rousseau's Musical Dictionary, Plate A. fig. 5. this succession of clefs from the lowest to the highest; which in all constitutes eight staves, clefs, or different positions of clefs.

Whatever may be the character and genius of any voice or instrument, if its extent above or below does not surpass that of the general claviary, in this number may be found a station and a clef suitable to it; and there are, in reality, clefs determined for all the parts in music. If the extent of a part is very considerable, so that the number of lines necessary to be added above or below may become inconvenient, the clef is then changed in the course of the music. It may be plainly perceived by the figure, what clef it is necessary to choose, for raising or depressing any part, under whatever clef it may be actually placed.

It will likewise appear, that, in order to adjust one clef to another, both must be compared by the general claviary, by means of which we may determine what every note under one of the clefs is with respect to the other. It is by this exercise repeated that we acquire the habit of reading with ease all the parts.

From this manœuvre it follows, that we may place whatever note we please of the gamut upon any line or space whatever of the stave, since we have the choice of eight different positions, which is equal to the number of notes in the octave. Thus you may mark a whole tune upon the same line, by changing the clef at each gradation. The 7th fig. of the same plate in Rousseau's Musical Dictionary, to which we formerly referred, shows by the series of clefs the order of the notes, *re, fa, la, ut, mi, sol, si, re*, rising by thirds, although all placed upon the same line. The fig. following represents upon the order of the same clefs the note *ut*, which appears to descend by thirds upon all the lines of the stave; and further, which yet, by means of changing the clef, still preserves its unison. It is upon such examples as this, that scholars ought to exercise themselves, in order to understand at the first glance the powers of all the clefs, and their simultaneous effect.

There are two of their positions, viz. the clef of *sol* upon the first line, and that of *fa* upon the third, which seem daily to fall more and more into desuetude. The first of these may seem less necessary, because it produces nothing but a position entirely similar to that of *fa* upon the fourth line, from which however it differs by two octaves. As to the clef of *fa*, it is plain, that in removing it entirely from the third line, we shall no longer have any equivalent position, and that the composition of the claviary, which is at present complete, will by these means become defective.

Thus much for Rousseau's account of clefs. He proceeds to explain their transposition; but as this would

render

Cleft
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Clemency.

render the present article too long and intricate, we remit the curious to his *Musical Dictionary*, vol. 1. page 162. See also *Malcom's Dissertation on Music*.

CLEFT, in a general sense, is a space made by the separation of parts. Green timber is very apt to split and cleave in several places, after it is wrought into form; and these cracks in it are very disagreeable to the sight. The common method of the country carpenters is to fill up these cracks with a mixture of grease and saw-dust; but the neatest way of all is, the soaking both sides well with the fat of beef-broth, and then dipping pieces of sponge into the same broth, and filling up all the cracks with them: they swell out so as to fill the whole crack; and accommodate themselves so well to it, that the deficiency is hardly seen.

CLEFTS, or *Cracks*, in farricry, appear on the bought of the patterns, and are caused by a sharp and malignant humour. See FARRICRY, sect. xxxiii.

CLEMA, in antiquity, a twig of the vine, which serves as a badge of the Centurion's office.

CLEMATIS, VIRGIN'S-BOWER: A genus of the polygynia order, belonging to the polyandria class of plants; and in the natural method ranking under the 26th order, *Multiflorique*. There is no calyx; the petals are four, rarely five; the seeds have a train. There are twelve species; all of which, except two, are shrubby climbing plants, very hardy, and adorned with quadrupetalous flowers of red, blue, purple, white, and greenish colours. They are very easily propagated by layers or cuttings. The *vitis alba*, one of the species, is very acrid to the taste, and without any smell. It is frequently used as a caustic, and for cleaning old ulcers. The root is said to be purgative. The leaves of all the species bruised and applied to the skin, burn it into carbuncles as in the plague; and if applied to the nostrils in a sultry day immediately after being cropped, will cause the same uneasy sensation as a flame applied to that part would occasion. Hence the title of *flammula*, or "little flame," by which this genus of plants was formerly distinguished.

CLEMENCY, denotes much the same with mercy; and implies a remission of severity towards offenders. The term is most generally used in speaking of the forgiveness exercised by princes or persons of high authority. It is the result, indeed, of a disposition which ought to be cultivated by all ranks, though its effects cannot be equally conspicuous or extensive. In praise of clemency joined with power, it is observed, that it is not only the privilege, the honour, and the duty of a prince, but it is also his security, and better than all his garrisons, forts, and guards, to preserve himself and his dominions in safety: That that prince is truly royal, who masters himself; looks upon all injuries as below him; and governs by equity and reason, not by passion or caprice. In illustration of this subject, the following examples are selected out of many recorded in history.

Sueton, c. 9.

1. Two patricians having conspired against Titus the Roman emperor, were discovered, convicted, and sentenced to death by the senate: but the good-natured prince sent for them, and in private admonished them, that in vain they aspired to the empire, which was given by destiny; exhorting them to be satisfied with the rank in which by Providence they had been

placed, and offering them any thing else which was in his power to grant. At the same time he dispatched a messenger to the mother of one of them, who was then at a great distance, and under deep concern about the fate of her son, to assure her, that her son was not only alive, but forgiven.

Clemency's

2. Licinius having raised a numerous army, Zofimus says 130,000 men, endeavoured to wrest the government out of the hands of his brother-in-law Constantine the emperor. But his army being defeated, Licinius fled with what forces he could rally to Nicomedia, whither Constantine pursued him, and immediately invested the place: but on the second day of the siege, the emperor's sister intreating him, with a flood of tears, by the tenderness he had ever shown for her, to forgive her husband, and grant him at least his life, he was prevailed upon to comply with her request; and the next day, Licinius, finding no means of making his escape, presented himself before the conqueror, and throwing himself at his feet, yielded to him the purple and the other ensigns of sovereignty. Constantine received him in a very friendly manner, entertained him at his table, and afterwards sent him to Thessalonica, assuring him, that he should live unmolested so long as he raised no new disturbances.

Zof. ii. 674

3. The council of thirty, established at Athens by Lyfander, committed the most execrable cruelties. Upon pretence of restraining the multitude within their duty, and to prevent seditions, they had caused guards to be assigned them, had armed 3000 of the citizens for that purpose, and at the same time disarmed all the rest. The whole city was in the utmost terror and dismay. Whoever opposed their injustice and violence fell a victim to their resentment. Riches were a crime that never failed of drawing a sentence upon their owners, always followed with death and the confiscation of estates; which the thirty tyrants divided amongst themselves. They put more people to death (says Xenophon) in eight months of a peace, than their enemies had done in a war of thirty years. All the citizens of any consideration in Athens, and who retained a love of liberty, quitted a place reduced to so hard and shameful a slavery, and sought elsewhere an asylum and retreat, where they might live in safety. At the head of these was Thrasylbulus, a person of extraordinary merit, and who beheld with the most lively affliction the miseries of his country.

The Lacedemonians had the inhumanity to endeavour to deprive those unhappy fugitives of this last resource. They published an edict to prohibit the cities of Greece from giving them refuge, decreed that they should be delivered up to the thirty tyrants, and condemned all such as should contravene the execution of this edict to pay a fine of five talents. Only two cities rejected with disdain so unjust an ordinance, Megara and Thebes; the latter of which made a decree to punish all persons whatsoever that should see an Athenian attacked by his enemies without doing his utmost to assist him. Lyfias, an orator of Syracuse who had been banished by the thirty, raised 500 soldiers at his own expence, and sent them to the aid of the common country of Eloquence. Thrasylbulus lost no time. After having taken Phytia, a small fort in Attica, he marched to the Piræus, of which he made himself master. The thirty flew thither with their troops,

Clemency. troops, and a battle ensued. The tyrants were overthrown. Critias, the most savage of them all, was killed on the spot: and as the army was taking to flight, Thraſybulus cried out, “Wherefore do you fly from me as from a victor, rather than assist me as the avenger of your liberty? We are not enemies, but fellow-citizens; nor have we declared war against the city, but against the thirty tyrants.” He continued with bidding them to remember, that they had the same origin, country, laws, and religion: he exhorted them to compassionate their exiled brethren, to restore their country to them, and resume their own liberty. This discourse had the desired effect. The army, upon their return to Athens, expelled the thirty, and substituted ten persons to govern in their room, whose conduct proved no better than theirs: but king Pausanias, moved with compassion for the deplorable condition to which a city, once so flourishing, was reduced, had the generosity to favour the Athenians in secret, and at length obtained a peace for them. It was sealed with the blood of the tyrants, who having taken arms to reinstate themselves in the government, were all put to the sword, and left Athens in the full possession of its liberty. All the exiles were recalled. Thraſybulus at that time proposed the celebrated amnesty, by which the citizens engaged upon oath, that all past transactions should be buried in oblivion. The government was re-established upon its ancient foot, the laws were restored to their pristine vigour, and magistrates elected with the usual form.

This (says Rollin) is one of the finest events in ancient history, worthy the Athenian clemency and benevolence, and has served as a model to successive ages in all good governments. Never had tyranny been more cruel and bloody than that the Athenians had lately thrown off. Every house was in mourning, every family bewailed the loss of some relation: it had been a series of public robbery and rapine, in which licence and impunity had authorized all manner of crimes. The people seemed to have a right to demand the blood of all accomplices in such notorious malversations, and even the interest of the state to authorize such a claim, that by exemplary severities such enormous crimes might be prevented for the future. But Thraſybulus rising above these sentiments, from the superiority of his more extensive genius, and the views of a more discerning and profound policy, foresaw, that by giving in to the punishment of the guilty, eternal seeds of discord and enmity would remain, to weaken the public by domestic divisions, when it was necessary to unite against the common enemy, and also occasion the loss to the state of a great number of citizens, who might render it important services from the view of making amends for past misbehaviour.

4. Such conduct, after great troubles in a state, has always seemed, with the ablest politicians, the most certain and ready means to restore the public peace and tranquillity. Cicero, when Rome was divided into two factions upon the occasion of Cæsar’s death, who had been killed by the conspirators, calling to mind this celebrated amnesty, proposed, after the example of the Athenians, to bury all that had passed in eternal oblivion.

5. Cardinal Mazarine observed to Don Lewis de Haro, prime minister of Spain, that this gentle and humane

conduct in France had prevented the troubles and revolts of that kingdom from having any fatal consequences, and “that the king had not lost a foot of land by them to that day;” whereas “the inflexible severity of the Spaniards was the occasion that the subjects of that monarchy, whenever they threw off the mask, never returned to their obedience but by the force of arms; which sufficiently appears (says he) in the example of the Hollanders, who are in the peaceable possession of many provinces, that not an age ago were the patrimony of the king of Spain.”

6. Leonidas the Lacedæmonian having, with 300 men only, disputed the pass of Thermopylæ against the whole army of Xerxes; and being killed in that engagement, Xerxes, by the advice of Mardonius one of his generals, caused his dead body to be hung upon a gallows, making thereby the intended dishonour of his enemy his own immortal shame. But some time after, Xerxes being defeated, and Mardonius slain, one of the principal-citizens of Ægina came and addressed himself to Pausanias, desiring him to avenge the indignity that Mardonius and Xerxes had shown to Leonidas, by treating Mardonius’s body after the same manner. As a farther motive for doing so, he added, that by thus satisfying the manes of those who were killed at Thermopylæ, he would be sure to immortalize his own name throughout all Greece, and make his memory precious to the latest posterity. “Carry thy base counsels elsewhere (replied Pausanias); thou must have a very wrong notion of true glory to imagine, that the way for me to acquire it is to resemble the barbarians. If the esteem of the people of Ægina is not to be purchased but by such a proceeding, I shall be content with preserving that of the Lacedæmonians only, amongst whom the base and ungenerous pleasure of revenge is never put in competition with that of showing clemency and moderation to their enemies, especially after their death. As for the souls of my departed countrymen, they are sufficiently avenged by the death of the many thousand Persians slain upon the spot in the last engagement.”

CLEMENS ROMANUS, bishop of Rome, where he is said to have been born; and to have been fellow-labourer with St Peter and St Paul. We have nothing remaining of his works that is clearly genuine, excepting one epistle, written to quiet some disturbances in the church of Corinth; which, next to holy writ, is esteemed one of the most valuable remains of ecclesiastical antiquity.

CLEMENS Alexandrinus, so called to distinguish him from the former, was an eminent father of the church, who flourished at the end of the second and beginning of the third centuries. He was the scholar of Pantaenus, and the instructor of Origen. The best edition of his works is that in 2 vols folio, published in 1715, by archbishop Potter:

CLEMENT V. (pope), the first who made a public sale of indulgences. He transplanted the holy see to Avignon in France; greatly contributed to the suppression of the knights templars; and was author of a compilation of the decrees of the general councils of Vienna, styled *Clementines*. He died in 1314.

CLEMENT VII. (Julius de Medicis), pope, memorable for his refusing to divorce Catharine of Arragon from Henry VIII.; and for the bull he published

Clemency
||
Clement.

Herod.
lib. ix.
c. 77. 78.

Clement
||
Clenard.

upon the king's marriage with Anne Boleyn: which, according to the Romish authors, lost him England. He died in 1534.

CLEMENT XIV. (Francis Laurentius Ganganelli), the late pope, was born at St Angelo in the duchy of Urbino, in October 1705; and chosen pope, though not yet a bishop, in 1769: at which time the see of Rome was involved in a most disagreeable and dangerous contest with the house of Bourbon. His reign was rendered troublesome by the collision of parties on the affairs of the Jesuits; and it is pretended that his latter days were embittered by the apprehensions of poison. Though this report was probably apocryphal, it is said that he often complained of the heavy burden which he was obliged to bear; and regretted, with great sensibility, the loss of that tranquillity which he enjoyed in his retirement when only a simple Franciscan. He was, however, fortunate in having an opportunity, by a single act, to distinguish a short administration of five years in such a manner as will ever prevent its sinking into obscurity. His death was immediately attributed to poison, as if an old man of 70, loaded with infirmities and disorders, could not quit the world without violence. His proceedings against the Jesuits furnished a plausible pretence for this charge; and the malevolence of their enemies embellished it with circumstances. It even seems as if the ministers of those powers who had procured their dissolution did not think it beneath them to countenance the report; as if falsehood was necessary to prevent the revival of a body which had already sunk, in its full strength, under the weight of real misconduct. The charge was the more ridiculous, as the pontiff had undergone a long and painful illness, which originally proceeded from a suppression of urine, to which he was subject; yet the report was propagated with the greatest industry: and though the French and Spanish ministers were present at the opening of his body, the most horrible circumstances were published relative to that operation. It was confidently told that the head fell off from the body, and that the stench poisoned and killed the operators. It availed but little that the operators showed themselves alive and in good health, and that the surgeons and physicians proved the falsehood of every part of the report. Clement XIV. appears to have been a man of a virtuous character, and possessed of considerable abilities. He died much regretted by his subjects.

CLEMENTINE, a term used among the Augustines, who apply it to a person who, after having been nine years a superior, ceases to be so, and becomes a private monk, under the command of a superior. The word has its rise hence, that pope Clement, by a bull, prohibited any superior among the Augustines from continuing above nine years in his office.

CLEMENTINES, in the canon law, are the constitutions of pope Clement V. and the canons of the council of Vienne.

CLENARD (Nicholas), a celebrated grammarian in the 16th century, was born at Dieft; and after having taught humanity at Louvain, travelled into France, Spain, Portugal, and Africa. He wrote in Latin, 1. Letters relating to his Travels, which are very curious and scarce. 2. A Greek Grammar, which has

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been revised and corrected by many grammarians; and other works. He died at Grenoble in 1542.

CLEOBIS and BITON, two youths, sons of Cydippe the priestess of Juno at Argos. When oxen could not be procured to draw their mother's chariot to the temple of Juno, they put themselves under the yoke, and drew it 45 stadia to the temple, amidst the acclamations of the multitude, who congratulated the mother on account of the piety of her sons. Cydippe intreated the goddesses to reward the piety of her sons with the best gift that could be granted to a mortal. They went to rest and awoke no more; and by this the goddesses showed that death is the only true happy event that can happen to a man. The Argives raised them statues at Delphi.

CLEOBULUS, son of Evagoras, and one of the Grecian sages; he was valiant, a lover of learning, and an enemy to vice. Flourished about 560 years before Christ.

CLEOMBROTUS, a king of Sparta, son of Anaxandrides. He was deterred from building a wall across the isthmus of Corinth against the approach of the Persians, by an eclipse of the sun. He died in the 75th Olympiad, and was succeeded by Plistarchus, son of Leonidas, a minor.

CLEOMBROTUS II. son of Paufanias king of Sparta, after his brother Agesipolis I. He made war against the Bœotians; and lest he should be suspected of treacherous communications with Epaminondas, he gave that general battle at Leuctra, in a very disadvantageous place. He was killed in the engagement, and his army destroyed, in the year of Rome 382.

CLEOMBROTUS III. a son-in-law of Leonidas king of Sparta, who for a while usurped the kingdom after the expulsion of his father-in-law. When Leonidas was recalled, Cleombrotus was banished, and his wife Chelonis, who had accompanied her father, now accompanied her husband in his exile.

CLEOME. in botany: A genus of the siliquosa order, belonging to the tetradynamia class of plants; and in the natural method ranking under the 25th order, *Putamineæ*. There are three nectariferous glands, one at each sinus of the calyx except the lowest; the petals all rising upwards; the siliqua unilocular and bivalved. There are 15 species; all of them, except two, natives of warm climates. They are herbaceous plants rising from one to two feet high; and are adorned with flowers of various colours, as red, yellow, flesh colour, &c. They are propagated by seeds, and require no other care than what is common to other exotics which are natives of warm countries.

CLEOMENES, king of Sparta, conquered the Argives and freed Athens from the tyranny of the Pisistratidæ. By bribing the oracle he pronounced Demaratus, his colleague on the throne, illegitimate, because he refused to punish the people of Ægina, who had deserted the Greeks. He killed himself in a fit of madness.

CLEOMENES II. succeeded his brother Agesipolis II. He reigned 34 years in the greatest tranquillity, and was father to Acrotatus and Cleonymus. He was succeeded by Areus I. son of Acrotatus.

CLEOMENES III. succeeded his father Leonidas. He was of an enterprising spirit, and resolved to restore the ancient discipline of Lycurgus in its full force.

Cleobis
and Biton
||
Cleomenes

Cleon || **Cleostratus.**
force. He killed the Ephori, and removed by poison his royal colleague Eurydamides, and made his own brother Euclidas king, against the laws of the state, which forbade more than one of the same family to sit on the throne. He made war against the Achæans, and attempted to destroy the Achæan league. Aratus the general of the Achæans, who supposed himself inferior to his enemy, called Antigonus to his assistance; and Cleomeues, when he had fought the unfortunate battle of Sellasia, retired into Egypt to the court of Ptolemy Evergetes, where his wife and children had gone before him. Ptolemy received him with great cordiality; but his successor, weak and suspicious, soon expressed his jealousy of this noble stranger, and imprisoned him. Cleomeues killed himself, and his body was flayed and exposed on a cross, 140 Olymp.

CLEON, the name of several noted men of antiquity. 1. Of an Athenian, who, though originally a tanner, became general of the armies of the state by his intrigues and eloquence. He took Thoron in Thrace, and was killed at Amphipolis in a battle with Brasidas the Spartan general, Olymp. 89th. 2. A general of Messenia, who disputed with Aristodemus for the sovereignty. 3. A statuary. 4. A poet who wrote a poem on the Argonauts. 5. An orator of Halicarnassus who composed an oration for Lyfander, in which he intimated the propriety of making the kingdom of Sparta elective. 6. A Magnesian who wrote some commentaries, in which he speaks of portentous events, &c.

CLEONÆ (anc. geog.), a town of Argolis, above Mycenæ, on the road which leads from Argos to Corinth; standing on an eminence, on every side occupied by houses. In the forest near this town was slain by Hercules the huge lion (Sil. Italicus, Seneca). *Cleonæus* the epithet; *Cleonæum Sidus*, the lion.— Another *Cleonæ* on Mount Athos in Chalcidice.

CLEOPATRA, the celebrated queen of Egypt, was daughter of Ptolemy Auletes. By her extraordinary beauty, she subdued the two renowned Roman generals Julius Cæsar and Marc Antony: the latter of whom, it is thought, lost the empire of Rome by his attachment to her. At length, Marc Antony being subdued by Octavian Cæsar, she tried the force of her declining charms upon the conqueror, but in vain; upon which, expecting no mercy from him, she poisoned herself, 30 years before Christ. According to some authors, she was the restorer of the Alexandrian library, to which she added that of Pergamos; and it is said, that she studied philosophy to console her for the absence of Antony. With her death ended the family of the Ptolemies in Egypt, after it had reigned from the death of Alexander 294 years: for Egypt, after this, was reduced to a Roman province; in which dependence it remained till it was taken from them by the Saracens, A. D. 641.

CLEOPATRIS (anc. geog.), a town of Egypt, on the Arabian Gulf. See **ARSINOË**. Now said to be *Suez*, situated at the bottom of the gulf of the Red Sea. E. Long. 34. 30. N. Lat. 30. 0.

CLEOSTRATUS, a celebrated astronomer born in Tenedos, was, according to Pliny, the first who discovered the signs of the Zodiac; others say, that he only discovered the signs Aries and Sagittarius. He also corrected the errors of the Grecian year about the 306th before Christ.

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CLEPSYDRA, an instrument or machine serving to measure time by the fall of a certain quantity of water.

The word comes from *κλεψύδρα*, *condra*, *ἕρως*, *aqua*, "water"; though there have likewise been clepsydræ made with mercury.

The Egyptians, by this machine, measured the course of the sun. Tycho Brahe, in our days, made use of it to measure the motion of the stars, &c. and Dudley used the same contrivance in making all his maritime observations. The use of clepsydræ is very ancient: they were invented in Egypt under the Ptolemies; as were also sun-dials. Their use was chiefly in the winter; the sun-dials served in the summer. They had two great defects; the one, that the water ran out with a greater or less facility, as the air was more or less dense; the other, that the water ran more readily at the beginning than towards the conclusion. M. Amontons has invented a clepsydra free from both these inconveniences; and which has these three grand advantages, of serving the ordinary purpose of clocks, of serving in navigation for the discovery of the longitude, and of measuring the motion of the arteries.

Construction of a CLEPSYDRA. To divide any cylindrical vessel into parts to be emptied in each division of time; the time wherein the whole, and that wherein any part, is to be evacuated, being given.

Suppose, *v. gr.* a cylindrical vessel, whose charge of water flows out in twelve hours, were required to be divided into parts to be evacuated each hour. 1. As the part of time 1 is to the whole time 12; so is the same time 12 to a fourth proportional, 144. 2. Divide the altitude of the vessel into 144 equal parts: here the last will fall to the last hour; the three next above to the last part but one; the five next to the tenth hour, &c.; lastly, the 23 last to the first hour. For since the times increase in the series of the natural numbers 1, 2, 3, 4, 5, &c. and the altitudes, if the numeration be in retrograde order from the twelfth hour, increase in the series of the unequal numbers 1, 3, 5, 7, 9, &c. the altitude, computed from the twelfth hour, will be as the squares of the times 1, 4, 9, 16, 25, &c. therefore the square of the whole time 144 comprehends all the parts of the altitude of the vessel to be evacuated. But a third proportional to 1 and 12 is the square of 12, and consequently it is the number of equal parts into which the altitude is to be divided, to be distributed according to the series of the unequal numbers, through the equal intervals of hours. Since in lieu of parts of the same vessel, other less vessels equal thereto may be substituted; the altitude of a vessel emptied in a given space of time being given, the altitude of another vessel to be emptied in a given time may be found; *viz.* by making the altitudes as the squares of the times. For a further description, with a figure, see **HYDROSTATICS**.

CLERC (John le), a most celebrated writer and universal scholar, born at Geneva in 1657. After he had passed through the usual course of study at Geneva, and had lost his father in 1676, he went to France in 1678; but returning the year after, he was ordained with the general applause of all his examiners. In 1682, le Clerc visited England with a view to learning the language. He preached several times in the French churches

Clerc. churches in London, and visited several bishops and men of learning: but the smoky air of the town not agreeing with his lungs, he returned to Holland within the year, where he at length settled. He preached before a synod held at Rotterdam by the remonstrants in 1684; and was admitted professor of philosophy, polite literature, and the Hebrew tongue, in their school at Amsterdam. The remainder of his life affords nothing but the history of his works, and of the controversies he was engaged in; but these would lead into too extensive a detail. He continued to read regular lectures; and because there was no single author full enough for his purpose, he drew up and published his *Logic*, *Ontology*, *Pneumatology*, and *Natural Philosophy*. He published *Ars Critica*; a Commentary on the Old Testament; a Compendium of Universal History; an Ecclesiastical History of the two first Centuries; a French Translation of the New Testament, &c. In 1686, he began, jointly with M. de la Croze, his *Bibliothèque Universelle et Historique*, in imitation of other literary journals; which was continued to the year 1693, inclusive, in 26 vols. In 1703, he began his *Bibliothèque Choisie*, and continued it to 1714, and then commenced another work on the same plan called *Bibliothèque Ancienne et Moderne*, which he continued to the year 1728; all of them justly deemed excellent stores of useful knowledge. In 1728, he was seized with a palsy and fever; and after spending the last six years of his life with little or no understanding, died in 1736.

CLERC (John le), called *Chevalier*, an eminent historical painter, was born at Nanci in 1587, but studied in Italy, where he resided for twenty years; and was a disciple of Carlo Venetiano, with whom he worked a long time, and whose style he so effectually studied and imitated, that several of the pictures which were finished by le Clerc were taken for the work of Venetiano. He was most highly esteemed at Venice for his extraordinary merit; and as a token of public respect, he was made a knight of St Mark. His freedom of hand was remarkable; he had a light pencil; and in his colouring he resembled his master. He died in 1633.

CLERC (Sebastian le), engraver and designer in ordinary to the French king, was born at Metz in 1637. After having learnt designing, he applied himself to mathematics, and was engineer to the marshal de la Ferté. He went to Paris in 1665, where he applied himself to designing and engraving with such success, that M. Colbert gave him a pension of 600 crowns. In 1672, he was admitted into the royal academy of painting and sculpture; and in 1680 was made professor of geometry and perspective in the same academy. He published, besides a great number of designs and prints, 1. A Treatise on theoretical and practical Geometry. 2. A Treatise on Architecture; and other works: and died in 1714.—He was an excellent artist, but chiefly in the petit style. His genius seldom exceeds the dimensions of six inches. Within those limits he could draw up 20,000 men with great dexterity. No artist except Callot and Della Bella could touch a small figure with so much spirit. His most esteemed prints are: 1. *The passion of our Saviour*, on 36 small plates, lengthwise, from his own compositions. The best impressions are without the borders. 2. The

miracle of the feeding five thousand, a middling sized plate, lengthwise. In the first impressions, which are very rare, a town appears in the back-ground; in place of which a mountain is substituted in the common ones. 3. *The elevation of the large stones used in building the front of the Lowore*, a large plate, lengthwise. The first impressions are without the date 1677, which was afterwards added. 4. *The academy of the sciences*, a middling sized plate, lengthwise. The first impressions are before the skeleton of the stag and tortoise were added. The second impressions are before the shadow was enlarged at the bottom, towards the right hand side of the print. Both these impressions are very scarce. The first is rarely met with. This print was copied for Chambers's Dictionary. 5. *The May of the Gobelins*, a middling-sized plate, lengthwise. The first impression is before the woman was introduced, who covers the wheel of the coach. 6. *The four conquests*, large plates, lengthwise, representing the taking of Tournay, the taking of Douay, the defeat of the comte de Marsin, and the Switzerland alliance. 7. *The battles of Alexander*, from Le Brun, six small long plates, including the title, which represents the picture gallery at the Gobelins. The first impressions of the tent of Darius, which plate makes part of this set, is distinguished by the shoulder of the woman, who is seated in the front, being without the shadow, which was afterwards added; for which reason they are called *the prints with the naked shoulder*. 8. *The entry of Alexander into Babylon*, a middling-sized plate, lengthwise. In the first impressions, the face of Alexander is seen in profile; in the second, it is a three quarter face, and therefore called *the print with the head turned*.

CLERC (George le) count de Buffon, a celebrated naturalist, was born at Montbard, in Burgundy, the 7th of September 1707: his father was a counsellor of the parliament of Dijon, and the son was destined to the same office, if science had not drawn him away from the law. He studied at Dijon; and his eager activity, his acuteness, penetration, and robust constitution, fitted him to pursue business and pleasure with equal ardour. His early passion was for astronomy, and the young Le Clerc was never without Euclid in his pocket. At the age of twenty, he went with an English nobleman and his governor to Italy; but he overlooked the choicest remains of art, and, amidst the ruins of an elegant and luxurious people, he first felt the charms of natural history, whose zealous and successful admirer he afterwards proved. On his return to France, he fought, on some occasional quarrel, with an Englishman, whom he wounded, and was obliged to retire to Paris. He there translated Newton's Fluxions, from the Latin, and Hales's Statics from the English, into the French language. He afterwards came to England, at the age of twenty-five; and this journey concluded his travels: he staid here about three months. At the age of twenty-one, he succeeded to the estate of his mother, which was valued at about 300,000 livres (above 12,000 pounds sterling); and he was one of those whose easy or affluent circumstances urge on literary pursuits, and clear the path of some of its thorns. Perhaps this was the period of his retirement to Montbard, where he spent much time, and where his leisure was little interrupted: while in the capital,

Clerg.
Clergy.

his office of intendant of the king's garden and cabinet engaged much of his time. He loved much company, and was partial to the fair; but he loved glory more. He spent 14 hours every day in study; and, when we examine the extent of his knowledge, and the number of his works, we wonder at his having executed so much even in this time. At five in the morning he retired to a pavilion in his vast gardens, and he was then inaccessible. This was, as prince Henry of Prussia called it, the cradle of natural history; but she was indifferently accommodated. The walls were naked, an old writing-table, with pen, ink, and paper, and an elbow chair of black leather, were the only furniture of his study. His manuscripts were in a cabinet in another building, and he went occasionally from one to the other. The eras of Buffon's works are pretty well known. When each was finished, it was put aside, in order that he might forget it, and he then returned to it with the severity of a critic. He was anxious to have it perspicuous; and if those to whom he read his works hesitated a moment, he changed the passage. The works of others he at last read like Magliabechi, the titles, the contents, and the most interesting parts; but he read M. Neckar's *Compte Rendu*, and the Administration of the Finances, at length: he spoke of them also with no little enthusiasm. His favourite authors were Fenelon, Montesquien, and Richardson.

M. de Buffon's conversation was unadorned, rarely animated, but sometimes very cheerful. He was exact in his dress, particularly in dressing his hair. He sat long at table, and then seemed at his ease. His conversation was, at this time, unembarrassed, and his guests had frequently occasion to notice some happy turn of phrase, or some deep reflection. His complaisance was very considerable: he loved praise, and even praised himself; but it was with so much frankness, and with so little contempt of others, that it was never disagreeable. Indeed, when we consider the extent of his reputation, the credit of his works, and the attention with which they were always received, we do not wonder that he was sensible of his own value. It would perhaps have displayed a stronger mind to have concealed it. His father lived to 93, and almost adored his son; his grandfather to 87; and the subject of the present article exceeded only 80. He died in April 1788. Fifty-six stones were found in his bladder; but if he had consented to the operation, he might probably have lived longer. One son remains; who near a high tower in the gardens of Montbard has placed a low column, with the following inscription:

Excelsæ Turri
Humilis Columna,
Parenti suo
Fil. Buffon.

CLERGY, a general name given to the body of ecclesiastics of the Christian church, in contradistinction to the laity. See LAITY.

The distinction of Christians into clergy and laity, was derived from the Jewish church, and adopted into the Christian by the apostles themselves: whenever any number of converts was made, as soon as they were capable of being formed into a congregation or church, a bishop or presbyter, with a deacon, were or-

dained to minister to them. Of the bishops, priests, and deacons, the clergy originally consisted; but in the third century, many inferior orders were appointed, as subservient to the office of deacon, such as ACOULTHISTS, READERS, &c.

This venerable body of men being separate and set apart from the rest of the people, in order to attend the more closely to the service of Almighty God, have therefore large privileges allowed them by our municipal laws: and had formerly much greater, which were abridged at the time of the reformation, on account of the ill use which the Popish clergy had endeavoured to make of them. For, the laws having exempted them from almost every personal duty, they attempted a total exemption from every secular tie. But it is observed by Sir Edward Coke, that as the overflowing of waters doth many times make the river to lose its proper channel, so, in times past, ecclesiastical persons, seeking to extend their liberties beyond their due bounds, either lost, or enjoyed not, those which of right belonged to them. The personal exemptions do indeed for the most part continue: a clergyman cannot be compelled to serve on a jury, nor to appear at a court-leet, or view of frank-pledge, which almost every other person is obliged to do: but if a layman is summoned on a jury, and before the trial takes orders, he shall notwithstanding appear and be sworn. Neither can he be chosen to any temporal office, as bailiff, reeve, constable, or the like; in regard of his own continual attendance on the sacred function. During his attendance on divine service, he is privileged from arrests in civil suits. In cases also of felony, a clerk in orders shall have the benefit of his clergy, without being branded in the hand; and may likewise have it more than once: in both which particulars he is distinguished from a layman. But, as they have their privileges, so they have also their disabilities, on account of their spiritual avocations. Clergymen are incapable of sitting in the house of commons; and by statute 21 Hen. VIII. c. 13. are not in general allowed to take any lands or tenements to farm, upon pain of 10*l.* per month, and total avoidance of the lease; nor, upon like pain, to keep any tap-house or brew-house; nor shall engage in any manner of trade, nor sell any merchandize, under forfeiture of the treble value. Which prohibition is consonant to the canon law.

Benefit of CLERGY, is an ancient privilege whereby one in orders claimed to be delivered to his ordinary to purge himself of felony.

After trial and conviction * of a criminal, the judgment of the court regularly follows, unless suspended or arrested by some intervening circumstance; of which the principal is *benefit of clergy*: a title of no small curiosity as well as use; and concerning which, therefore, it may not be improper to inquire, 1. Into its original, and the various mutations which this privilege of the clergy has sustained. 2. To what persons it is to be allowed at this day. 3. In what cases. 4. The consequences of allowing it.

I. Clergy, the *privilegium clericale*, or (in common speech) the benefit of clergy, had its original from the times regard paid by Christian princes to the church in its infant state, and the ill use which the popish ecclesiastics soon made of that pious regard. The exemp-

Clergy.

Blasph.
Comment.* See the
articles Ar-
raignment,
Plea, Trial,
and Convic-
tion.Blasph.
Comment.

Clergy. tions which they granted to the church were principally of two kinds: 1. Exemptions of places consecrated to religious duties from criminal arrests; which was the foundation of sanctuaries. 2. Exemption of the persons of clergymen from criminal process before the secular judge in a few particular cases; which was the true original and meaning of the *privilegium clericale*.

But the clergy increasing in wealth, power, honour, number, and interest, soon began to set up for themselves; and that which they obtained by the favour of the civil government, they now claimed as their inherent right, and as a right of the highest nature, indefeasible, and *jure divino*. By their canons, therefore, and constitutions, they endeavoured at, and where they met with easy princes, obtained, a vast extension of those exemptions; as well in regard to the crimes themselves, of which the list became quite universal, as in regard to the persons exempted; among whom were at length comprehended, not only every little subordinate officer belonging to the church or clergy, but even many that were totally laymen.

In England, however, although the usurpations of the pope were very many and grievous, till Henry VIII. totally exterminated his supremacy, yet a total exemption of the clergy from secular jurisdiction could never be thoroughly effected, though often endeavoured by the clergy: and therefore, though the ancient *privilegium clericale* was in some capital cases, yet it was not universally allowed. And in those particular cases, the use was for the bishop or ordinary to demand his clerks to be remitted out of the king's courts as soon as they were indicted: concerning the allowance of which demand there was for many years a great uncertainty; till at length it was finely settled in the reign of Henry VI. that the prisoner should first be arraigned; and might either then claim his benefit of clergy by way of declinatory plea; or, after conviction, by way of arrest of judgment. This latter way is most usually practised, as it is more to the satisfaction of the court to have the crime previously ascertained by confession or the verdict of a jury; and also it is more advantageous to the prisoner himself, who may possibly be acquitted, and so need not the benefit of his clergy at all.

Originally the law was held that no man should be admitted to the benefit of clergy, but such as had the *habitus et tonsuram clericalem*. But, in process of time, a much wider and more comprehensive criterion was established; every one that could read (a great mark of learning in those days of ignorance and her siter superstition) being accounted a clerk, or *clericus*, and allowed the benefit of clerkship, though neither initiated in clerkship, nor trimmed with the holy tonsure. But when learning, by means of the invention of printing, and other concurrent causes, began to be more generally disseminated than formerly; and reading was no longer a competent proof of clerkship, or being in holy orders; it was found that as many laymen as divines were admitted to the *privilegium clericale*: and therefore by statute 4 Henry VII. c. 13. a distinction was once more drawn between mere lay scholars and clerks that were really in orders. And, though it was thought reasonable still to mitigate the

severity of the law with regard to the former, yet they were not put upon the same footing with actual clergy; being subjected to a slight degree of punishment, and not allowed to claim the clerical privilege more than once. Accordingly the statute directs, that no person, once admitted to the benefit of clergy shall be admitted thereto a second time, until he produces his orders: and in order to distinguish their persons, all laymen who are allowed this privilege, shall be burned with a hot-iron in the brawn of the left thumb. This distinction between learned laymen and real clerks in orders was abolished for a time by the statutes 28 Hen. VIII. c. 1. and 32 Hen. VIII. c. 3.; but is held to have been virtually restored by statute 1 Edw. VI. c. 12. which statute also enacts, that lords of parliament and peers of the realm may have the benefit of their peerage, equivalent to that of clergy, for the first offence (although they cannot read, and without being burnt in the hand), for all offences then clergyable to commoners, and also for the crimes of house-breaking, highway-robbery, horse-stealing, and robbing of churches.

After this burning, the laity, and before it the real clergy, were discharged from the sentence of the law in the king's courts, and delivered over to the ordinary, to be dealt with according to the ecclesiastical canons. Whereupon the ordinary, not satisfied with the proofs adduced in the profane secular court, set himself formally to make a purgation of the offender by a new canonical trial; although he had been previously convicted by his country, or perhaps by his own confession. This trial was held before the bishop in person, or his deputy; and by a jury of twelve clerks: And there, first, the party himself was required to make oath of his own innocence: next, there was to be the oath of twelve compurgators, who swore they believed he spoke the truth: then, witnesses were to be examined upon oath, but on behalf of the prisoner only: and, lastly, the jury were to bring in their verdict upon oath, which usually acquitted the prisoner; otherwise, if a clerk, he was degraded, or put to penance. A learned judge in the beginning of last century, remarks with much indignation the vast complication of perjury and subornation of perjury in this solemn farce of a mock trial: the witnesses, the compurgators, and the jury, being all of them partakers in the guilt: the delinquent party also, though convicted in the clearest manner, and conscious of his own offence, yet was permitted, and almost compelled, to swear himself not guilty; nor was the good bishop himself, under whose countenance this scene was transacted, by any means exempt from a share of it. And yet, by this purgation, the party was restored to his credit, his liberty, his lands, and his capacity of purchasing afresh, and was entirely made a new and an innocent man.

This scandalous prostitution of oaths, and the forms of justice, in the almost constant acquittal of felonious clerks by purgation, was the occasion that, upon very heinous and notorious circumstances of guilt, temporal courts would not trust the ordinary with the trial of the offender, but delivered over to him the convicted clerk, *absque purgatione faciendo*: in which situation the clerk convicted could not make purgation; but was to continue in prison during life, and was incapable

Clergy. capable of acquiring any personal property, or receiving the profits of his lands, unless the king should please to pardon him. Both these courses were in some degree exceptionable; the latter perhaps being too rigid, as the former was productive of the most abandoned perjury. As therefore these mock trials took their rise from factious and popish tenets, tending to exempt one part of the nation from the general municipal law; it became high time, when the reformation was thoroughly established, to abolish so vain and impious a ceremony.

Accordingly the statute 18 Eliz. c. 7. enacts, that, for the avoiding such perjuries and abuses, after the offender has been allowed his clergy, he shall not be delivered to the ordinary as formerly; but, upon such allowance, and burning of the hand, he shall forthwith be enlarged and delivered out of prison; with proviso, that the judge may, if he thinks fit, continue the offender in gaol for any time not exceeding a year. And thus the law continued unaltered for above a century; except only, that the statute 21 Jac. I. c. 6. allowed, that women convicted of simple larcenies under the value of 10s. should (not properly have the benefit of clergy, for they were not called upon to read; but) be burned in the hand, whipped, or stocked, or imprisoned for any time not exceeding a year. And a similar indulgence by the statutes 3 and 4 Will. and Mary c. 9. and 4 and 5 Will. and Mary c. 24. was extended to women guilty of any clergyable felony whatever; who were allowed once to claim the benefit of the statute, in like manner as men might claim the benefit of clergy, and to be discharged upon being burned in the hand, and imprisoned for any time not exceeding a year. All women, all peers, and all male commoners who could read, were therefore discharged in such felonies absolutely, if clerks in orders; and for the first offence upon burning in the hand, if lay; yet all liable (except peers), if the judge saw occasion, to imprisonment not exceeding a year. And these men who could not read, if under the degree of peerage, were hanged.

Afterwards, indeed, it was considered, that education and learning were no extenuations of guilt, but quite the reverse: and that if the punishment of death for simple felony was too severe for those who had been liberally instructed, it was, *à fortiori*, too severe for the ignorant also. And thereupon, by statute 5 Anne, c. 6. it was enacted that the benefit of clergy should be granted to all those who were intitled to ask it, without requiring them to read by way of conditional merit. And, experience having shown that so universal a lenity was frequently inconvenient, and an encouragement to commit the lower degrees of felony; and that though capital punishments were too rigorous for these inferior offences, yet no punishment at all (or next to none, as branding or whipping), was as much too gentle; it was enacted by the same statute 5 Anne, c. 6. that when any person is convicted of any theft or larceny, and burnt in the hand for the same, he shall, at the discretion of the judge, be committed to the house of correction or public work-house, to be there kept to hard labour for any time not less than six months, and not exceeding two years; with a power of inflicting a double confinement in case of the party's escape from the first. And it is

also enacted by the statutes 4 Geo. I. c. 11. and 6 Geo. I. c. 23. that when any persons shall be convicted of any larceny, either grand or petit, or any felonious stealing or taking of money or goods and chattles, either from the person or the house of any other, or in any other manner, and who by the law shall be intitled to the benefit of clergy, and liable only to the penalties of burning in the hand, or whipping; the court, in their discretion, instead of such burning in the hand, or whipping, may direct such offenders to be transported to America for seven years; and if they return, or are seen at large in this kingdom within that time, it shall be felony without benefit of clergy.

In this state does the benefit of clergy at present stand; very considerably different from its original institution: the wisdom of the English legislature having, in the course of a long and laborious process, extracted, by a noble alchemy, rich medicines out of poisonous ingredients; and converted, by gradual mutations, what was at first an unreasonable exemption of particular popish ecclesiastics, into a merciful mitigation of the general law with respect to capital punishments.

From the whole of this detail, we may collect, that however in times of ignorance and superstition, that monster in true policy may for a while subsist, of a body of men residing in a state, and yet independent of its laws; yet when learning and rational religion have a little enlightened mens minds, society can no longer endure an absurdity so gross, as must destroy its very fundamentals. For, by the original contract of government, the price of protection by the united force of individuals, is that of obedience to the united will of the community. This united will is declared in the laws of the land: and that united force is exerted in their due, and universal, execution.

II. We are next to inquire, to what persons the benefit of clergy is to be allowed at this day: and this must chiefly be collected from what has been observed in the preceding article. For, upon the whole, we may pronounce, that all clerks in orders are, without any branding, and of course without any transportation (for that is only substituted in lieu of the other), to be admitted to this privilege, and immediately discharged, or at most only confined for one year; and this as often as they offend. Again, all lords of parliament, and peers of the realm, by the statute 1 Edw. VI. c. 12. shall be discharged in all clergyable and other felonies provided for by the act without any burning in the hand, in the same manner as real clerks convicted: but this is only for the first offence. Lastly, all the commons of the realm, not in orders, whether male or female, shall, for the first offence, be discharged of the punishment of felonies, within the benefit of clergy, upon being burnt in the hand, and suffering discretionary imprisonment; or, in case of larceny, upon being transported for seven years, if the court shall think proper.

III. The third point to be considered is, for what crimes the *privilegium clericale*, or benefit of clergy, is to be allowed. And it is to be observed, that neither in high treason, nor in petit larceny, nor in any mere misdemeanors, it was indulged at the common law: and therefore we may lay it down as a rule, that it was allowable only in petit treason and capital felonies;

Clergy. felonies; which for the most part became legally intitled to this indulgence by the statute *de clero*, 25 Edw. III. stat. 3. c. 4. which provides, that clerks convicted for treason or felonies, touching other persons than the king himself or his royal majesty, shall have the privilege of holy church. But yet it was not allowed in all cases whatsoever: for in some it was denied even in common law, viz. *insidiatio viarum*, or lying in wait for one on the highway; *depopulatio agrorum*, or destroying and ravaging a country; *combustio domorum*, or arson, that is, burning of houses; all which are a kind of hostile acts, and in some degree border upon treason. And farther, all these identical crimes, together with petit treason, and very many other acts of felony, are ousted of clergy by particular acts of parliament.

Upon the whole, we may observe the following rules. 1. That in all felonies, whether new created, or by common law, clergy is now allowable, unless taken away by act of parliament. 2. That where clergy is taken away from the principal, it is not of course taken away from the accessory, unless he be also particularly included in the words of the statute. 3. That when the benefit of clergy is taken away from the offence (as in case of murder, buggery, robbery, rape, and burglary), a principal in the second degree, being present, aiding and abetting the crime, is as well excluded from his clergy as he that is a principal in the first degree: but, 4. That where it is only taken away from the person committing the offence (as in the case of stabbing, or committing larceny in a dwelling-house), his aiders and abettors are not excluded, through the tenderness of the law which hath determined that such statutes shall not be taken literally.

IV. Lastly, We are to inquire what the consequences are to the party, of allowing him this benefit of clergy. We speak not of the branding, imprisonment, or transportation; which are rather concomitant conditions, than consequences, of receiving this indulgence. The consequences are such as affect his present interest, and future credit and capacity: as having been once a felon, but now purged from that guilt by the privilege of clergy; which operates as a kind of statute pardon. And we may observe, 1. That, by his conviction, he forfeits all his goods to the king; which, being once vested in the crown, shall not afterwards be restored to the offender. 2. That, after conviction, and till he receives the judgment of the law by branding or the like, or else is pardoned by the king, he is, to all intents and purposes, a felon; and subject to all the disabilities and other incidents of a felon. 3. That, after burning or pardon, he is discharged for ever of that, and all other felonies before committed, within the benefit of clergy; but not of felonies from which such benefit is excluded: and this by statutes 8 Eliz. c. 4. and 18 Eliz. c. 7. 4. That, by the burning, or pardon of it, he is restored to all capacities and credits, and the possession of his lands, as if he had never been convicted. 5. That what is said with regard to the advantages of commoners and laymen, subsequent to the burning in the hand, is equally applicable to all peers and clergymen, although never branded at all. For they have the same privi-

leges, without any burning, to which others are intitled after it.

CLERK (*clericus*), a word formerly used to signify a learned man, or man of letters. The word comes from the Greek κληρικός, used for *clergy*; but more properly signifying *lot* or *heritage*, in regard the lot and portion of clerks or ecclesiastics is to serve God. Accordingly *clerus* was at first used to signify those who had a particular attachment to the service of God. The origin of the expression is derived from the Old Testament, where the tribe of Levi is called the *lot*, *heritage*, κληρος; and God is reciprocally called *their portion*; by reason that tribe was consecrated to the service of God, and lived on the offerings made to God, without any other settled provision as the rest had. Thus, Pasquier observes, the officers of the counts (*comites*) were anciently created under the title of *clerks of the secret*. So *clericus domini regis*, in the time of Edward I. was Englished, *the king's secretary*, or *clerk of his council*. The term was applied indifferently to all who made any profession of learning; or who knew how to manage the pen: though originally it was appropriated to ecclesiastics. As the nobility and gentry were usually brought up to the exercise of arms, there was none but the clergy left to cultivate the sciences: hence, as it was the clergy alone who made any profession of letters, a very learned man came to be called a *great clerk*, and a stupid ignorant man a *bad clerk*.

CLERK is also applied to such as by their course of life exercise their pens in any court or office; of which there are various kinds: thus,

CLERK of the Bails, an officer in the court of king's bench, whose business is to file all bail-pieces taken in that court, where he always attends.

CLERK of the Check, an officer belonging to the king's court; so called, because he has the check and controulment of the yeomen that belong to the king, queen, or prince. He likewise, by himself or deputy, sets the watch in the court. There is also an officer in the navy of the same name, belonging to the king's yards.

CLERK of the Crown, an officer in the king's bench, who frames, reads, and records all indictments against offenders, there arraigned or indicted of any public crime. He is likewise termed *clerk of the crown-office*, in which capacity he exhibits information by order of the court for divers offences.

CLERK of the Crown, in chancery, an officer whose business it is constantly to attend the lord chancellor in person or by deputy; to write and prepare for the great seal special matters of state by commission, both ordinary and extraordinary, viz. commissions of lieutenancy, of justices of assize, oyer and terminer, gaol-delivery, and of the peace; all general pardons, granted either at the king's coronation, or in parliament: the writs of parliament, with the names of the knights, citizens, and burghesses, are also returned into his office. He also makes out special pardons and writs of execution on bonds of statute-staple forfeited.

CLERK of the Deliveries of the Ordnance. See **ORDNANCE**.

CLERK of the Errors, in the court of common pleas, an officer who transcribes and certifies into the king's bench, the tenor of the record of the action on which the

Clerk.

the writ of error, made out by the curfitor, is brought there to be determined. In the king's bench, the clerk of the errors transcribes and certifies the records of causes, by bill, in that court, into the exchequer. And the business of the clerk of the errors in the exchequer, is to transcribe the records certified thither out of the king's bench, and to prepare them for judgment in the exchequer-chamber.

CLERK of the Effoins, in the court of common pleas, keeps the effoin roll, or enters effoins: he also provides parchment, cuts it into rolls, marks the number on them, delivers out all the rolls to every officer, and receives them again when written. See *ESSOIN*.

CLERK of the Estreats, an officer in the exchequer, who every term receives the estreats out of the lord-treasurer's remembrancer's office, and writes them out to be levied for the crown.

CLERK of the Given-cloth, formerly an officer in chancery, but now abolished.

CLERK of the Hammer, or *Hanaper*, an officer in chancery, whose business is to receive all money due to the king for the seals of charters, letters patent, commissions, and writs; also the fees due to the officers for enrolling and examining them.

CLERK-Comptroller of the King's Household, an officer of the king's court, authorized to allow or disallow the charges of pursuivants, messengers of the green-cloth, &c. to inspect and controul all defects of any of the inferior officers; and to sit in the counting-house with the lord-steward and other officers of the household for regulating such matters.

CLERK of the King's Silver, an officer of the common pleas, to whom every fine is brought, after it has passed the office of the *custos brevium*; and who enters the effect of writs of covenant, into a book kept for that purpose, according to which all the fines of that term are recorded in the rolls of the court.

CLERK of the Market, an officer of the king's house, to whom is given the charge of the king's measures and weights, the standards of those that ought to be used all over England.

CLERK of the Nichils, or *Nichils*, an officer of the exchequer, who makes a roll of all such sums as are nichilled by the sheriffs upon their estreats of green wax, and delivers them in to the remembrancer of the treasury, to have execution done upon them for the king. See *NIHIL*.

CLERK of the Ordnance. See *ORDNANCE*.

CLERK of the Outlawries, an officer of the common pleas, and deputy to the attorney-general, for making out all writs of *capias utlagatum* after outlawry, to which there must be the king's attorney's name.

CLERK of the Paper-office, an officer belonging to the king's bench, whose business is to make up the paper-books of special pleadings in that court.

CLERK of the Peace, an officer belonging to the sessions of the peace, whose business is to read indictments, enrol the proceedings, and draw the process: he likewise certifies into the king's bench transcripts of indictments, outlawries, attainders, and convictions had before the justices of peace, within the time limited by statute, under a certain penalty. This office is in the gift of the *custos rotularum*, and may be executed by deputy.

CLERK of the Pells, an officer that belongs to the exchequer, whose business is to enter every teller's bill into a parchment-roll called *pellis receptorum*; and to make another roll of payments called *pellis exituum*.

CLERK of the petty Bag, an officer of the court of chancery, whereof there are three, the master of the rolls being the chief: their business is to record the return of all inquisitions out of every shire; to make out patents of customers, gaugers, comptrollers, &c.; liberates upon extent of statutes-staple; *conge d'elires* for bishops; summons of the nobility, clergy, and burgesses to parliament; and commissions directed to knights and others of every shire, for assessing subsidies and taxes.

CLERK of the Pipe, an officer of the exchequer, who having the accounts of all debts due to the king, delivered out of the remembrancer's office, charges them in a great roll folded up like a pipe. He writes out warrants to sheriffs, to levy the said debts on the goods and chattels of the debtors; and if they have no goods, then he draws them down to the treasurer's remembrancer to write estreats against their lands.

CLERK of the Pleas, an officer of the exchequer, in whose office all the officers of the court, having special privilege, ought to sue or be sued in any action. In this office also actions at law may be prosecuted by other persons, but the plaintiff ought to be tenant or debtor to the king, or some way accountable to him. The under clerks are attorneys in all suits.

CLERKS of the Privy-seal, four officers that attend the lord privy seal, for writing and making out all things that are sent by warrant from the signet to the privy seal, and to be passed the great seal; and likewise to make out privy seals, upon special occasions of his majesty's affairs, as for loan of money, or the like.

CLERK of the Rolls, an officer of the chancery, whose business is to make searches after, and copies of deeds, officers, &c.

CLERK of the Signet, an officer continually attending upon his majesty's principal secretary, who has the custody of the privy signet, as well for sealing the king's private letters as those grants which pass the king's hand by bill signed. There are four of these officers who have their diet at the secretary's table.

SIX CLERKS, officers in chancery next in degree below the twelve masters, whose business is to enrol commissions, pardons, patents, warrants, &c. which pass the great seal. They were anciently *clerici*, and forfeited their places if they married. There are also attorneys for parties in suits depending in the court of chancery.

CLERK of the Treasury, an officer belonging to the court of common pleas, who has the charge of keeping the records of the court, makes out all records of *nisi prius*, and likewise all exemplifications of records being in the treasury. He has the fees due for all searches; and has under him an under keeper, who always keeps one key of the treasury-door.

CLERK of the Warrants, an officer of the common pleas, whose business is to enter all warrants of attorney for plaintiffs and defendants in suit; and to enrol deeds of bargain and sale, that are acknowledged in court, or before a judge. His office is likewise to estreat into the exchequer all fines, fines, estreats, and amercements.

Clerk.

Clerke
||
Clermont.

anercements, which grow due to the crown in that court.

CLERKE (Captain Charles), a celebrated English navigator, was bred up in the navy from his youth, and was present in several actions during the war of 1755. In that between the Bellona and Courageux he was in great danger; for having been stationed in the mizen-top on board the former, the mast was carried overboard by a shot, and he fell into the sea along with it: but, however, was taken up without having received any injury. When Commodore Byron made his first voyage round the world, Mr Clerke served on board his ship in quality of a midshipman; and was afterwards on the American station. In the year 1768, he sailed round the world a second time in the Endeavour, on board of which he served in the station of master's mate; but, during the voyage, succeeded to a lieutenantcy. He returned in 1775, and was soon after appointed master and commander. When Captain Cook undertook his last voyage, Mr Clerke was appointed Captain of the Discovery; and in consequence of the death of Captain Cook, naturally succeeded to the supreme command. He did not, however, long enjoy his new dignity. Before his departure from England, he had manifest symptoms of a consumption. Of this disease he lingered during the whole of the voyage; and his long residence in the cold northern climates cut off all hopes of recovery: but though sensible that the only chance he had of prolonging his life was by a speedy return to a warmer climate, his attention to his duty was so great, that he persevered in search of a passage between the Asiatic and American continents until every one of the officers was of opinion that it was impracticable. He bore his distemper with great firmness and equanimity, retaining a good flow of spirits to the last; and died on the 22d of August 1778, in the 38th year of his age, the ship being then within view of the coast of Kamtschatka.

CLERKE'S Island lies on the western side of the American continent, in N. Lat. 63. 15. and E. Long. 190. 30. It was discovered by Captain Cook in his last voyage, but a landing could not be effected. At a distance it appeared to be of considerable extent, and to have several hills connected with the low grounds in such a manner as to make it look like a group of islands. Near its eastern extremity is a little island remarkable for having three elevated rocks upon it. Both the large and small island are uninhabited.

CLERMONT, a considerable, rich, and populous town of France, in Auvergne, with a bishop's see. The cathedral, the public squares, and the walks, are very fine. Here is a bridge naturally formed, as they pretend, by the petrifying quality of a fountain. E. Long. 3. 18. N. Lat. 45. 47.

CLERMONT Manuscript, is a copy of St Paul's Epistles, found in the monastery of Clermont in France, and used by Beza, together with the Cambridge MS. in preparing his edition of the New Testament. This copy is in the octavo form, and is written on fine vellum in Greek and Latin, with some mutilations. Beza supposes that it is of equal antiquity with the Cambridge copy; but both were probably written by a Latin scribe in a later period than he assigns to them. The various readings of this MS. were communicated to archbishop Usher, and they are

N^o 82.

preserved by Walton. The MS. itself was in the possession of Morinus; and after his death deposited among the MS. copies of the Royal Library at Paris, N^o 2245.

CLEROMANCY, a kind of divination performed by the throwing of dice, or little bones; and observing the points, or marks, turned up. The word comes from κληρος, "lot," and ατυσια, "divination." At Bura, a city of Achaia, was a temple and celebrated oracle of Hercules; where such as consulted the oracle, after praying to the idol, threw four dice, the points whereof being well scanned by the priest, he was supposed to draw an answer from them.

Something of this kind seems to have been practised with regard to Jonah.

CLERVAL, a town of France, in the Franche Comté, seated on the river Doux, belonging to the house of Wirtemburgh, but depends on the crown of France. E. Long. 5. 57. N. Lat. 46. 35.

CLERVAUX, one of the most celebrated and finest abbeyes of France, in Champagne, five miles from Bar-sur-Aube, and seated in a valley surrounded with woods and mountains. It is the chief of the Cistercian order. Here is the famous Tun of St Bernard, which will hold 800 tuns of wine. Near this abbey is a small town.

CLESIDES, a Greek painter, about 276 years before Christ, in the reign of Antiochus I. He revenged the injuries he had received from queen Stratonice by representing her in the arms of a fisherman. However indecent the painter might represent the queen, she was drawn with such personal beauty, that she preserved the piece and liberally rewarded the artist.

CLETHRA, in botany: A genus of the monogynia order, belonging to the decandria class of plants; and in the natural method ranking under the 18th order, *Biornes*. The calyx is quinquepartite; the petals five; the stigma trifid; the capsule trilocular and three-valved. There is but one species, viz. the *Alnifolia*. This is a native of Virginia and Carolina, where it grows in moist places, and near the sides of rivulets, rising near eight or ten feet high. The leaves are shaped like those of the alder-tree, but longer; these are placed alternately upon the branches: the flowers are produced in close spikes at the extremities of the branches; they are white, composed of five petals, and have ten stamina in each, nearly of the same length with the petals. This is hardy enough to bear the open air in Britain, and is one of the most beautiful flowering shrubs. Its season is commonly about the beginning of July; and, if the season is not very hot, there will be part of the spikes in beauty till the middle of September. This shrub will thrive best in moist land, and requires a sheltered situation, where it may be defended from strong winds, which frequently break off the branches where they are too much exposed to their violence. It is propagated by layers, but they are generally two years before they take root. It may also be propagated by suckers, which are sent out from the roots: if these are carefully taken off with fibres in the autumn, and planted in a nursery-bed, they will be strong enough in two years to transplant where they are to remain.

CLEVELAND, a district in the north riding of York.

Cleveland Yorkshire in England, from whence the noble family of Fitzroy took the title of Duke, but which is now extinct.

Cliffortia.

CLEVELAND (John), an English poet of some eminence in his time, who during the civil war under Charles I. engaged as a literary champion in the royal cause against the parliamentarians. He died in 1658, and was much extolled by his party. His works, which consist of poems, characters, orations, epistles, &c. were printed in octavo in 1677.

CLEVES, the duchy of, a province of the circle of Westphalia, in Germany. It is divided into two parts by the Rhine, and is about 40 miles in length from east to west, and 20 in breadth from north to south. It is a fine agreeable country, and pretty populous. The towns are, Cleves the capital, Calcar, Gennet, Santen, Orsoy, Bureck, and Greit. These lie on the left side the river. On the right, Daysburgh, Wese, Rees, and Emmerick. There have been great contests about this duchy, but it now belongs to the king of Prussia.

CLEVES, a city of Germany, in the duchy of Cleves, of which it is the capital. It stands upon a pleasant hill, about three miles from the Rhine, with which it communicates, by means of a canal which is large enough for great barges. The castle stands upon a mountain, and, though old, is very agreeable. Calvinists, Lutherans, and Roman Catholics, are all tolerated in this city. E. Long. 5. 36. N. Lat. 51. 40.

CLIENT, among the Romans, a citizen who put himself under the protection of some great man, who in respect of that relation was called *patron*.

This patron assisted his client with his protection, interest, and goods; and the client gave his vote for his patron, when he sought any office for himself or his friends. Clients owed respect to their patrons, as these owed them their protection.

The right of patronage was appointed by Romulus, to unite the rich and poor together, in such a manner as that one might live without contempt, and the other without envy; but the condition of a client, in course of time, became little else but a moderate slavery.

CLIENT is now used for a party in a law-suit, who has turned over his cause into the hands of a counsellor or solicitor.

CLIFFORTIA, in botany: A genus of the polyandria order, belonging to the dicecia class of plants; and in the natural method ranking under the 38th order, *Tricocca*. The male calyx is triphyllous; no corolla; the stamina near 30 in number; the female calyx is triphyllous, superior to the receptacle of the fruit; no corolla; two styles; with a bilocular capsule; and a single seed. There are three species, all of them natives of Africa; so require to be kept in a green-house when cultivated in this country. Their flowers make no great appearance; but the plants themselves are very ornamental evergreens. They grow to the height of four or five feet; and are propagated by cuttings, which must be young shoots of five or six inches length. If these are planted in pots in spring or summer, and plunged in a hot bed, they will readily take root. They must

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be watered plentifully in summer, but very sparingly in winter.

Climacteric Climate.

CLIMACTERIC, among physicians, (from *climacter*, "a ladder"), a critical year in a person's life.

According to some, this is every seventh year; but others allow only those years produced by multiplying 7 by the odd number 3, 5, 7, and 9, to be climacterical. These years, they say, bring with them some remarkable change with respect to health, life, or fortune: the grand climacteric is the 63d year; but some, making two, add to this the 81st: the other remarkable climacterics are the 7th, 21st, 35th, 49th, and 56th.

CLIMATE, or CLIME, in geography, a part of the surface of the earth, bounded by two circles parallel to the equator; and of such a breadth, as that the longest day in the parallel nearer the pole exceeds the longest day in that next the equator by some certain spaces; viz. half an hour. The word comes from the Greek *κλιμα*, "inclinamentum," an inclination.

The beginning of the climate, is a parallel circle wherein the day is the shortest. The end of the climate, is that wherein the day is the longest. The climates therefore are reckoned from the equator to the pole; and are so many bands, or zones, terminated by lines parallel to the equator: though, in strictness, there are several climates in the breadth of one zone. Each climate only differs from its contiguous ones, in that the longest day in summer is longer or shorter by half an hour in the one place than in the other. As the climates commence from the equator, the first climate at its beginning has its longest day precisely 12 hours long; at its end, 12 hours and an half: the second, which begins where the first ends, viz. at 12 hours and an half, ends at 13 hours; and so of the rest, as far as the polar circles, where, what the geographers call *hour-climates* terminate, and *month-climates* commence. As an hour-climate is a space comprised between two parallels of the equator, in the first of which the longest day exceeds that in the latter by half an hour; so the month-climate is a space terminated between two circles parallel to the polar circles, whose longest day is longer or shorter than that of its contiguous one by a month or 30 days.

The ancients, who confined the climates to what they imagined the habitable parts of the earth, only allowed of seven. The first they made to pass through Meroe, the second through Sienna, the third through Alexandria, the fourth through Rhodes, the fifth through Rome, the sixth through Pontus, and the seventh through the mouth of the Borysthene. The moderns, who have sailed further toward the poles, make 30 climates on each side; and, in regard the obliquity of the sphere makes a little difference in the length of the longest day, instead of half an hour, some of them only make the difference of climates a quarter.

Vulgarly the term *climate* is bestowed on any country or region differing from another either in respect of the seasons, the quality of the soil, or even the manners of the inhabitants; without any regard to the length of the longest day. Abulfeda, an Arabic author, distinguishes the first kind of climates by the

Climate the term *real climates*, and the latter by that of *ap-
||
Clio.* parent climates. Varenius gives us a table of 30 cli-
mates; but without any regard to the refraction.

Ricciolus furnishes a more accurate one, wherein the refractions are allowed for; an abstract of which follows:

Climate
||
Clitoria.

Middle of Clim.	Longest Day.	Latit.	Middle of Clim.	Longest Day.	Latit.	Middle of Clim.	Latit.	Cont. Light.	North Night.	Cont. Light.	South Night.
I	12th 30	7° 18	VIII	16th 0	48 15	XV	66° 53	31 ^d	27 ^d	30 ^d	28 ^d
II	13 0	15 36	IX	17 0	53 46	XVI	69 30	62	58	60	59
III	13 30	23 8	X	18 0	57 44	XVII	73 0	93	87	89	88
IV	14 0	29 49	XI	19 0	60 39	XVIII	78 6	124	117	120	118
V	14 30	35 35	XII	20 0	62 44	XIX	84 0	156	148	150	149
VI	15 0	40 32	XIII	22 0	65 10	XX	90 0	188	180	178	177
VII	15 30	44 42	XIV	24 0	65 54						

CLIMAX, or GRADATION, in rhetoric, a figure wherein the word or expression which ends the first member of a period begins the second, and so on; so that every member will make a distinct sentence, taking its rise from the next foregoing, till the argument and period be beautifully finished; as in the following gradation of Dr Tillotson: "After we have practised good actions a while, they become easy; and when they are easy, we begin to take pleasure in them; and when they please us, we do them frequently; and by frequency of acts, a thing grows into a habit; and confirmed habit is a kind of second nature; and so far as any thing is natural, so far it is necessary; and we can hardly do otherwise; nay, we do it many times when we do not think of it."

CLINCH, in the sea-language, that part of a cable which is bended about the ring of the anchor, and then seized or made fast.

CLINCHING, in the sea-language, a kind of slight caulking used at sea, in a prospect of foul weather, about the posts: it consists in driving a little oakum into their seams, to prevent the water coming in at them.

CLINIC, a term applied by the ancient church-historians to those who received baptism on their death-bed.

CLINIC Medicine, was particularly used for the method of visiting and treating sick persons in bed, for the more exact discovery of all the symptoms of their disease.

CLINIAS, a Pythagorean philosopher, and musician, in the 65th Olympiad. He was wont to assuage his passion, being very choleric, by his lyre.

CLINPODIUM, FIELD-BASIL: A genus of the gymnospermia order, belonging to the didynamia class of plants; and in the natural method ranking under the 4th order, *Asperifolia*. The involucre consists of many small bristles under the verticillus or whirl of flowers. There are six species, all of them herbaceous plants, growing from one to two feet high. They are remarkable only for their strong odour, being somewhat between marjoram and basil.

CLIO, in pagan mythology, the first of the muses, daughter of Jupiter and Mnemosyne. She presided over history. She is represented crowned with laurels, holding in one hand a trumpet, and a book in the other. Sometimes she holds a plectrum or quill with

a lute. Her name signifies honour and reputation, *κλέος, gloria*; and it was her office faithfully to record the actions of brave and illustrious heroes. She had Hyacintha by Pierius, son of Magnus.

CLIO, in zoology, a genus of insects belonging to the order of vermes mollusca. The body is oblong and fitted for swimming; and it has two membranaceous wings placed opposite to each other. The species are three, principally distinguished by the shape of their vagina, and are all natives of the ocean.

CLIPEUS, in natural history, a name given to the flat depressed centronix, from their resembling a shield.

See CENTRONIA.

CLISTHENES, a famous Athenian magistrate, the author of the mode of banishing ambitious citizens by ostracism, or writing their names upon a shell: the intention was patriotic, but it was abused like all other human institutions; some of the worthiest citizens of Athens being thus exiled. He died 510 years before Christ.

CLITOMACHUS, the philosopher, flourished about 140 years before Christ. He was born at Carthage; quitted his country at 40 years of age; and went to Athens, where he became the disciple and successor of Carneades. He composed many books, but they are all lost.

CLITORIA, in botany: A genus of the decandria order, belonging to the diadelphia class of plants; and in the natural method ranking under the 3^d order, *Papilionacea*. The corolla is supine, or turned down-side up; with the vexillum or flag-petal very large, patent, and almost covering the alæ or wing-petals. There are four species, all of them herbaceous perennials, or annuals, of the kidney-bean kind, growing naturally in both the Indies. The stalk is climbing, slender, and of the height of a man. The leaves are winged, placed alternately, and consist of two, three, or five pair of lobes, terminated by an odd one. The flowers, which are elegant, stand singly, each on its proper foot-stalk. They are very large, and generally of a deep blue, but sometimes of a white colour. From the fruit of this plant is distilled an eye-water. The beans reduced to powder, and taken in broth, to the quantity of two drachms, prove a gentle purge; and Grimmius remarks, in his *Labor Ceyl.* that the powder of the dried beans, being mixed with the milk of the cocoa nut, or with broth, and administered in quantity,

Plate
CXXVIII.

Clitoris
||
Clive.

quantity from one to three drachms, not only mitigates colic pains, but is very useful, and much used in Ceylon, in all disorders of the stomach and bowels. These plants are propagated by seeds; and, in this country, must be kept continually in a stove.

CLITORIS, in anatomy, is a part of the external pudenda, situated at the angle which the nymphæ form with each other. Like the penis it has an erection, and it is thought to be the principal seat of venereal pleasure. The clitoris is of different sizes in different women; but in general it is small, and covered with the labia. The preternaturally enlarged clitoris is what constitutes an hermaphrodite. When the clitoris is too large, it may be so extirpated as to remove the unnecessary part; but this requires much care, for a farther extirpation subjects the patient to an involuntary discharge of urine.

CLITUMNUS, (anc. geog.), a river of Umbria, on this side the Apennine. According to Pliny, it was a fountain consisting of several veins, situated between Hispellum and Spoletium; which soon after swelled into a very large and navigable river, running from east to west into the Tinea, and both together into the Tiber. A river famous for its milk-white flocks and herds, (Virgil.) The god of the river was called *Clitumnus*.

CLITUS, brother to Alexander the Great's nurse, followed that prince in his conquests, and saved his life by cutting off the hand of Rosaces, which held an ax lifted up to kill him at the passage of the Granicus. Alexander, who had a great regard for him, some time after invited him to supper; when Clitus, at the end of the repast, being heated with wine, diminished the exploits of that prince, in order to magnify those of Philip his father. This so enraged Alexander, that he killed him with his own hand; but he was afterwards so afflicted at it, that he attempted his own life.

CLIVE (Robert) lord, son of Richard Clive, Esq; of Styche near Drayton in Salop, was born in 1725. Toward the close of the war in 1741, he was sent as a writer in the East India service to Madras; but being fonder of the camp than the counting-house, he soon availed himself of an opportunity to exchange his pen for a pair of colours. He first distinguished himself at the siege of Pondicherry in 1748; acted under major Laurence at the taking of Devi Cotta in Tanjore, who wrote of his military talents in high terms; commanded a small party for the taking of Arcot, and afterward defended that place against the French; and performed many other exploits, which, considering the remoteness of the scene of action, would require a long detail to render sufficiently intelligible. He was, however, in brief, looked upon and acknowledged as the man who first roused his countrymen to spirited action, and raised their reputation in the East: so that when he came over to England in 1753, he was presented, by the court of directors, with a rich sword set with diamonds, as an acknowledgment of past, and an incitement to future, services. Captain Clive returned to India in 1755, as governor of fort St David, with the rank of lieutenant-colonel in the king's troops; when as commander of the company's troops, he, in conjunction with admiral

Clive
||
Cloacina.

Watson, reduced Angria the pirate, and became master of Geria, his capital, with all his accumulated treasure. On the loss of Calcutta and the well known barbarity of the soubah Surajah Dowla, they sailed to Bengal; where they took fort William, in January 1757; and colonel Clive defeating the soubah's army soon after, accelerated a peace. Surajah Dowla's perfidy, however, soon produced fresh hostilities, which ended in his ruin; he being totally defeated by colonel Clive at the famous battle of Plassey. The next day the conqueror entered Muxadabad in triumph; and placed Jaffier Ally Cawn, one of the principal generals, on the throne: the deposed soubah was soon after taken, and privately put to death by Jaffier's son. Admiral Watson died at Calcutta; but colonel Clive commanded in Bengal the two succeeding years: he was honoured by the Mogul with the dignity of an Omrah of the empire; and was rewarded by the new soubah with a grant of lands, or a jaghire, producing 27,000 l. a-year. In 1760, he returned to England, where he received the unanimous thanks of the company, was elected member of parliament for Shrewsbury, and was raised to an Irish peerage by the title of Lord Clive Baron of Plassey. In 1764, fresh disturbances taking place in Bengal, lord Clive was esteemed the only man qualified to settle them, and was accordingly again appointed to that presidency; after being honoured with the order of the Bath, and with the rank of major-general. When he arrived in India, he exceeded the most sanguine expectation, in restoring tranquillity to the province without striking a blow, and fixed the highest ideas of the British power in the minds of the natives. He returned home in 1767; and, in 1772, when a parliamentary inquiry into the conduct of the East India company was agitated, he entered into an able justification of himself in a masterly speech in the house of commons. He died *suddenly* towards the close of the year 1774.

CLOACÆ, in antiquity, the common sewers of Rome, to carry off the dirt and soil of the city into the Tiber; justly reckoned among the grand works of the Romans. The first common sewer, called *Cloaca Maxima*, was built by Tarquinius, some say Priscus, others Superbus, of huge blocks of stone joined together without any cement, in the manner of the edifices of those early times; consisting of three rows of arches one above another, which at length conjoin and unite together; measuring in the clear 18 palms in height, and as many in width. Under these arches they rowed in boats; which made Pliny say that the city was suspended in air, and that they sailed beneath the houses. Under these arches also were ways through which carts loaded with hay could pass with ease. It began in the Forum Romanum; measured 300 paces in length; and emptied itself between the temple of Vesta and the Pons Senatorius. There were as many principal sewers as there were hills. Pliny concludes their firmness and strength from their standing for so many ages the shocks of earthquakes, the fall of houses, and the vast loads and weights moved over them.

CLOACINA, the goddess of jakes and common sewers, among the Romans.

Clock.

CLOCK, a machine constructed in such a manner, and regulated so by the uniform motion of a pendulum (A), as to measure time, and all its subdivisions, with great exactness.

The invention of clocks with wheels is referred to Pacificus, archdeacon of Verona, who lived in the time of Lotharius son of Louis the Debonair, on the credit of an epitaph quoted by Ughelli, and borrowed by him from Paavinus. They were at first called *nocturnal dials*, to distinguish them from sun-dials, which showed the hour by the sun's shadow. Others ascribe the invention to Boethius, about the year 510. Mr Derham makes clock-work of a much older standing; and ranks Archimedes's sphere mentioned by Claudian, and that of Posidonius mentioned by Cicero, among the machines of this kind: not that either their form or use were the same with those of ours, but that they had their motion from some hidden weights or springs, with wheels, or pullies, or some such clock-work principle. But be this as it will, it is certain the art of making clocks, such as are now in use, was either first invented, or at least retrieved, in Germany, about 200 years ago. The water-clocks, or clepsydræ, and sun-dials, have both a much better claim to antiquity. The French annals mention one of the former kind sent by Aaron, king of Persia, to Charlemagne, about the year 807, which seemed to bear some resemblance to the modern clocks: it was of brass, and showed the hours by twelve little balls of the same metal, which fell at the end of each hour, and in falling struck a bell and made it sound. There were also figures of 12 cavaliers, which at the end of each hour came forth at certain apertures or windows in the side of the clock, and shut them again, &c.

The invention of pendulum-clocks is owing to the happy industry of the last age: the honour of it is disputed by Huygens and Galileo. The former, who has written a volume on the subject, declares it was first put in practice in the year 1657, and the description thereof printed in 1658. Becher, *de Nova Temporis dimetiendi Theoria*, anno 1680, contends for Galileo; and relates, though at second-hand, the whole history of the invention; adding, that one Tresler, clock maker to the then father of the Grand Duke of Tuscany, made the first pendulum-clock at Florence, by direction of Galileo Galilei; a pattern of which was brought into Holland. The Academy de' Ciementi say expressly, that the application of the pendulum to the movement of a clock was first proposed by Galileo, and first put in practice by his son Vincenzo Galilei, in 1649. Be the inventor who he will, it is certain the invention never flourished till it came into Huygens's hands, who insists on it, that if ever Galileo thought of such a thing, he never brought it to any degree of perfection. The first pendulum-clock made in England was in the year 1662, by Mr Fremantil a Dutchman.

Amongst the modern clocks, those of Strasburg and Lyons are very eminent for the richness of their furniture, and the variety of their motions and figures. In the first, a cock claps his wings, and proclaims the

hour; the angel opens a door, and salutes the virgin; and the Holy Spirit descends on her, &c. In the second, two horsemen encounter, and beat the hour on each other: a door opens, and there appears on the theatre the Virgin, with Jesus Christ in her arms; the Magi, with their retinue, marching in order, and presenting their gifts; two trumpeters sounding all the while to proclaim the procession. These, however, are excelled by two lately made by English artists, and intended as a present from the East India company to the Emperor of China. The clocks we speak of are in the form of chariots, in which are placed, in a fine attitude, a lady, leaning her right hand upon a part of the chariot, under which is a clock of curious workmanship, little larger than a snilling, that strikes and repeats, and goes eight days. Upon her finger sits a bird finely modelled, and set with diamonds and rubies, with its wings expanded in a flying posture, and actually flutters for a considerable time on touching a diamond button below it; the body of the bird (which contains part of the wheels that in a manner give life to it) is not the bigness of the 16th part of an inch. The lady holds in her left hand a gold tube not much thicker than a large pin, on the top of which is a small round box, to which a circular ornament set with diamonds not larger than a sixpence is fixed, which goes round near three hours in a constant regular motion. Over the lady's head, supported by a small fluted pillar no bigger than a quill, is a double umbrella, under the largest of which a bell is fixed at a considerable distance from the clock, and seems to have no connection with it; but from which a communication is secretly conveyed to a hammer, that regularly strikes the hour, and repeats the same at pleasure, by touching a diamond button fixed to the clock below. At the feet of the lady is a gold dog; before which from the point of the chariot are two birds fixed on spiral springs; the wings and feathers of which are set with stones of various colours, and appear as if flying away with the chariot, which, from another secret motion, is contrived to run in a straight, circular, or any other direction; a boy that lays hold of the chariot behind, seems also to push it forward. Above the umbrella are flowers and ornaments of precious stones; and it terminates with a flying dragon set in the same manner. The whole is of gold, most curiously executed, and embellished with rubies and pearls.

Of the general Mechanism of Clocks, and how they measure Time. The first figure of Plate CXXXIX. is a profile of a clock: P is a weight that is suspended by a rope that winds about the cylinder or barrel C, which is fixed upon the axis a a; the pivots b b go into holes made in the plates TS, TS, in which they turn freely. These plates are made of brass or iron, and are connected by means of four pillars ZZ; and the whole together is called the *frame*.

The weight P, if not restrained, would necessarily turn the barrel C with an uniform accelerated motion, in the same manner as if the weight was falling freely from a height. But the barrel is furnished with a ratchet wheel K K, the right side of whose teeth strikes against the click, which is fixed with a screw to the wheel

(A) A balance not unlike the fly of a kitchen-jack, was formerly used in place of the pendulum.

Fig. 3.

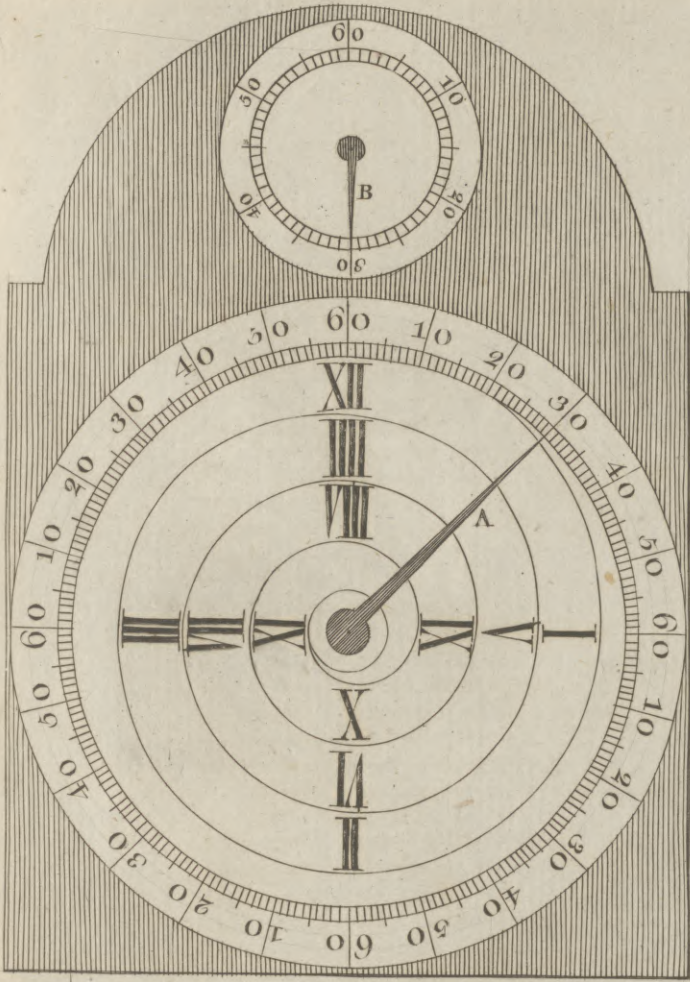


Fig. 1.

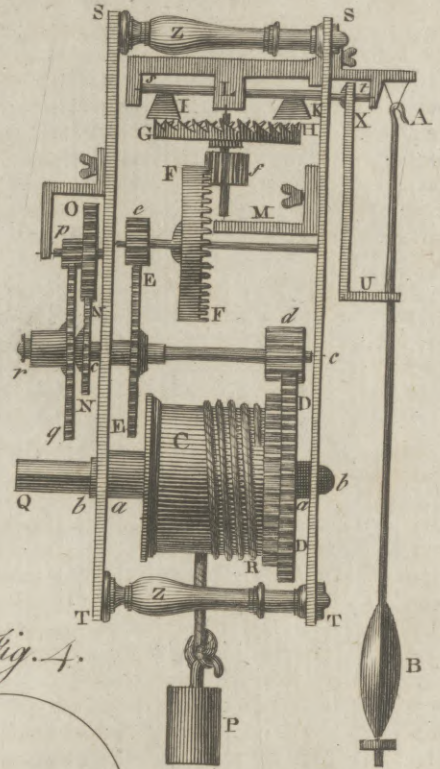


Fig. 4.

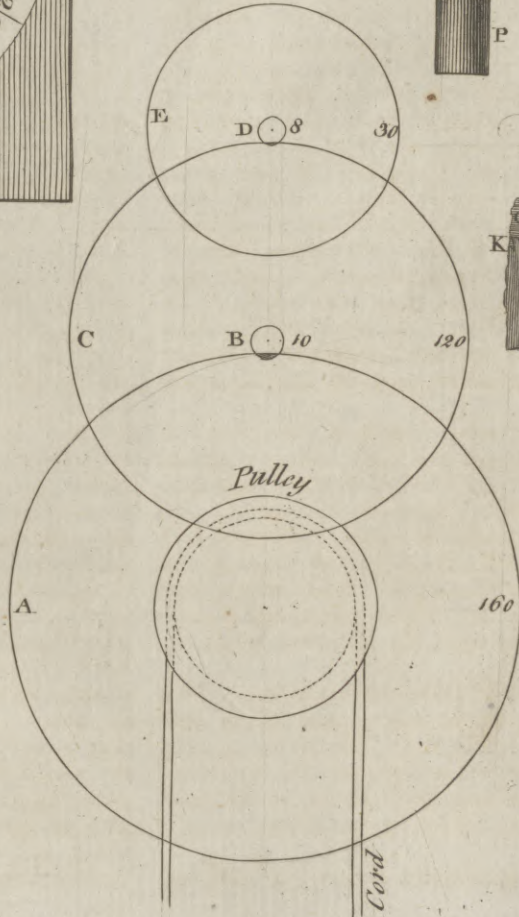


Fig. 2.



Fig. 5.



wheel DD, as represented in fig. 2. so that the action of the weight is communicated to the wheel DD, the teeth of which act upon the teeth of the small wheel *d* which turns upon the pivots *c c*. The communication or action of one wheel with another is called the *pitching*; a small wheel like *d* is called a *pinion*, and its teeth are leaves of the pinion. Several things are requisite to form a good pitching, the advantages of which are obvious in all machinery where teeth and pinions are employed. The teeth and pinion leaves should be of a proper shape, and perfectly equal among themselves: the size also of the pinion should be of a just proportion to the wheel acting into it; and its place must be at a certain distance from the wheel, beyond or within which it will make a bad pitching.

The wheel EE is fixed upon the axis of the pinion *d*; and the motion communicated to the wheel DD by the weight is transmitted to the pinion *d*, consequently to the wheel EE, as likewise to the pinion *e* and wheel FF, which moves the pinion *f*, upon the axis of which the crown or balance wheel GH is fixed. The pivots of the pinion *f* play in holes of the plates LM, which are fixed horizontally to the plates TS. In a word, the motion begun by the weight is transmitted from the wheel GH to the palettes IK, and by means of the fork UX rivetted on the palettes communicates motion to the pendulum AB, which is suspended upon the hook A. The pendulum AB describes, round the point A, an arc of a circle alternately going and returning. If then the pendulum be once put in motion by a push of the hand, the weight of the pendulum at B will make it return upon itself, and it will continue to go alternately backward and forward till the resistance of the air upon the pendulum, and the friction at the point of suspension at A, destroys the original impressed force. But as, at every vibration of the pendulum, the teeth of the balance-wheel GH act so upon the palettes IK (the pivots upon the axis of these palettes play in two holes of the petence *s t*), that after one tooth H has communicated motion to the palette K, that tooth escapes; then the opposite tooth G acts upon the palette I, and escapes in the same manner; and thus each tooth of the wheel escapes the palettes IK, after having communicated their motion to the palettes in such a manner that the pendulum, instead of being stopt, continues to move.

The wheel EE revolves in an hour; the pivot *e* of this wheel passes through the plate, and is continued to *r*; upon the pivot is a wheel NN with a long socket fastened in the centre; upon the extremity of this socket *r* the minute-hand is fixed. The wheel NN acts upon the wheel O; the pinion of which *p* acts upon the wheel *g g*, fixed upon a socket which turns along with the wheel N. This wheel *g g* makes its revolution in 12 hours, upon the socket of which the hour-hand is fixed.

From the above description it is easy to see, 1. That the weight *p* turns all the wheels, and at the same time continues the motion of the pendulum. 2. That the quickness of the motion of the wheels is determined by that of the pendulum. 3. That the wheels point out the parts of time divided by the uniform motion of the pendulum.

When the cord upon which the weight is suspend-

ed is entirely run down from off the barrel, it is wound up again by means of a key, which goes on the square end of the arbor at Q, by turning it in a contrary direction from that in which the weight descends. For this purpose, the inclined side of the teeth of the wheel R (fig. 2.) removes the click C, so that the ratchet-wheel R turns while the wheel D is at rest; but as soon as the cord is wound up, the click falls in between the teeth of the wheel D, and the right side of the teeth again act upon the end of the click, which obliges the wheel D to turn along with the barrel; and the spring A keeps the click between the teeth of the ratchet-wheel R.

We shall now explain how time is measured by the motion of the pendulum; and how the wheel E, upon the axis of which the minute-hand is fixed, makes but one precise revolution in an hour. The vibrations of a pendulum are performed in a shorter or longer time in proportion to the length of the pendulum itself. A pendulum of 3 feet $8\frac{1}{2}$ French lines in length, makes 3600 vibrations in an hour: *i. e.* each vibration is performed in a second of time, and for that reason it is called a *second pendulum*. But a pendulum of 9 inches $2\frac{1}{2}$ French lines makes 7200 vibrations in an hour, or two vibrations in a second of time, and is called a *half second pendulum*. Hence, in constructing a wheel whose revolution must be performed in a given time, the time of the vibrations of the pendulum which regulates its motion must be considered. Supposing, then, that the pendulum AB makes 7200 vibrations in an hour, let us consider how the wheel E shall take up an hour in making one revolution. This entirely depends on the number of teeth in the wheels and pinions. If the balance-wheel consists of 30 teeth, it will turn once in the time that the pendulum makes 60 vibrations: for at every turn of the wheel, the same tooth acts once on the palette I, and once on the palette K, which occasions two separate vibrations in the pendulum; and the wheel having 30 teeth, it occasions twice 30, or 60 vibrations. Consequently, this wheel must perform 120 revolutions in an hour; because 60 vibrations, which it occasions at every revolution, are contained 120 times in 7200, the number of vibrations performed by the pendulum in an hour. Now, in order to determine the number of teeth for the wheels EF, and their pinions *e f*, it must be remarked, that one revolution of the wheel E must turn the pinion *e* as many times as the number of teeth in the pinion is contained in the number of teeth in the wheel. Thus, if the wheel E contains 72 teeth, and the pinion *e* 6, the pinion will make 12 revolutions in the time that the wheel makes 1; for each tooth of the wheel drives forward a tooth of the pinion, and when the 6 teeth of the pinion are moved, a complete revolution is performed; but the wheel E has by that time only advanced 6 teeth, and has still 66 to advance before its revolution be completed, which will occasion 11 more revolutions of the pinion. For the same reason, the wheel F having 60 teeth, and the pinion *f* 6, the pinion will make 10 revolutions while the wheel performs one. Now, the wheel F being turned by the pinion *e*, makes 12 revolutions for one of the wheel E; and the pinion *f* makes 10 revolutions for one of the wheel F; consequently, the pinion *f* performs 10 times 12 or

Clock.

120 revolutions in the time the wheel E performs one. But the wheel G, which is turned by the pinion *f*, occasions 60 vibrations in the pendulum each time it turns round; consequently the wheel G occasions 60 times 120 or 7200 vibrations of the pendulum while the wheel E performs one revolution; but 7200 is the number of vibrations made by the pendulum in an hour, and consequently the wheel E performs but one revolution in an hour; and so of the rest.

From this reasoning, it is easy to discover how a clock may be made to go for any length of time without being wound up: 1. By increasing the number of teeth in the wheels; 2. By diminishing the number of teeth in the pinions; 3. By increasing the length of the cord that suspends the weight; 4. By increasing the length of the pendulum; and, 5. By adding to the number of wheels and pinions. But, in proportion as the time is augmented, if the weight continues the same, the force which it communicates to the last wheel G H will be diminished.

It only remains to take notice of the number of teeth in the wheels which turn the hour and minute hands.

The wheel E performs one revolution in an hour; the wheel N N, which is turned by the axis of the wheel E, must likewise make only one revolution in the same time; and the minute-hand is fixed to the socket of this wheel. The wheel N has 30 teeth, and acts upon the wheel O, which has likewise 30 teeth, and the same diameter; consequently the wheel O takes one hour to a revolution: now the wheel O carries the pinion *p*, which has 6 teeth, and which acts upon the wheel *qq* of 72 teeth; consequently the pinion *p* makes 12 revolutions while the wheel *qq* makes one, and of course the wheel *qq* takes 12 hours to one revolution; and upon the socket of this wheel the hour-hand is fixed. All that has been said here concerning the revolutions of the wheels, &c. is equally applicable to watches as to clocks.

The ingenious Dr Franklin has contrived a clock to show the hours, minutes, and seconds, with only three wheels and two pinions in the whole movement. The dial-plate (fig. 3.) has the hours engraven upon it in spiral spaces along two diameters of a circle containing four times 60 minutes. The index A goes round in four hours, and counts the minutes from any hour by which it has passed to the next following hour. The time, therefore, in the position of the index shown in the figure is either $32\frac{1}{2}$ minutes past XII. III. or VIII.; and so in every other quarter of the circle it points to the number of minutes after the hours which the index last left in its motion. The small hand B, in the arch at top, goes round once in a minute, and shows the seconds. The wheel-work of this clock may be seen in fig. 4. A is the first or great wheel, containing 160 teeth, and going round in four hours with the index A in fig. 3. let down by a hole on its axis. This wheel turns a pinion B of 10 leaves, which therefore goes round in a quarter of an hour. On the axis of this pinion is the wheel C of 120 teeth; which goes round in the same time, and turns a pinion D of eight leaves round in a minute, with the second hand B of fig. 3. fixed on its axis, and also the common wheel E of 30 teeth for moving a pendulum (by palettes) that vibrates seconds, as in a common

Clock. This clock is wound up by a line going over a pulley on the axis of the great wheel, like a common thirty hour clock. Many of these admirably simple machines have been constructed, which measure time exceedingly well. It is subject, however, to the inconvenience of requiring frequent winding by drawing up the weight, and likewise to some uncertainty as to the particular hour shown by the index A. Mr Ferguson has proposed to remedy these inconveniences by the following construction. In the dial-plate of his clock (fig. 5.) there is an opening, *abcd*, below the centre; through which appears part of a flat plate, on which the 12 hours, with their divisions into quarters, are engraven. This plate turns round in 12 hours; and the index A points out the true hour, &c. B is the minute-hand, which goes round the large circle of 60 minutes whilst the plate *abcd* shifts its place one hour under the fixed index A. There is another opening, *efg*, through which the seconds are seen on a flat moveable ring at the extremity of a fleur-de-lis engraven on the dial-plate. A in fig. 6. is the great wheel of this clock, containing 120 teeth, and turning round in 12 hours. The axis of this wheel bears the plate of hours, which may be moved by a pin passing through small holes drilled in the plate, without affecting the wheel-work. The great wheel A turns a pinion B of ten leaves round in an hour, and carries the minute-hand B on its axis round the dial-plate in the same time. On this axis is a wheel C of 120 teeth, turning round a pinion D of six leaves in three minutes; on the axis of which there is a wheel E of 90 teeth, that keeps a pendulum in motion, vibrating seconds by palettes, as in a common clock, when the pendulum-wheel has only 30 teeth, and goes round in a minute. In order to show the seconds by this clock, a thin plate must be divided into three times sixty, or 180 equal parts, and numbered 10, 20, 30, 40, 50, 60, three times successively; and fixed on the same axis with the wheel of 90 teeth, so as to turn round near the back of the dial-plate; and these divisions will show the seconds through the opening *efgb*, fig. 5. This clock will go a week without winding, and always show the precise hour; but this clock, as Mr Ferguson candidly acknowledges, has two disadvantages of which Dr Franklin's clock is free. When the minute-hand B is adjusted, the hour-plate must also be set right by means of a pin; and the smallness of the teeth in the pendulum-wheel will cause the pendulum ball to describe but small arcs in its vibrations; and therefore the momentum of the ball will be less, and the times of the vibrations will be more affected by any unequal impulse of the pendulum-wheel on the palettes. Besides, the weight of the flat ring on which the seconds are engraven will load the pivots of the axis of the pendulum-wheel with a great deal of friction, which ought by all possible means to be avoided. To remedy this inconvenience, the second plate might be omitted.

A clock similar to Dr Franklin's was made in Lincolnshire about the end of last century or beginning of this; and is now in London in the possession of a grandson of the person who made it.

A clock, showing the apparent diurnal motions of the sun and moon, the age and phases of the moon, with the time of her coming to the meridian, and the times

Clock.

times of high and low water, by having only two wheels and a pinion added to the common movement, was contrived by Mr Fergufon, and described in his Select Exercifes. The dial-plate of this clock (fig 7.) contains all the twenty-four hours of the day and night. S is the fun, which ferves as an hour index, by going round the dial-plate in twenty-four hours; and M is the moon, which goes round in twenty-four hours fifty minutes and a half, the time of her going round in the heavens from one meridian to the fame meridian again. The fun is fixed to a circular plate (see fig. 8.), and carried round by the motion of that plate on which the twenty-four hours are engraven; and within them is a circle divided into twenty-nine and a half equal parts for the days of the moon's age, reckoning from new moon to new moon; and each day ftands directly under the time, in the twenty-four hour circle of the moon's coming to the meridian; the XII under the fun ftanding for noon, and the oppofite XII for midnight. The moon M is fixed to another circular plate (fig. 6.) of the fame diameter with that which carries the fun, part of which may be feen through the opening, over which the fmall wires *r* and *b* pafs in the moon-plate. The wire *a* fhows the moon's age and time of her coming to the meridian, and *b* fhows the time of high-water for that day in the fun-plate. The diftance of thefe wires answers to the difference of time between the moon's coming to the meridian and high-water at the place for which the clock is made. At London their difference is two hours and a half. Above the moon-plate there is a fixed plate N, fupported by a wire A, fixed to it at one end and fixed at right angles into the dial-plate at the midnight XII. This plate may represent the earth, and the dot L London, or the place to which the clock is adapted. Around this plate there is an elliptic fhade on the moon-plate, the higheft points of which are marked high-water, and the loweft low-water. As this plate turns round below the plate N, thefe points come fucceffively even with L, and ftand over it at the times when it is high or low water at the given place; which times are pointed by the fun S on the dial-plate; and the plate H above XII at noon rifes or falls with the tide. As the fun S goes round the dial-plate in twenty-four hours, and the moon M in twenty-four hours fifty minutes and a half, it is plain that the moon makes only twenty-eight revolutions and a half, whilft the fun makes twenty-nine and a half; fo that it will be twenty-nine days and a half from conjunction to conjunction. And thus the wire *a* fhifts over one day of the moon's age on the fun-plate in twenty-four hours. The phases of the moon for every day of her age may be feen through a round hole *m* in the moon-plate: thus, at conjunction or new-moon, the whole fpace feen through *m* is black; at oppofition or full moon this fpace is white; at either quadrature half black and half white; and at every pofition the white part refembles the vifible part of the moon for every day of her age. The black fhaded fpace N *f* F *l* (fig. 8.) on the fun-plate ferves for thefe appearances. N represents the new moon, F the full moon, and *f* her firft quarter, and *l* her laft quarter, &c. The wheel-work and tide-work of this clock are represented in fig. 9. A and B are two wheels of equal diameters: A has fifty-feven teeth, with an hollow axis that paffes through the dial of the clock, and carries

the fun-plate with the fun S. B has fifty-nine teeth, with a folid fpindle for its axis, which turns within the hollow axis of A, and carries the moon-plate with the moon M: both wheels are turned round by a pinion C of nineteen leaves, and this pinion is turned round by the common clock-work in eight hours; and as nineteen is the third part of fifty-feven, the wheel A will go round in twenty-four-hours; and the wheel B in twenty-four hours fifty minutes and a half: fifty-feven being to twenty-four as fifty-nine to twenty-four hours fifty minutes and a half very nearly. On the back of the wheel B is fixed an elliptical ring D, which, in its revolution, raifes and lets down a lever EF, whose centre of motion is on a pin at F; and this, by the upright bar G, raifes and lets down the tide-plate H twice in the time of the moon's revolving from the meridian to the meridian again: this plate moves between four rollers R, R, R, R. A clock of this kind was adapted by Mr Fergufon to the movement of an old watch: the great wheel of a watch goes round in four hours; on the axis of this he fixed a wheel of twenty-teeth, to turn a wheel of forty teeth on the axis of the pinion C; by which means that pinion was turned round in eight hours, the wheel A in twenty-four, and the wheel B in twenty-four hours fifty minutes and a half.

To this article we fhall fubjoin a brief account of two curious contrivances. The firft, for giving motion to the parts of a clock by making it to defcend along an inclined plane, is the invention of Mr Maurice Wheeler; and the clock itfelf may be feen in Don Saltero's coffee-houfe at Chelfea. DE, fig. 10. is the inclined plane on which the clock A B C defcends: CXLII. this confifts externally of a hoop about an inch broad, and two fides or plates ftanding out beyond the hoop about one-eighth of an inch all round, with indented edges, that the clock may not fide, but turn round whilft it moves down. One of thefe plates is infcribed with the twenty-four hours, which pafs fucceffively under the index LP, fig. 11. which is always in a pofition perpendicular to the horizon, and fhows the hour on the top of the machine: for this reafon the lower part of the index, or H L, is heaviest, that it may preponderate the other H P, and always keep it pendulous, with its point to the vertical hour, as the movement goes on. Inftead of this index, an image may be fixed for ornament on the axis *g*, which with an erected finger performs the office of an index. In order to defcribe the internal part or mechanism of this clock, let LETQ be the external circumference of the hoop, and *f f* the fame plate, on which is placed the train of wheel-work 1, 2, 3, 4, which is much the fame as in other clocks, and is governed by a balance and regulator as in them. But there is no need of a fpring and fufee in this clock; their effects being otherwife answered, as we fhall fee. In this machine the great wheel of 1 is placed in the centre, or upon the axis of the movement, and the other wheels and parts towards one fide, which would therefore prove a bias to the body of the clock, and caufe it to move, even on an horizontal plane, for fome fhort diftance; this makes it neceffary to fix a thin plate of lead at C, on the oppofite part of the hoop, to reftore the equilibrium of the movement. This being done, the machine will abide at reft in any pofition on the horizontal plane

Clock.

HH; but if that plane be changed into the inclined plane DE, it will touch it in the point D; but it cannot rest there, because the centre of gravity at M acting in the direction MI, and the point T having nothing to support it, must continually descend, and carry the body down the plane. But now if any weight P be fixed on the other side of the machine, such as shall remove the centre of gravity from M to the point V in the line LD which passes through the point D, it will then rest upon the inclined plane, as in the case of the rolling cylinder. If this weight P be supposed not fixed, but suspended at the end of an arm, or vectis, which arm or lever is at the same time fastened to a central wheel I, moving on the axis M of the machine, which wheel by its teeth shall communicate with the train of wheels, &c. on the other side, and the power of the weight be just equal to the friction or resistance of the train, it will remain motionless as it did before when it was fixed; and consequently the clock also will be at rest on the inclined plane. But supposing the power of the weight P to be superior to the resistance of the train, it will then put it into motion, and of course the clock likewise; which will then commence a motion down the plane; while the weight P, its vectis PM, and the wheel I, all constantly retain the same position which they have at first when the clock begins to move. Hence it is easy to understand, that the weight P may have such an intrinsic gravity, as shall cause it to act upon the train with any required force, so as to produce a motion in the machine of any required velocity; such, for instance, as shall carry it once round in twenty-four hours: then, if the diameters of the plates ABC be four inches, it will describe the length of their circumference, viz. 12,56 inches in one natural day; and therefore, if the plane be of a sufficient breadth, such a clock may go several days, and would furnish a perpetual motion, if the plane were infinitely extended. Let SD be drawn through M perpendicular to the inclined plane in the point D; also let LD be perpendicular to the horizontal line HH, passing thro' D; then is the angle HDE = LDS = DMT; whence it follows that the greater the angle of the plane's elevation is, the greater will be the arch DI; and consequently the further will the common centre of gravity be removed from M; therefore the power of P will be augmented, and of course the motion of the whole machine accelerated. Thus it appears, that by duly adjusting the intrinsic weight of P, at first to produce a motion showing the mean time as near as possible, the time may be afterwards corrected, or the clock made to go faster or slower by raising or depressing the plane, by means of the screw at S. The angle to which the plane is first raised is about ten degrees. The marquis of Worcester is also said to have contrived a watch that moved on a declivity. See farther Phil. Trans. Abr. vol. 1. p. 468, &c. or n^o 161.

The other contrivance is that of M. de Gennes for making a clock ascend on an inclined plane. To this end let ABC (fig. 12.) be the machine on the inclined plane EDE, and let it be kept at rest upon it, or in equilibrio by the weight P at the end of the lever PM. The circular area CF is one end of a spring barrel in the middle of the movement, in which is included a spring as in a common watch. To this end of the barrel the arm or lever PM is fixed upon the centre M;

N^o 82.

and thus, when the clock is wound up, the spring moves the barrel, and therefore the lever and weight P in the situation PM. In doing this, the centre of gravity is constantly removed farther from the centre of the machine, and therefore it must determine the clock to move upwards, which it will continue to do as long as the spring is unbending itself; and thus the weight and its lever PM will preserve the situation they first have, and do the office of a chain and suste. Phil. Trans. n^o 140. or Abridg. vol. 1. p. 467.

By stat. 9 and 10 W. III. cap. 28. § 2. no person shall export, or endeavour to export out of this kingdom, any outward or inward box-case or dial-plate, of gold, silver, brass, or other metal, for clock or watch, without the movement in or with every such box, &c. made up fit for use, with the maker's name engraven thereon; nor shall any person make up any clock or watch without putting his name and place of abode or freedom, and no other name or place, on every clock or watch; on penalty of forfeiting every such box, case, and dial-plate, clock and watch, not made up and engraven as aforesaid; and 20l. one moiety to the king, the other to those that shall sue for the same.

CLOCKS, portable, or pocket, commonly denominated *Watches*. See the article WATCH.

Clock-Work, properly so called, is that part of the movement which strikes the hours, &c. on a bell; in contradistinction to that part of the movement of a clock or watch which is designed to measure and exhibit the time on a dial-plate, and which is termed *Watch-work*.

I. Of the *Clock-part*. The wheels composing this part are: The great or first wheel H; which is moved by the weight or spring at the barrel G: in sixteen or thirty-hour clocks, this has usually pins, and is called the *pin-wheel*; in eight-day pieces, the second wheel I is commonly the pin-wheel, or striking-wheel, which is moved by the former. Next the striking-wheel is the detent-wheel, or hoop-wheel K, having a hoop almost round it, wherein is a vacancy at which the clock locks. The next is the third or fourth wheel, according to its distance from the first, called the *warning-wheel* L. The last is the flying pinion Q, with a fly or fan, to gather air, and so bridle the rapidity of the clock's motion. To these must be added the pinion of report; which drives round the locking-wheel, called also the *count-wheel*; ordinarily with eleven notches in it, unequally distant, to make the clock strike the hours.

Besides the wheels, to the clock part belongs the ratch or ratchet; a kind of wheel with twelve large fangs, running concentric to the dial-wheel, and serving to lift up the detents every hour, and make the clock strike: the detents or stops, which being lifted up and let fall, lock and unlock the clock in striking; the hammer, as S, which strikes the bell R; the hammer-tails, as T, by which the striking pins draw back the hammers; latches, whereby the work is lifted up and unlocked; and lifting-pieces, as P, which lift up and unlock the detents.

The method of calculating the numbers of a piece of clock-work having something in it very entertaining, and at the same time very easy and useful, we shall give the readers the rules relating thereto: 1. Regard here needs only be had to the counting-wheel, striking-

Fig. 7.

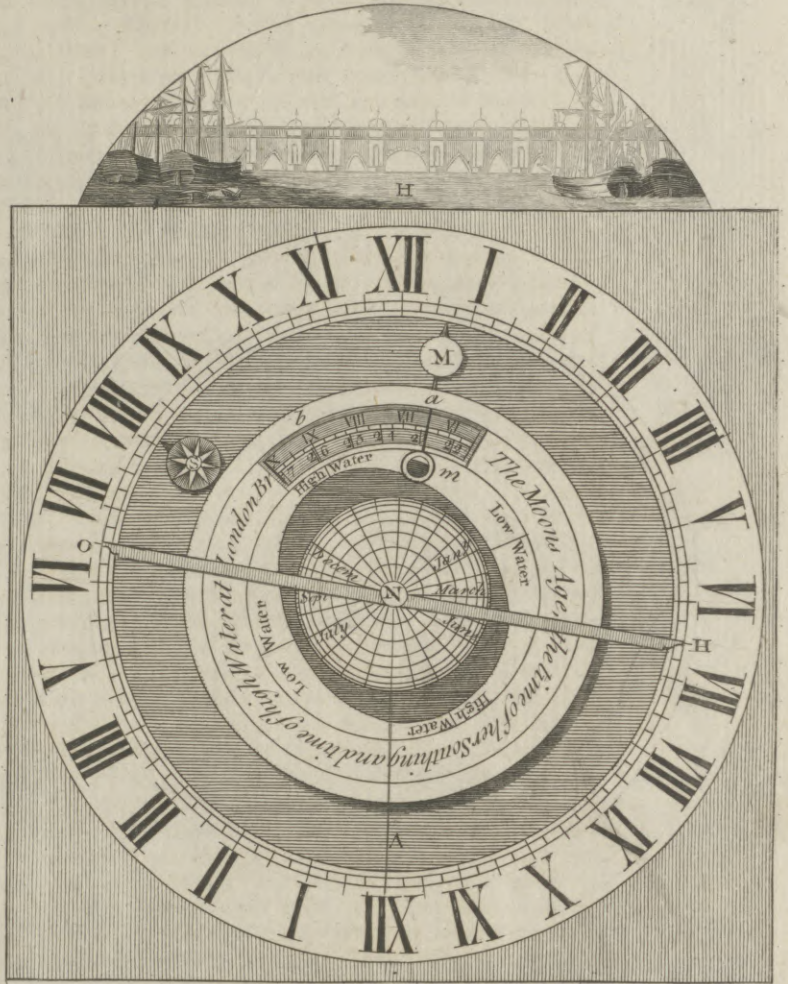


Fig. 6.

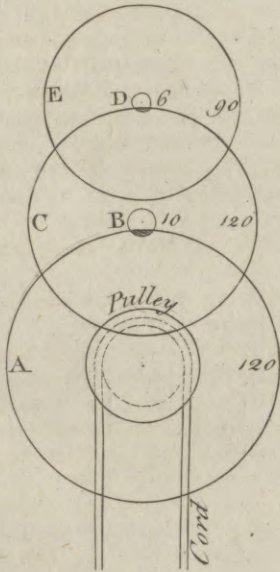


Fig. 9.

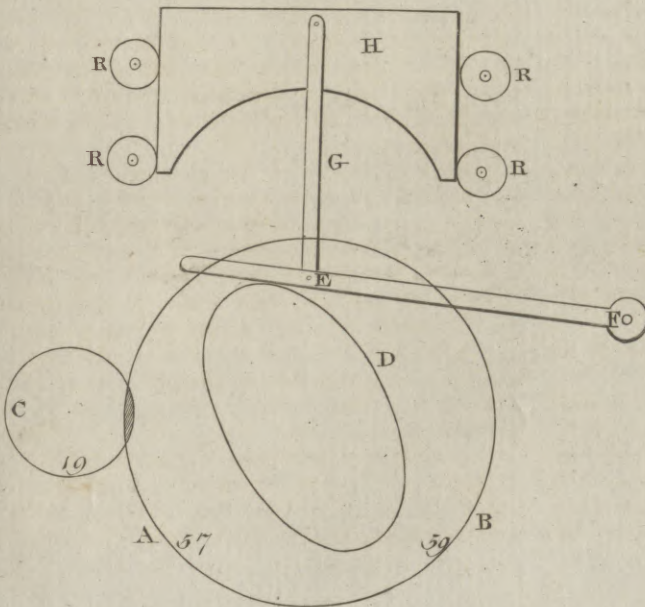
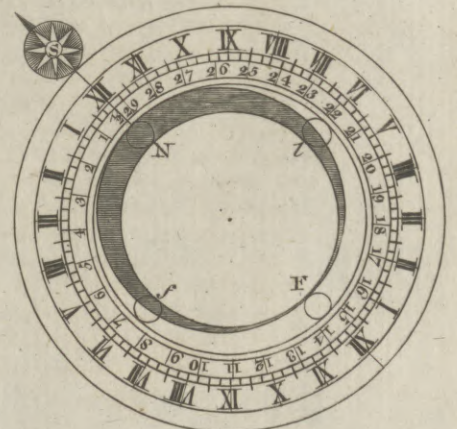


Fig. 8.



Clock.

striking-wheel, and detent-wheel, which move round in this proportion: the count-wheel commonly goes round once in 12 or 24 hours; the detent-wheel moves round every stroke the clock strikes, or sometimes but once in two strokes: wherefore it follows, that, 2. As many pins as are in the pin-wheel, so many turns hath the detent-wheel in one turn of the pin-wheel; or, which is the same, the pins of the pin-wheel are the quotients of that wheel divided by the pinion of the detent-wheel. But if the detent-wheel move but once round in two strokes of the clock, then the said quotient is but half the number of pins. 3. As many turns of the pin-wheel as are required to perform the strokes of 12 hours (which are 78), so many turns must the pinion of report have to turn round the count-wheel once: or thus, the quotient of 78, divided by the number of striking-pins, shall be the quotient for the pinion of report and the count-wheel; and this is in case the pinion of report be fixed to the arbor of the pin-wheel, which is commonly done.

An example will make all plain: The locking-wheel being 48, the pinion of report 8, the pin-wheel 78, the striking-pins are 13, and so of the rest. Note also, that 78 divided by 13 gives 6, the quotient of the pinion of report. As for the warning-wheel and fly-wheel, it matters little what numbers they have; their use being only to bridle the rapidity of the motion of the other wheels.

The following rules will be of good service in this calculation. 1. To find how many strokes a clock strikes in one turn of the fusee or barrel: As the turns of the great wheel or fusee are to the days of the clock's continuance; so is the number of strokes in 24 hours, viz. 156, to the strokes of one turn of the fusee.

2. To find how many days a clock will go: As the strokes in 24 hours are to those in one turn of the fusee; so are the turns of the fusee to the days of the clock's going.

3. To find the number of turns of the fusee or barrel: As the strokes in one turn of the fusee are to those of 24 hours; so is the clock's continuance to the turns of the fusee or great wheel.

4. To find the number of leaves in the pinion of report on the axis of the great wheel: As the number of strokes in the clock's continuance is to the turns of the fusee; so are the strokes in 12 hours, viz. 78, to the quotient of the pinion of report fixed on the arbor of the great wheel.

5. To find the strokes in the clock's continuance: As 12 is to 78; so are the hours of the clock's continuance to the number of strokes in that time.

By means of the following table, clocks and watches may be so regulated as to measure true equal time.

Days.	H. M.	S.	The stars make 366 revolutions from any point of the compass to the same point again in 365 days and one minute; and therefore they gain a 365th part of a revolution every 24 hours of mean solar time, near enough for regulating any clock or watch.
10	3	56	This acceleration is at the rate of 3 min. 55 sec. 53 thirds, 59 fourths in 24 hours; or, in the nearest round numbers,

3 minutes, 56 seconds; by which quantity of time every star comes round sooner than it did on the day before.

Therefore if you mark the precise moment shown by a clock or watch when any star vanishes behind a chimney, or any other object, as seen thro' a small hole in a thin plate of metal, fixed in a window-shutter; and do this for several nights successively (as suppose twenty); if, at the end of that time, the star vanishes as much sooner than it did the first night, by the clock, as answers to the time denoted in the table for so many days, the clock goes true: otherwise not. If the difference between the clock and star be less than the table shows, the clock goes too fast; if greater, it goes too slow; and must be regulated accordingly, by letting down or raising up the ball of the pendulum, by little and little, by turning the screw-nut under the ball, till you find it keeps true equal time.

Thus, supposing the star should disappear behind a chimney, any night when it is XII. by the clock; and that, on the 20th night afterward, the same star should disappear when the time is 41 minutes 22 seconds past X. by the clock; which being subtracted from 12 hours 0 min. 0 sec. leaves remaining 1 hour 18 minutes 38 seconds for the time the star is then faster than the clock: look in the table, and against 20, in the left hand column, you will find the acceleration of the star to be 1 hour 18 min. 38. sec. agreeing exactly with what the difference ought to be between the clock and star: which shows that the clock measures true equal time, and agrees with the mean solar time, as it ought to do.

II. Of the Watch-part of a clock or watch. This is that part of the movement which is designed to measure and exhibit the time on a dial-plate; in contradistinction to that part which contributes to the striking of the hour, &c.

The several members of the watch-part are, 1. The balance, consisting of the rim, which is its circular part; and the verge, which is its spindle; to which belong two palettes or leaves, that play in the teeth of the crown-wheel. 2. The potence, or pottance, which is the strong stud in pocket-watches, whereon the lower pivot of the verge plays, and in the middle of which one pivot of the balance-wheel plays; the bottom of the pottance is called the foot, the middle part the nose, and the upper part the shoulder. 3. The cock, which is the piece covering the balance. 4. The regulator, or pendulum spring, which is the small spring, in the new pocket-watches, underneath the balance. 5. The pendulum (fig. 13); whose parts are, the verge *x*, palettes *y, y*, cocks *z, z*, the rod, the fork *a*, the flatt *2*, the bob or great ball *3*, and the corrector or regulator *4*, being a contrivance of Dr Derham for bringing the pendulum to its nice vibrations. 6. The wheels, which are the crown-wheel *F* in pocket-pieces, and swing-wheel in pendulums; serving to drive the balance or pendulum. 7. The contrate-wheel *E*, which is that next the crown-wheel, &c. and whose teeth

Clock.

8	0	31	27
9	0	35	23
10	0	39	19
11	0	43	15
12	0	47	11
13	0	51	7
14	0	55	3
15	0	58	58
16	1	2	54
17	1	6	50
18	1	10	46
19	1	14	42
20	1	18	38
21	1	22	34
22	1	26	30
23	1	30	26
24	1	34	22
25	1	38	17
26	1	43	13
27	1	46	9
28	1	50	5
29	1	54	1
30	1	57	57

Clock.

teeth and hoop lie contrary to those of other wheels; whence the name. 8. The great, or first wheel C; which is that the fusee B, &c. immediately drives, by means of the chain or string of the spring-box or barrel A; after which are the second wheel D, third wheel, &c. Lastly, between the frame and dial-plate, is the pinion of report, which is that fixed on the arbor of the great wheel; and serves to drive the dial-wheel, as that serves to carry the hand.

For the illustration of this part of the work which lies concealed, let ABC (fig. 14.) represent the uppermost side of the frame plate, as it appears when detached from the dial-plate: the middle of this plate is perforated with a hole, receiving that end of the arbor of the centre wheel which carries the minute hand; near the plate is fixed the pinion of report *ab* of 10 teeth; this drives a wheel *cd* of 40 teeth; this wheel carries a pinion *ef* of 12 teeth; and this again drives a wheel *gh* with 36 teeth.

As in the body of the watch the wheels every where divide the pinions; here, on the contrary, the pinions divide the wheels, and by that means diminish the motion, which is here necessary; for the hour-hand, which is carried on a socket fixed on the wheel *gh*, is required to move but once round, while the pinion *ab* moves twelve times round. For this purpose the motion of the wheel *cd* is $\frac{1}{4}$ of the pinion *ab*. Again, while the wheel *cd*, or the pinion *ef*, goes once round, it turns the wheel *gh* but $\frac{1}{3}$ part round; consequently the motion of *gh* is but $\frac{1}{3}$ of $\frac{1}{4}$ of the motion of *ab*; but $\frac{1}{3}$ of $\frac{1}{4}$ is $\frac{1}{12}$; *i. e.* the hour-wheel *gh* moves once round in the time that the pinion of report, on the arbor of the centre or minute wheel, makes 12 revolutions, as required. Hence the structure of that part of a clock or watch which shows the time may be easily understood.

The cylinder A (fig. 13.) put into motion by a weight or inclosed spring moves the fusee B, and the great wheel C, to which it is fixed by the line or cord that goes round each, and answers to the chain of a watch.

The method of calculation is easily understood by the sequel of this article: for, suppose the great wheel C goes round once in 12 hours, then if it be a royal pendulum clock, swinging seconds, we have $60 \times 60 \times 12 = 43200$ seconds or beats in one turn of the great wheel. But because there are 60 swings or seconds in one minute, and the seconds are shown by an index on the end of the arbor of the swing-wheel, which in those clocks is in an horizontal position; therefore, it is necessary that the swing-wheel F should have 30 teeth; whence $43200 \div 30 = 720$, the number to be broken into quotients for finding the number of teeth for the other wheels and pinions.

In spring-clocks, the disposition of the wheels in the watch part is such as is here represented in the figure, where the crown-wheel F is in an horizontal position; the seconds not being shown there by an index, as is done in the large pendulum clocks. Whence in these clocks the wheels are disposed in a different manner, as represented in fig. 14. where C is the great wheel, and D the centre or minute wheel, as before: but the contrate wheel E is placed on one side, and F the swing-wheel is placed with its centre in the same per-

pendicular line GH with the minute-wheel, and with its plane perpendicular to the horizon, as are all the others. Thus the minute and hour hands turn on the end of the arbor of the minute-wheel at *a*, and the second hand on the arbor of the swing-wheel at *b*.

Theory and calculation of the Watch-part, as laid down by the Rev. Dr Derham.—1. The same motion, it is evident, may be performed either by one wheel and one pinion, or many wheels and many pinions; provided the number of turns of all the wheels bear the proportion to all the pinions which that one wheel bears to its pinion: or, which is the same thing, if the number produced by multiplying all the wheels together, be to the number produced by multiplying all the pinions together, as that one wheel to that one pinion. Thus, suppose you had occasion for a wheel of 1440 teeth, with a pinion of 28 leaves; you make it into three wheels of 36, 8, and 5, and three pinions of 4, 7, and 1. For the three wheels, 36, 8, and 5, multiplied together, give 1440 for the wheels, and the three pinions 4, 7, and 1, multiplied together, give 28 for the pinions. Add, that it matters not in what order the wheels and pinions are set, or which pinion runs in which wheel; only, for convenience sake, the biggest numbers are commonly put to drive the rest.

2. Two wheels and pinions of different numbers may perform the same motion. Thus, a wheel of 36 drives a pinion of 4; the same as a wheel of 45 a pinion of 5; or a wheel of 90 a pinion of 10: the turns of each being 9.

3. If, in breaking the train into parcels, any of the quotients should not be liked; or if any other two numbers, to be multiplied together, are desired to be varied; it may be done by this rule. Divide the two numbers by any other two numbers which will measure them; multiply the quotients by the alternate divisors; the product of these two last numbers found will be equal to the product of the two numbers first given. Thus, if you would vary 36 times 8, divide these by any two numbers which will evenly measure them: so, 36 by 4 gives 9; and 8 by 1 gives 8: now, by the rule, 9 times 1 is 9, and 8 times 4 is 32; so that for 36×8 , you have 32×9 ; each equal to 288. If you divide 36 by 6 and 8 by 2, and multiply as before, you have $24 \times 12 = 36 \times 8 = 288$.

4. If a wheel and pinion fall out with cross numbers, too big to be cut in wheels, and yet not to be altered by these rules; in seeking for the pinion of report, find two numbers of the same, or a near proportion, by this rule: as either of the two given numbers is to the other, so is 360 to a fourth. Divide that fourth number, as also 360, by 4, 5, 6, 8, 9, 10, 12, 15 (each of which numbers exactly measures 360), or by any of those numbers that bring a quotient nearest to an integer. As suppose you had 147 for the wheel, and 170 for the pinion; which are too great to be cut into small wheels, and yet cannot be reduced into less, as having no other common measure but unity; say, as $170 : 147 :: 360 : 311$. Or, as $147 : 170 :: 360 : 416$. Divide the fourth number and 360 by one of the foregoing numbers; as 311 and 360 by 6, it gives 52 and 60; divide them by 8, you have 39 and 45: and if you divide 360 and 416 by

Clock.

Clock. 8, you have 45 and 52 exactly. Wherefore, instead of the two numbers 147 and 170, you may take 52 and 60, or 39 and 45, or 45 and 52, &c.

5. To come to practice in calculating a piece of watch-work: First pitch on the train or beats of the balance in an hour; as, whether a swift one of about 20,000 beats (the usual train of a common 30 hour pocket-watch), or a slower of about 16000 (the train of the new pendulum pocket-watches), or any other train. Next, resolve on the number of turns the fusee is intended to have, and the number of hours the piece is to go: suppose, e.g. 12 turns, and to go 30 hours, or 192 hours (i.e. 8 days), &c. Proceed now to find the beats of the balance or pendulum in one turn of the fusee; thus in numbers; 12 : 16 : : 20000 : 26666. Wherefore, 26666 are the beats in one turn of the fusee or great wheel, and are equal to the quotients of all the wheels unto the balance multiplied together. Now this number is to be broken into a convenient parcel of quotients; which is to be done thus: first, halve the number of beats, viz. 26666, and you have 13333; then pitch on the number of the crown-wheel, suppose 17: divide 13333 by 17, and you have 784 for the quotient (or turns) of the rest of the wheels and pinions; which, being too big for one or two quotients, may be best broken into three. Choose therefore three numbers; which, when multiplied all together continually, will come nearest 784: as suppose 10, 9, and 9, multiplied continually, give 810, which is somewhat too much; therefore try again other numbers, 11, 9, 8: these, drawn one into another continually, produce 792; which is as near as can be, and is a convenient quotient. Having thus contrived the piece from the great wheel to the balance, but the numbers not falling out exactly, as you first proposed, correct the work thus: first, multiply 792, the product of all the quotients pitched upon, by 17 (the notches of the crown-wheel); the product is 13464, which is half the number of beats in one turn of the fusee: Then find the true number of beats in an hour. Thus, 16 : 12 : : 13464 : 10098, which is half the beats in an hour. Then find what quotient is to be laid upon the pinion of report (by the rule given under that word). Thus, 16 : 12 : : 12 : 9, the quotient of the pinion of report. Having thus found your quotients, it is easy to determine what numbers the wheels shall have, for choosing what numbers the pinions shall have, and multiplying the pinions by their quotients, the product is the number for the wheels. Thus, the number of the pinion of report is 4, and its quotient is 9; therefore the number for the dial-wheel must be 4x9, or 36: so the next pinion being 5, its quotient 11, therefore the great wheel must be 5x11=55; and so of the rest.

Such is the method of calculating the numbers of a 16 hour watch. Which watch may be made to go longer by lessening the train, and altering the pinion of report. Suppose you could conveniently slacken the train to 16000; then say, As $\frac{1}{2}$ 16000, or 8000 : 13464 : : 12 : 20; so that this watch will go 20 hours. Then for the pinion of report, say (by the rule given under that word), as 20 : 12 : : 12 : 7. So that 7

is the quotient of the pinion of report. 4) 28 (7
And as to the numbers, the operation is the same as before, only the dial-wheel is but 28; for its quotient is altered to 7. 5) 55 (11
If you would give numbers to a watch of about 10000 beats in an hour, to have 12 turns of the fusee, to go 170 hours, and 17 notches in the crown-wheel; the work

is the same, in a manner, as in the last example: and consequently thus: as 12 : 170 : : 10000 : 141666, which fourth number is the beats in one turn of the fusee; its half, 70833, being divided by 17, gives 4167 for the quotient: and because this number is too big for three quotients, therefore choose four, as 10, 8, 8, 6 $\frac{1}{2}$; whose product into 17 makes 71808, nearly equal to half the true beats in one turn of the fusee. Then say, as 170 : 12 : : 71808 : 5069, which is half the true train of your watch. And again, 170 : 12 : : 12 : 3 $\frac{1}{2}$, the denominator of which expresses the opinion of report, and the numerator is the number of the dial-wheel. But these numbers being too big to be cut in small wheels, they must be varied by the fourth rule above. Thus:

As 144 : 170 : : 360 : 425;
Or 170 : 144 : : 360 : 305.

Then dividing 360, and either of these two fourth proportionals (as directed by the rule), suppose by 15; you will have $\frac{24}{5}$ or $\frac{24}{5}$; then the numbers of the whole movement will stand as in the margin.

Such is the calculation of ordinary watches, to show the hour of the day: in such as show minutes, and seconds, the process is thus:

1. Having resolved on the beats in an hour; by dividing the designed train by 60, find the beats in a minute; and accordingly, find proper numbers for the crown-wheel and quotients, so as that the minute-wheel shall go round once in an hour, and the second wheel once in a minute.

Suppose, e.g. you shall choose a pendulum of seven inches, which vibrates 142 strokes in a minute, and 8520 in an hour. Half these sums are 71, and 4260. Now, the first work is to break this 71 into a good proportion, which will fall into one quotient, and the crown-wheel. Let the crown-wheel have 15 notches; then 71, divided by 15, gives nearly 5; so a crown-wheel of 15, and a wheel and pinion whose quotient is 5, will go round in a minute to carry a hand to show seconds. For a hand to go round in an hour to show minutes, because there are 60 minutes in an hour, it is but breaking 60 into good quotients (suppose 10 and 6, or 8 and 7 $\frac{1}{2}$, &c.), and it is done. Thus, 4260 is broken as near as can be into proper numbers. But since it does not fall out exactly into the above-mentioned numbers, you must correct (as before directed), and find the true number of beats in an hour, by multiplying 15 by 5, which makes 75; and 75 by 60 makes 4500, which is half the true train. Then find the beats in one turn of the fusee; thus, 16 : 192 : : 4500 : 54000; which last is half the beats in one turn of the fusee. This

Clock,
Clodia lex.

54000 being divided by 4500 (the true numbers already pitched on), the quotient will be 12; which, not being too big for a single quotient, needs not be divided into more; and the work will stand as in the margin. As to the hour-hand, the 15 great wheel, which performs only one revolution in 12 turns of the minute-wheel,

will show the hour; or it may be done by the minute-wheel.

It is requisite for those who make nice astronomical observations, to have watches that make some exact number of beats *per second*, without any fraction; but we seldom find a watch that does. As four beats *per second* would be a very convenient number, we shall here give the train for such a watch, which would (like most others) go 30 hours, but is to be wound up once in 24 hours.

The fusee and first wheel to go round in four hours. This wheel has 48 teeth, and it turns a pinion of 12 leaves, on whose axis is the second wheel, which goes round in one hour, and carries the minute-hand. This wheel has 60 teeth, and turns a pinion of 10 leaves; on whose axis is the third wheel of 60 teeth, turning a pinion of 6 leaves; on whose axis is the fourth (or contrate) wheel, turning round in a minute, and carrying the small hand that shows the seconds, on a small circle on the dial-plate, divided into 60 parts: this contrate wheel has 48 teeth, and turns a pinion of 6 leaves; on whose axis is the crown or balance-wheel of 15 teeth, which makes 30 beats in each revolution.

The crown-wheel goes 480 times round in an hour, and 30 times 480 make 14400, the number of beats in an hour. But one hour contains 3600 seconds; and 14400 divided by 3600 quotes 4, the required number of beats in a second.

The fusee must have $7\frac{1}{2}$ turns, to let the chain go so many times round it. Then, as 1 turn is to 4 hours, so is $7\frac{1}{2}$ turns to 30 hours, the time the watch would go after it is wound up.

See further the articles MOVEMENT, TURN, &c. And for the history and particular construction of *Watches* properly so called, see the article WATCH.

CLODIA LEX, *de Cypro*, was enacted by the tribune Clodius, in the year of Rome 607, to reduce Cyprus into a Roman province, and expose Ptolemy king of Egypt to sale in his regal ornaments. It empowered Cato to go with the praetorian power and see the auction of the king's goods, and commissioned him to return the money to Rome. Another, *de Magistratibus*, 695, by Clodius the tribune. It forbade the censors to put a stigma or mark of infamy upon any person who had not been actually accused and condemned by both the censors. Another, *de Religionibus*, by the same, 696, to deprive the priest of Cybele, a native of Pessinus, of his office, and confer the priesthood upon Brotigonus, a Gallogrecian. Another, *de Provinciis*, 695, which nominated the provinces of Syria, Babylon, and Persia, to the consul Gabinus, and Achaia, Thessaly, Macedon, and Greece, to his colleague Piso, with proconsular power. It empowered them to defray the expences of their march from the public treasury. Another, 695, which required the same distribution of corn among the

people gratis, as had been given them before at six asses and a triens the bushel. Another, 695, by the same, *de Judiciis*. It called to an account such as had executed a Roman citizen without a judgment of the people and all the formalities of a trial. Another, by the same, to pay no attention to the appearances of the heavens while any affair was before the people. Another, to make the power of the tribunes free in making and proposing laws. Another, to re-establish the companies of artists which had been instituted by Numa, but since his time abolished.

CLODIUS (Publius), a Roman descended of an illustrious family. He made himself famous for his licentiousness, avarice, and ambition. He committed incest with his three sisters, and introduced himself in women's clothes into the house of Julius Caesar whilst Pompeia Caesar's wife, of whom he was enamoured, was celebrating the mysteries of Ceres, where no man was permitted to appear. He was accused for this violation of human and divine laws; but he made himself tribune, and by that means screened himself from justice. He descended from a patrician into a plebeian family to become a tribune. He was such an enemy to Cato, that he made him go with praetorian power, in an expedition against Ptolemy king of Cyprus, that by the difficulty of the campaign he might ruin his reputation, and destroy his interest at Rome during his absence. Cato, however, by his uncommon success frustrated the views of Clodius. He was also an inveterate enemy to Cicero, and by his influence he banished him from Rome, partly on pretence that he had punished with death and without trial the adherents of Catiline. He wreaked his vengeance upon Cicero's house, which he burnt, and set all his goods to sale; which, however, to his great mortification, no one offered to buy. In spite of Clodius, Cicero was recalled and all his goods restored to him. Clodius was sometime after murdered by Milo, whose defence Cicero took upon himself.

CLOGHER, an episcopal town of Ireland, in the county of Tyrone, and province of Ulster. It sends two members to parliament. In a very early age an abbey of regular canons, dedicated to the Virgin Mary, was founded here. St Patrick is said to have presided over the church of Clogher; and having appointed St Kertenn to be his successor, he resigned this government, and went to Armagh, where he founded his celebrated abbey. On the 20th of April 1396, a dreadful fire burnt to the ground the church, the two chapels, the abbey, the court of the bishops, and thirty-two other buildings, with all the sacerdotal vestments, utensils, &c. belonging to the bishop's chapter and church. In the year 1610, on the 24th of July, whilst George Montgomery was bishop of Clogher, king James annexed this abbey and its revenues to that see. The see (valued in the king's books at 350l. *per annum* by extent returned 15th James I.) is reputed to be worth L.4000 annually. W. Long, 7. 30. N. Lat. 54. 16.

CLOISTER (*Claustrum*), a habitation surrounded with walls, and inhabited by canons or religious, &c. In a more general sense, cloister is used for a monastery of religious of either sex. In a more restrained sense, cloister is used for the principal part of a regular

Clodius
||
Cloister

Fig. 14.

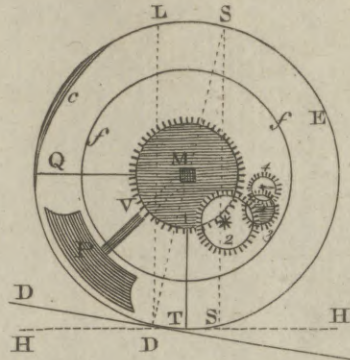
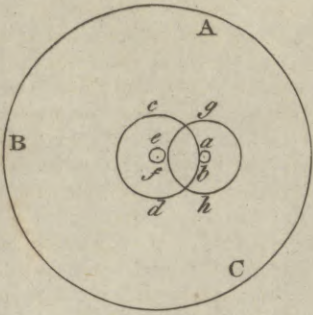


Fig. 10.

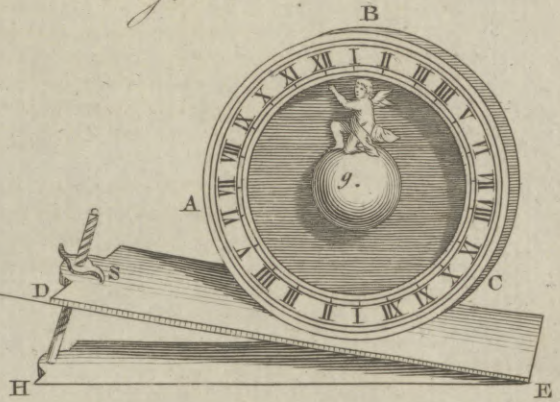


Fig. 13.

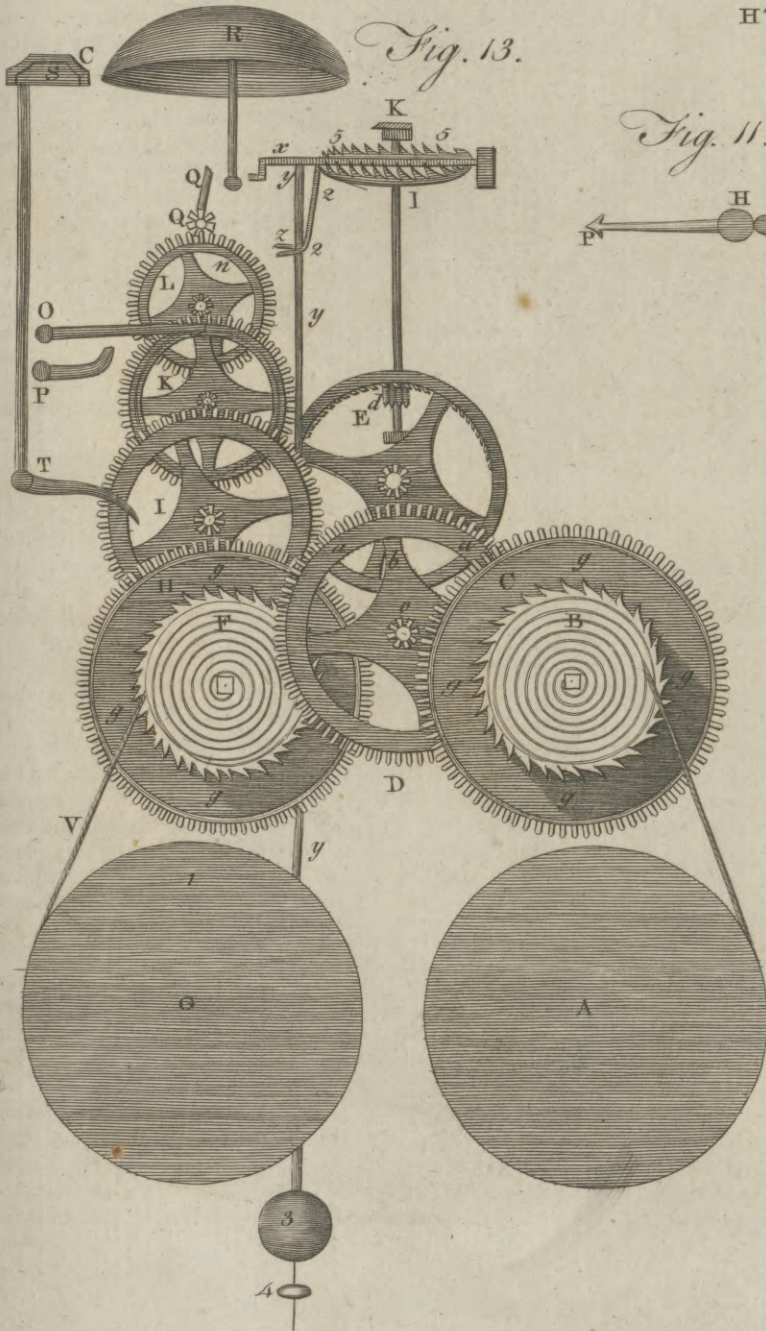


Fig. 11.



Fig. 12.

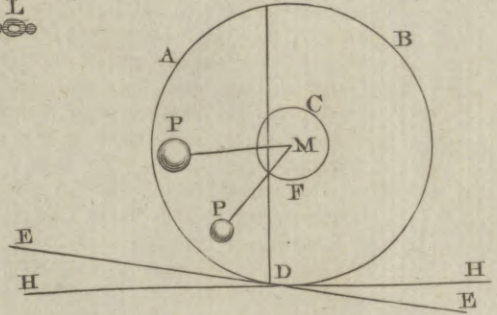
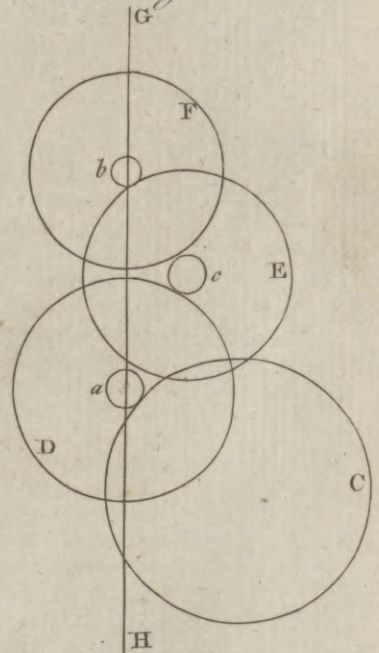
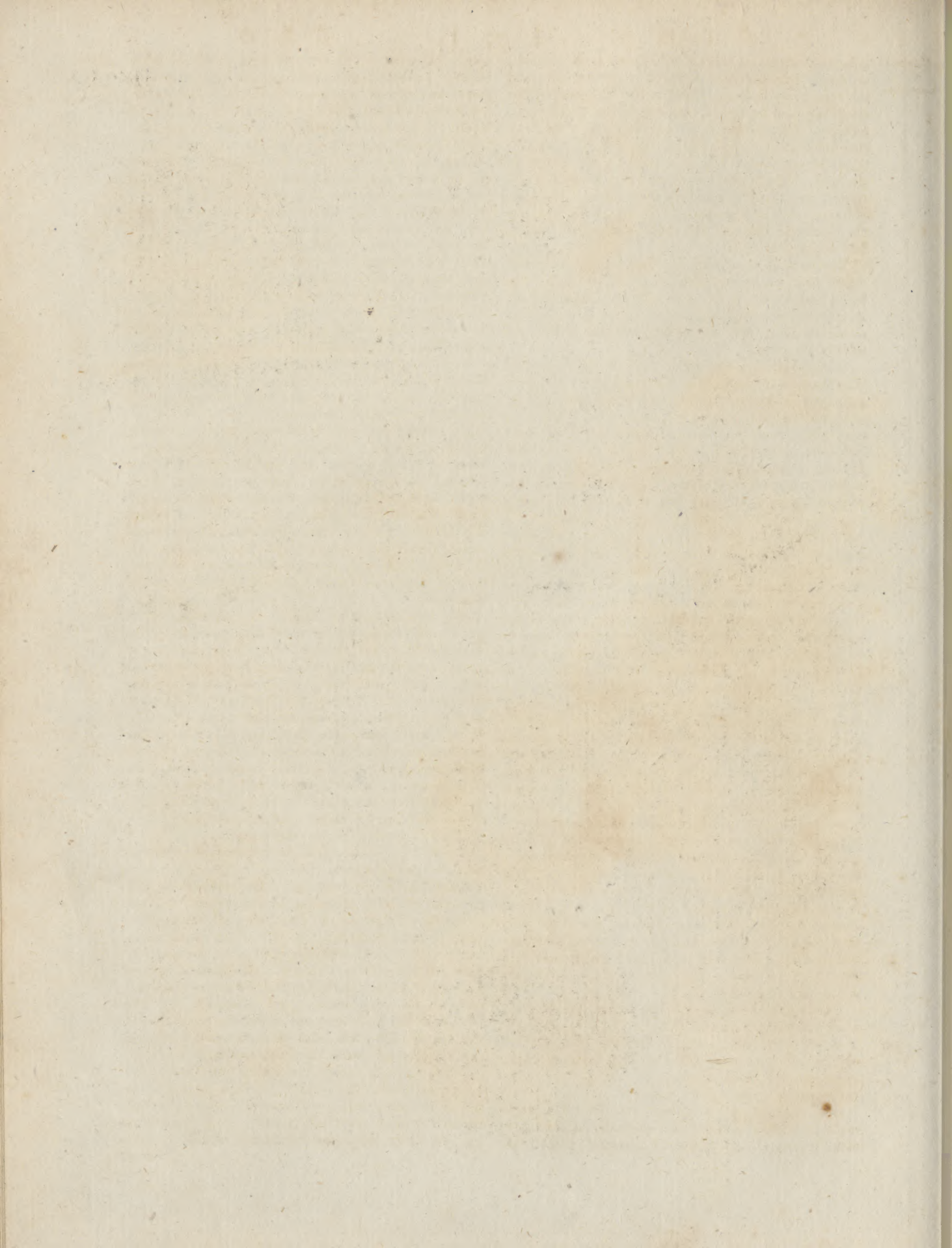


Fig. 15.





Clonmell,
Close.

gular monastery, consisting of a square built around; ordinarily between the church, the chapter-house, and the refectory; and over which is the dormitory. The cloisters served for several purposes in the ancient monasteries. Petrus Blesensis observes, that it was here the monks held their lectures: the lecture of morality at the north side, next the church; the school on the west, and the chapter on the east; spiritual meditation, &c. being reserved for the church. Lanfranc observes, that the proper use of the cloister was for the monks to meet in, and converse together, at certain hours of the day.

The form of the cloister was square; and it had its name *claustrum*, from *claudo*, "I shut or close;" as being inclosed on its four sides with buildings. Hence, in architecture, a building is still said to be in form of a cloister, when there are buildings on each of the four sides of the court.

CLONMELL, the assize town of the county of Tipperary in Ireland, is situated on the river Suir, hath a barrack for two troops of horse, and is governed by a mayor, recorder, bailiffs, and town-clerk. The river is navigable from this town to Carrick and Waterford; and there is some trade carried on here in the woollen branch, particularly by the quakers, who are very numerous in this neighbourhood. There is a spring here of Spa water, that issues out of the side of a rising ground, that is, notwithstanding, overlooked by a pretty steep hill, on that side of the river Suir which is in the county of Waterford. The cures performed by drinking of this water in the scurvy, and other chronic distempers, drew thither, some years ago a great resort of people; but fashion, which reigns with an absolute authority, has brought other waters of late into higher credit. It was in this town that the celebrated and Rev. Laurence Sterne was born, on the 24th of November 1713. The town consists of four cross streets, and has a spacious bridge of 20 arches over the river Suir; the market house is strong and well built; and there is a charter school here for forty children, to which the late John Dawson, Esq; and Sir Charles Moore, Bart. were considerable benefactors. A Dominican friary was founded at Clonmell, in 1269, and dedicated to St Dominick. In the same year Otho de Grandison erected a Franciscan friary, the church of which was esteemed one of the most magnificent in Ireland; in it was kept an image of St Francis, respecting the miracles wrought by which many marvellous stories are circulated. This town is very ancient, being built before the invasion of the Danes; it was formerly defended by a square wall. Oliver Cromwell, who found more resistance from this place than any other of his conquests in the kingdom, demolished the castles and fortifications, of which now only the ruins remain: the chief Gothic church here is still kept in good repair.

CLOSE, in heraldry. When any bird is drawn in a coat of arms with its wings close down about it, (*i. e.* not displayed), and in a standing posture, they blazon it by this word *close*; but if it be flying, they call it *volant*. See VOLANT.

CLOSE, in music. See CADENCE.

CLOSE-HAULED, in navigation, the general arrangement or trim of a ship's sails when she endeavours to make a progress in the nearest direction possible to-

wards that point of the compass from which the wind blows. In this manner of sailing, the keel commonly makes an angle of six points with the line of the wind; but sloops and some other small vessels are said to sail almost a point nearer. All vessels, however, are supposed to make nearly a point of lee-way when close-hauled, even when they have the advantage of a good sailing breeze and smooth water. The angle of lee-way, however, increases in proportion to the increase of the wind and sea. In this disposition of the sails, they are all extended sideways on the ship, so that the wind, as it crosses the ship obliquely toward the stern from forwards, may fill their cavities. But as the current of winds also enters the sails in an oblique direction, the effort of it to make the ship advance is considerably diminished: she will therefore make the least progress when sailing in this manner. The ship is said to be close-hauled, because at this time her *tacks*, or lower corners of the principal sails, are drawn close down to her side to windward, the sheets hauled close-aft, and all the bow-lines drawn to their greatest extension to keep the sails steady.

CLOSE-Quarters, certain strong barriers of wood, stretching across a merchant-ship in several places. They are used as places of retreat when a ship is boarded by her adversary, and are therefore fitted with several small loop-holes through which to fire the small arms, and thereby annoy the enemy and defend themselves. They are likewise furnished with several caissons called *powder-chests*, which are fixed upon the deck, and filled with powder, old-nails, &c. and may be fired at any time from the close-quarters upon the boarders.

We have known an English merchant-ship of 16 ^{Falconer's} guns, and properly fitted with close-quarters, defeat the united efforts of three French privateers who boarded her in the last war, after having engaged at some distance nearly a day and a half, with very few intervals of rest. Two of the cruisers were equipped with twelve guns each, and the other with eight. The French sailors were, after boarding, so much exposed to continued fire of musquetry and coehorns charged with grenadoes, that a dreadful scene of carnage ensued, in which the decks were soon covered with the dead bodies of the enemy, several of which the boarders, in their hurry to escape, had left behind.

CLOT-BIRD: a species of FRINGILLA

CLOTH, in commerce, a manufacture made of wool, wove in the loom.

Cloths are of divers qualities, fine or coarse. The goodness of cloth, according to some, consists in the following particulars: 1. That the wool be of a good quality, and well dressed. 2. It must be equally spun, carefully observing that the thread of the warp be finer and better twitted than that of the woof. 3. The cloth must be well wrought, and beaten on the loom, so as to be every where equally compact. 4. The wool must not be finer at one end of the piece than in the rest. 5. The lists must be sufficiently strong, of the same length with the stuff, and must consist of good wool, hair, or ostrich-feathers; or, what is still better, of Danish dog's hair. 6. The cloth must be free from knots and other imperfections. 7. It must be well scoured with fuller's earth, well sulled with the best white soap, and afterwards washed in clear water.

Close
||
Cloth.

Cloth.

water. 8. The hair or nap must be well drawn out with the teazel, without being too much opened. 9. It must be shorn close without making it threadbare. 10. It must be well dried. 11. It must not be tenter-stretched, to force it to its just dimensions. 12. It must be pressed cold, not hot pressed, the latter being very injurious to woollen cloth.

Manufacturing of white Cloths which are intended for dyeing. The best wool for the manufacturing of cloths are those of England and Spain, especially those of Lincolnshire and Segovia. To use those wools to the best advantage, they must be scoured, by putting them into a liquor somewhat more than lukewarm, composed of three parts fair water and one of urine. After the wool has continued long enough in the liquor to soak, and dissolve the grease, it is drained and well washed in running water. When it feels dry, and has no smell but the natural one of the sheep, it is said to be duly scoured.

After this, it is hung to dry in the shade; the heat of the sun making it harsh and inflexible: when dry, it is beat with rods upon hurdles of wood, or on cords, to cleanse it from dust and the grosser filth; the more it is thus beat and cleansed, the softer it becomes, and the better for spinning. After beating, it must be well picked, to free it from the rest of the filth that had escaped the rods.

It is now in a proper condition to be oiled, and carded on large iron cards placed slopewise. Olive oil is esteemed the best for this purpose: one fifth of which should be used for the wool intended for the woof, and a ninth for that designed for the warp. After the wool has been well oiled, it is given to the spinners, who first card it on the knee with small fine cards, and then spin it on the wheel, observing to make the thread of the warp smaller by one third than that of the woof, and much compacter twisted.

The thread thus spun, is reeled, and made into skeins. That designed for the woof is wound on little tubes, pieces of paper, or rushes, so disposed as that they may be easily put in the eye of the shuttle. That for the warp is wound on a kind of large wooden bobbins, to dispose it for warping. When warped, it is stiffened with size; the best of which is that made of shreds of parchment; and when dry, is given to the weavers, who mount it on the loom.

The warp thus mounted, the weavers, who are two to each loom, one on each side, tread alternately on the treddle, first on the right step, and then on the left, which raises and lowers the threads of the warp equally; between which they throw transversely the shuttle from the one to the other: and every time that the shuttle is thus thrown, and a thread of the wool inserted within the warp, they strike it conjunctly with the same frame, wherein is fastened the comb or reed, between whose teeth the threads of the warp are passed, repeating the stroke as often as is necessary.

The weavers having continued their work till the whole warp is filled with the wool, the cloth is finished; it is then taken off the loom by unrolling it from the beam whereon it had been rolled in proportion as it was wove; and now given to be cleansed of the knots, ends of threads, straws, and other filth, which is done with iron nippers.

In this condition it is carried to the fullery, to be scoured with urine, or a kind of potter's clay, well steeped in water, put along with the cloth in the trough wherein it is fullled. The cloth being again cleared from the earth or urine, is returned to the former hands to have the lesser filth, small straws, &c. taken off as before: then it is returned to the fuller to be beat and fullled with hot water, wherein a fuitable quantity of soap has been dissolved; after fulling, it is taken out to be smoothed or pulled by the lifts lengthwise, to take out the wrinkles, crevices, &c.

The smoothing is repeated every two hours, till the fulling be finished, and the cloth brought to its proper breadth: after which it is washed in clear water, to purge it of the soap, and given wet to the carders to raise the hair or nap on the right side with the thistle or weed. After this preparation the cloth-worker takes the cloth, and gives it its first cut or shearing: then the carders resume it, and after wetting, give it as many more courses with the teazel, as the quality of the stuff requires, always observing to begin against the grain of the hair, and to end with it; as also to begin with a smoother thistle, proceeding still with one sharper and sharper, as far as the sixth degree.

After these operations, the cloth being dried, is returned to the cloth-worker, who sheers it a second time, and returns it to the carders, who repeat their operation as before, till the nap be well ranged on the surface of the cloth, from one end of the piece to the other.

The cloth thus wove, scoured, napped, and shorn, is sent to the dyer; when dyed, it is washed in fair water, and the worker takes it again wet as it is, lays the nap with a brush on the table, and hangs it on the tenters, where it is stretched both in length and breadth sufficiently to smooth it, set it square, and bring it to its proper dimensions, without straining it too much; observing to brush it afresh, the way of the nap, while a little moist, on the tenters.

When quite dry, the cloth is taken off the tenters, and brushed again on the table, to finish the laying of the nap: after which it is folded, and laid cold under a press, to make it perfectly smooth and even, and give it a gloss.

Lastly, the cloth being taken out of the press, and the papers, &c. for glossing it removed, it is in a condition for sale or use. With regard to the manufacture of mixt cloths, or those wherein the wools are first dyed, and then mixt, spun, and wove of the colours intended, the process, except what relates to the colour, is mostly the same with that just represented.

CLOTH made from Vegetable Filaments. See BARK and FILAMENTS.

Incumbustible CLOTH. See ASBESTOS.

CLOTHO, the youngest of the three Parcaë, daughters of Jupiter and Themis. She was supposed to preside over the moment that we are born. She held the distaff in her hand and spun the thread of life, whence her name κλωθεύω, to spin. She was represented wearing a crown with seven stars, and covered with a variegated robe.

CLOUD, a collection of vapours suspended in the atmosphere.

Cloth

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Cloud.

¹ Cloud. Cause of the formation of clouds uncertain. That the clouds are formed from the aqueous vapours which before were so closely united with the atmosphere as to be invisible, is universally allowed: but it is no easy matter to account for the long continuance of some very opaque clouds without dissolving; or to give a reason why the vapours, when they have once begun to condense, do not continue to do so till they at last fall to the ground in the form of rain or snow, &c. Under the article BAROMETER, n^o 23. we have hinted at the general cause of the formation of clouds; namely, a separation of the latent heat from the water whereof the vapour is composed. The consequence of this separation, as is undeniably proved by Dr Black, must be the condensation of that vapour, in some degree at least: in such case, it will first appear as a smoke, mist, or fog; which if interposed betwixt the sun and earth, will form a cloud; and the same causes continuing to act, the cloud will produce rain or snow. But though the separation of this latent heat in a certain degree is the immediate cause of the formation of clouds, the remote cause, or the changes produced in the atmosphere, whereby such a separation may be induced, are much more difficult to be discovered. In common observation, we see that vapour is most powerfully condensed by cold substances, such as metals, water, &c. But cold alone cannot in all cases cause the condensation of the atmospherical vapours, otherwise the nights believed to be always foggy or cloudy, owing to the vapours, raised throughout the day by the heat of the sun, being condensed by the superior coldness of the night. Great rains will happen in very warm weather, when the union of the vapours with the atmosphere ought rather to be promoted than dissolved, if cold was the only agent in their condensation. The serenity of the atmosphere, also, in the most severe frosts, abundantly shows that some other cause besides mere heat or cold is concerned in the formation of clouds, and condensation of the atmospherical vapours.

² Not always owing to cold. ³ Electricity probably concerned. The electric fluid is now so generally admitted as an agent in all the great operations of nature, that it is no wonder to find the formation of clouds attributed to it. This hath accordingly been given by S. Beccaria as the cause of the formation of all clouds whatsoever, whether of thunder, rain, hail, or snow. The first, he thinks, are produced by a very great power of electricity, and the others by one more moderate. But though it is certain that all clouds, or even fogs and rain, are electrified in some degree, it still remains a question, whether the clouds are formed in consequence of the vapour whereof they are composed being first electrified, or whether they become electrified in consequence of its being first separated from the atmosphere, and in some measure condensed. This hath not yet, as far as we know, been ascertained by the experiments of Beccaria, or any other person; and indeed, notwithstanding the multitude of electrical discoveries that have lately been made, there seems to be little or no foundation for ascertaining it. Electricity is known to be in many cases a promoter of evaporation; but no experiments have yet been brought to prove, that electrified air parts with its moisture more readily than such as is not electrified; so that, till the properties of electrified air are farther investigated, it is

impossible to lay down any rational theory of the formation of clouds upon this principle.

But whether the clouds are produced, *i. e.* the invisible vapours floating in the atmosphere condensed so as to become visible, by means of electricity or not, it is certain that they do contain the electric fluid in prodigious and inconceivable quantities, and many very terrible and destructive phenomena have been occasioned by clouds very highly electrified. The most extraordinary instance of this kind perhaps on record happened in the island of Java in the East Indies in August 1772. On the 11th of that month, at midnight, a bright cloud was observed covering a mountain in the district called *Oberibon*, and at the same time several reports were heard like those of a gun. The people who dwelt upon the upper parts of the mountain not being able to fly fast enough, a great part of the cloud, almost three leagues in circumference, detached itself under them, and was seen at a distance rising and falling like the waves of the sea, and emitting globes of fire so luminous, that the night became as clear as day. The effects of it were astonishing; every thing was destroyed for seven leagues round; the houses were demolished; plantations were buried in the earth; and 2140 people lost their lives, besides 1500 head of cattle, and a vast number of horses, goats, &c.

Another instance of a very destructive cloud, the electric qualities of which will at present scarcely be doubted, is related by Mr Brydone, in his Tour through Malta. It appeared on the 29th of October 1757. About three quarters of an hour after midnight, there was seen to the south-west of the city of Melita, a great black cloud, which, as it approached, changed its colour, till at last it became like a flame of fire mixed with black smoke. A dreadful noise was heard on its approach, which alarmed the whole city. It passed over the port, and came first on an English ship, which in an instant was torn in pieces, and nothing left but the hulk; part of the masts, sails, and cordage, were carried to a considerable distance along with the cloud. The small boats and felloques that fell in its way were all broken to pieces and sunk. The noise increased and became more frightful. A centinel terrified at its approach ran into his box; but both he and it were lifted up and carried into the sea, where he perished. It then traversed a considerable part of the city, and laid in ruins almost every thing that stood in its way. Several houses were laid level with the ground, and it did not leave one steeple in its passage. The bells of some of them, together with the spires, were carried to a considerable distance; the roofs of the churches demolished and beat down, &c. It went off at the north-east point of the city, and demolishing the light-house, is said to have mounted up into the air with a frightful noise; and passed over the sea to Sicily, where it tore up some trees, and did other damage; but nothing considerable, as its fury had been mostly spent at Malta. The number of killed and wounded amounted to near 200; and the loss of shipping, &c. was very considerable.

The effects of thunder-storms, and the vast quantity of electricity collected in the clouds which produce these storms, are so well known, that it is superfluous to mention them. It appears, however, that even these

Cloud. ⁴ Clouds often prodigiously electrified. ⁵ Terrible destruction by an electrified cloud in Java. ⁶ By another in the island of Malta.

Cloud. these clouds are not so highly electrified as to produce their fatal effects on those who are immersed in them. It is only the discharge of part of their electricity upon such bodies as are either not electrified at all, or not so highly electrified as the cloud, that does all the mischief. We have, however, only the following instance on record, of any person's being immersed in the body of a thunder-cloud. Professor Saussure, and young Mr Jalabert, when travelling over one of the high Alps, were caught among clouds of this kind; and to their astonishment found their bodies so full of electrical fire, that spontaneous flashes darted from their fingers with a crackling noise, and the same kind of sensation as when strongly electrified by art.

7
Instance of two people involved in a thunder-cloud.

8
Height of the clouds.

• See Thunder.

The height of clouds in general is not great; the summits of very high mountains being commonly quite free from them, as Mr Brydon experienced in his journey up mount *Ætna*: but those which are most highly electrified descend lowest, their height being often not above seven or eight hundred yards above the ground; nay, sometimes thunder-clouds appear actually to touch the ground with one of their edges*: but the generality of clouds are suspended at the height of a mile, or little more, above the earth. Some, however, have imagined them to arise to a most incredible and extravagant height. Maignan of Thoulouze, in his *Treatise of Perspective*, p. 93, gives an account of an exceeding bright little cloud that appeared at midnight in the month of August, which spread itself almost as far as the zenith. He says that the same thing was also observed at Rome; and from thence concludes, that the cloud was a collection of vapours raised beyond the projection of the earth's shadow, and of consequence illuminated by the beams of the sun. This, however, can by no means be credited; and it is much more probable that this cloud owed its splendor to electricity, than to the reflection of the solar beams.

9
Their various colours accounted for.

In the evenings after sun-set, and mornings before sun-rise, we often observe the clouds tinged with beautiful colours. They are mostly red; sometimes orange, yellow, or purple; more rarely bluish; and seldom or ever green. The reason of this variety of colours, according to Sir Isaac Newton, is the different size of the globules into which the vapours are condensed. This is controverted by Mr Melville, who thinks that the clouds reflect the sun's light precisely as it is transmitted to them through the atmosphere. This reflects the most refrangible rays in the greatest quantity; and therefore ought to transmit the least refrangible ones, red, orange, and yellow, to the clouds, which accordingly appear most usually of those colours. In this opinion he was greatly confirmed by observing, when he was in Switzerland, that the snowy summits of the Alps turned more and more reddish after sun-set, in the same manner as the clouds; and he imagines, that the semitransparency of the clouds, and the obliquity of their situation, tend to make the colours in them much more rich and copious than those on the tops of snowy mountains.

10
Of the motions of clouds.

The motions of the clouds, though sometimes directed by the wind, are not always so, especially when thunder is about to ensue. In this case they seem to move very slowly, and often to be absolutely stationary

for some time. The reason of this most probably is, that they are impelled by two opposite streams of air nearly of equal strength; by which means their velocity is greatly retarded. In such cases both the aerial currents seem to ascend to a very considerable height; for Mess. Charles and Roberts, when endeavouring to avoid a thunder-cloud in one of their aerial voyages, could find no alteration in the course of the current, though they ascended to the height of 4000 feet from the surface of the earth. In some cases the motions of the clouds evidently depend on their electricity, independent of any current of air whatever. Thus, in a calm and warm day, we often see small clouds meeting each other in opposite directions, and setting out from such short distances, that we cannot suppose any opposite winds to be the cause. These clouds, when they meet, instead of forming a larger one, become much less, and sometimes vanish altogether; a circumstance undoubtedly owing to the discharge of opposite electricities into each other. This serves also to throw some light on the true cause of the formation of clouds; for if two clouds electrified, the one positively and the other negatively, destroy each other on contact; it follows, that any quantity of vapour suspended in the atmosphere, while it retains its natural quantity of electricity, remains invisible, but becomes a cloud when electrified either *plus* or *minus*. A difficulty, however, still occurs; *viz.* in what manner a small quantity of vapour surrounded by an immense ocean of the same kind of matter, can acquire either more or less electricity than that which surrounds it: and this indeed we seem not as yet to have any data to solve in a satisfactory manner.

The shapes of the clouds are likewise undoubtedly owing to their electricity; for in those seasons in which a great commotion has been excited in the atmospheric electricity, we shall perceive the clouds assuming strange and whimsical shapes, which vary almost every moment. This, as well as the meeting of small clouds in the air, and vanishing upon contact, is an almost infallible sign of thunder.

Besides the phenomena of thunder, rain, &c. the clouds are intimately connected with those of wind, and always assume a particular shape when a strong continued wind is about to ensue; though it is remarkable, that in the strongest winds we shall often observe them stationary. Sometimes also, on the approach of a cloud, we shall find a sudden and violent gust of wind arise; and at others, the wind, though violent before, shall cease on the approach of a cloud, and recover its strength as soon as the cloud is past. This connection of the clouds with wind is most remarkable in mountainous countries, when the peaks are sufficiently high to have their tops involved in clouds. A very remarkable mountain of this kind is met with at the Cape of Good Hope, from the clouds on whose top, according to the relations of travellers, the winds issue forth as if they had been confined in a bag; and something similar has been observed of mountains in other parts of the world.

The uses of the clouds are evident; as from them proceeds the rain which refreshes the earth; and without which, according to the present system of nature, the whole surface of the earth must be a mere desert.

They

^{Clovis}
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Clovis.
They are likewise of great use as a screen interposed between the earth and the scorching rays of the sun, which are often so powerful as to destroy the grass and other tender vegetables. In the more secret operations of nature also, where the electrical fluid is concerned, the clouds bear a principal share; and serve especially as a medium for conveying that fluid from the atmosphere into the earth, and from the earth into the atmosphere: in doing which, when electrified to a great degree, they sometimes produce very terrible effects; of which instances have been already given.

CLOVE-TREE, in botany. See CARYOPHYLLUS.

CLOVE, a term used in weights of wool. Seven pounds make a clove. In Essex, eight pounds of cheese and butter go to the clove.

CLOVE *July-flower*. See DIANTHUS.

CLOVER-GRASS, in botany. See TRIFOLIUM; and AGRICULTURE, n^o 177, 179.

CLOUGH, or DRAUGHT, in commerce, an allowance of two pounds in every hundred weight for the turn of the scale, that the commodity may hold out weight when sold out by retail.

CLOVIO (Giorgio Giulio), history and portrait painter, was born in Sclavonia in 1498. Having in the early part of his youth applied himself to literature, his genius prompted him to pursue the art of painting for a profession; and at 18 years of age he went to Rome, where he spent three years to perfect his hand in drawing, and devoted himself entirely to painting in miniature. His knowledge of colouring was established by the instructions of Julio Romano, and his taste of composition and design was founded on the observations he made on the works of Michael Angelo Buonaroti. By those assistances he proceeded to such a degree of excellence in portrait as well as in history, that in the former he was accounted equal to Titian, and in the latter not inferior to Buonaroti. He died in 1578. His works are exceedingly valuable, and are at this day numbered among the curiosities of Rome. Vafari, who had seen the wonderful performances of Clovio with inexpressible astonishment, enumerates many of his portraits and historical compositions, and seems to be almost at a loss for language sufficiently expressive of their merit. He mentions two or three pictures on which the artist had bestowed the labour of nine years: but the principal picture represented Nimrod building the Tower of Babel; which was so exquisitely finished, and so perfect in all its parts, that it seemed quite inconceivable how the eye or the pencil could execute it. He says it is impossible to imagine any thing so admirably curious; whether one considers the elegance of the attitudes, the richness of the composition, the delicacy of the naked figures, the perspective proportion of the objects, the tender distances, the scenery, the buildings, or other ornaments; for every part is beautiful and inimitable. He also takes notice of a single ant introduced in one of the pictures of this master; which, though exceedingly and incredibly small, is yet so perfect, that even the most minute member was as distinct as if it had been painted of the natural size.

CLOVIS I. was the real founder of the French monarchy; for he was the first conqueror of the several provinces of Gaul, possessed before his time by the Romans, Germans, and Goths. These he united to the

then scanty dominions of France, removed the seat of government from Sciffons to Paris, and made this the capital of his new kingdom. He died in 511, in the 46th year of his age and 31st of his reign. See (*Hist. of*) FRANCE.

CLOUTS, in gunnery, are thin plates of iron nailed on that part of the axle-tree of a gun-carriage which comes through the nave, and through which the limspin goes.

CLOYNE, a town of Ireland, in the county of Cork and province of Munster. W. Long. 8. o. N. Lat. 51. 40. It is but a small place, though an episcopal residence. A church was built, and a bishopric erected here, by St Colman, who died on the 4th of November 604; and in 707 an abbey was also founded here. In 1430, the bishopric was united to that of Cork; and the union continued till the 11th of November 1638, when Dr George Synge was consecrated bishop of Cloyne; since which time this see has been governed by its own prelates, one of whom was the celebrated BERKELEY.—This see is not taxed in the king's books; but is now reputed to be worth L. 2500 a-year.—The chapter of Cloyne is composed of a dean, chanter, chancellor, treasurer, an archdeacon, and fourteen prebendaries. The diocese is divided into four rural deaneries, and the collegiate church of St Mary of Youghal is united to the bishopric. The cathedral is a decent Gothic building. The nave is about 120 feet long; having lateral aisles, besides the cross aisles, divided by Gothic arches, five on each side. In the choir there is an excellent organ. The bishop's palace, which was rebuilt at the beginning of the present century, is large and convenient. To the north-west of Cloyne is a reputed holy well, dedicated to St Colman, which is much frequented on the 24th of November, being the patron-day.

CLUE OF A SAIL, the lower corner; and hence

CLUE-Garnets, are a sort of tackles fastened to the clues, or lower corners of the main-sail or fore-sail, to truss them up to the yard as occasion requires, which is usually termed *clueing up the sails*.

CLUE-Lines are for the same purpose as clue-garnets; only that the latter are confined to the courses, whereas the former are common to all the square sails. See these ropes as represented in the article SHIP.

CLUNIA (anc. geog.), a principal town of the Hither Spain, a Roman colony, with a conventus juridicus, on the Durus, to the west of Numantia. Now *Corunna del Conde*.

CLUNIUM (anc. geog.), a town of Corsica, near Bastia. Now *St Catharine*.

CLUNY, or CLUGNY, a celebrated abbey of Benedictine monks, in a city of that name; being the head or chief of a congregation denominated from them.

It is situated in the Maçonnois, a little province of France, on the river Grône; and was founded by William Duke of Berry and Aquitain; or, as others say, by the Abbot Bernon, supported by that Duke, in the year 910.

This abbey was anciently so very spacious and magnificent, that in 1245, after the holding of the first council of Lyons, Pope Innocent IV. went to Cluny, accompanied with the 2 patriarchs of Antioch and Constantinople, 12 Cardinals, 3 archbishops, 15 bishops, and a great number of abbots; who were all entertained,

Clouts

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Cluny.

Clupea.

tained, without one of the monks being put out of their place: tho' S. Louis, Q. Blanche his mother, the Duke of Artois his brother, and his sister, the Emperor of Constantinople, the sons of the kings of Arragon and Castile, the Duke of Burgundy, 6 counts, and a great number of lords, with all their retinues, were there at the same time.

Cluny, at its first erection, was put under the immediate protection of the apostolic see; with express prohibition to all secular and ecclesiastic powers, to disturb the monks in the possession of their effects, or the election of their abbot. By this they pretended to be exempted from the jurisdiction of bishops; which at length gave the hint to other abbeys to insist on the same.

Cluny is the head of a very numerous and extensive congregation: in effect, it was the first congregation of divers monasteries united under one chief, so as only to constitute one body, or, as they call it, one order, that ever arose.

This order of monks was brought into England by William Earl of Warren, son-in-law to William the Conqueror, who built a house for them at Lewes in Sussex about the year 1077. There were 27 priories and cells of this order in England, which were governed by foreigners, afterwards made denizens.

CLUPEA, or HERRING, in ichthyology, a genus belonging to the order of abdominales. The upper jaw is furnished with a serrated maxilla; the branchiostegic membrane has eight rays; a scaly serrated line runs along the belly from the head to the tail; and the belly-fins have frequently nine rays. There are 11 species, viz.

1. The harengus, or common herring, has no spots, and the under jaw is longer than the upper one. A herring dies immediately after it is taken out of the water; whence the proverb arises, *As dead as a herring*. The meat is every where in great esteem, being fat, soft, and delicate; especially if it is dressed as soon as caught, for then it is incomparably better than on the next day.

The herring was unknown to the ancients. Notwithstanding the words *χερσιν* and *μαριν* are by translators rendered *halec*, the characters given to those fish are common to such numbers of different species as render it impossible to say which they intended.

Herrings are found from the highest northern latitudes, yet known as low as the northern coasts of France; and except one instance, brought by Dod, of a few being once taken in the bay of Tangier, none are ever found more southerly. They are met with in vast shoals on the coast of America, as low as Carolina. In Chesapeak-bay is an annual inundation of those fish, which cover the shore in such quantities as to become a nuisance. We find them again in the seas of Kamptschatka, and probably they reach Japan; for Kempfer mentions, in his account of the fish of that country, some that are congenerous. The great winter rendezvous of the herring is within the arctic circle: there they continue for many months in order to recruit themselves after the fatigue of spawning; the seas within that space swarming with insect food in a far greater degree than those of our warmer latitudes. This mighty army begins to put itself in motion in the spring: we distinguish this vast body by that name;

for the word *herring* comes from the German *heer*, Clupea. "an army," to express their numbers. They begin to appear off the Shetland isles in April and May; these are only the forerunners of the grand shoal which comes in June: and their appearance is marked by certain signs, by the numbers of birds, such as gannets and others, which follow to prey on them; but when the main body approaches, its breadth and depth is such as to alter the appearance of the very ocean. It is divided into distinct columns of five or six miles in length, and three or four in breadth, and they drive the water before them with a kind of rippling: sometimes they sink for the space of ten or fifteen minutes, and then rise again to the surface; and in fine weather reflect a variety of splendid colours like a field of the most precious gems; in which, or rather in a much more valuable, light should this stupendous gift of Providence be considered by the inhabitants of the British isles.

The first check this army meets in its march southward is from the Shetland isles, which divide it into two parts; one wing takes to the east, the other to the western shores of Great Britain, and fill every bay and creek with their numbers; others pass on towards Yarmouth, the great and ancient mart of herrings: they then pass through the British Channel, and after that, in a manner disappear. Those which take towards the west, after offering themselves to the Hebrides, where the great stationary fishery is, proceed to the north of Ireland, where they meet with a second interruption, and are obliged to make a second division: the one takes to the western side, and is scarce perceived, being soon lost in the immensity of the Atlantic; but the other, that passes into the Irish sea, rejoices and feeds the inhabitants of most of the coasts that border on it. These brigades, as we may call them, which are thus separated from the greater columns, are often capricious in their motions, and do not show an invariable attachment to their haunts.

Were we inclined to consider this partial migration ³Wonderful in a moral light, we might reflect with veneration and instinct of these creatures. awe on the mighty power which originally impressed on this most useful body of his creatures the instinct that directs and points out the course, that blesses and enriches these islands, which causes them, at certain and invariable times, to quit the vast polar deeps, and offer themselves to our expecting fleets. That benevolent Being has never been known, from the earliest account of time, once to withdraw this blessing from the whole; though he often thinks proper to decay it to particulars, yet this partial failure (for which we see no natural reason) should fill us with the most exalted and grateful sense of his Providence for impressing such an invariable and general instinct on these fish towards a southward migration when the whole is to be benefited, and to withdraw it when only a minute part is to suffer.

This instinct was given them, that they might remove for the sake of depositing their spawn in warmer seas, that would mature and vivify it more assuredly than those of the frozen zone. It is not from defect of food that they set themselves in motion; for they come to us full of fat, and on their return are almost universally observed to be lean and miserable. What their food is near the Pole we are not yet informed; but

¹
Herrings,
where
found.

²
Immense
shoal of
them.

Clupea. but in our seas they feed much on the *oniscus marinus*, a crustaceous insect, and sometimes on their own fry.

Clupea, Clusia.

They are full of roe in the end of June, and continue in perfection till the beginning of winter, when they deposit their spawn. The young herrings begin to approach the shores in July and August, and are then from half an inch to two inches long: those in Yorkshire are called *herring file*. Though we have no particular authority for it, yet as very few young herrings are found in our seas during winter, it seems most certain that they must return to their parental haunts beneath the ice, to repair the vast destruction of their race during summer by men, fowl, and fish. Some of the old herrings continue on our coast the whole year: the Scarborough fishermen never put down their nets but they catch a few: but the numbers that remain are not worth comparison with those that return. See *Herring-FISHERY*.

The Severn shad is esteemed a very delicate fish about the time of its first appearance, especially in that part of the river that flows by Gloucester, where they are taken in nets, and usually sell dearer than salmon: some are sent to London, where the fish-mongers distinguish them from those of the Thames by the French name *alose*. Whether they spawn in this river and the Wye is not determined, for their fry has not yet been ascertained. The old fish come from the sea into the river in full roe. In the months of July and August, multitudes of bleak frequent the river near Gloucester; some of them are as big as a small herring, and these the fishermen erroneously suppose to be the fry of the shad. Numbers of these are taken near Gloucester, in those months only, but none of the emaciated shad are ever caught in their return.

4
Young ones probably return with their parents.

The Dutch are most extravagantly fond of this fish when it is pickled. A premium is given to the first buss that arrives in Holland with a lading of this their ambrosia, and a vast price given for each keg. There is as much joy among the inhabitants on its arrival, as the Egyptians show on the first overflowing of the Nile. Flanders had the honour of inventing the art of pickling herrings. One William Beuklen of Biverlet, near Sluys, hit on this useful expedient: from him was derived the name *pickle*, which we borrow from the Dutch and German. Beuklen died in 1397. The emperor Charles V. held his memory in such veneration for the service he did to mankind, as to do his tomb the honour of a visit. It is very singular that most nations give the name of their favourite dish to the facetious attendant on every mountebank. Thus the Dutch call him *pickle herring*; the Italians, *macaroni*; the French, *jean pottage*; the Germans, *hans wurst*, that is, *jack sausage*; and the English dignify him with the name of *jack pudding*.

The Thames shad does not frequent that river till the latter end of May or beginning of June, and is esteemed a very coarse and insipid sort of fish. The Severn shad is sometimes caught in the Thames, though rarely, and called *allis* (no doubt *alose*, the French name) by the fishermen in that river. About the same time, and rather earlier, the variety called, near Gloucester, the *twaitte*, makes its appearance; and is taken in great numbers in the Severn, and is held in as great disrepute as the shad of the Thames. The differences between each variety are as follows: the true shad weighs sometimes eight pounds; but their general size is from four to five. The *twaitte*, on the contrary, weighs from half a pound to two pounds, which it never exceeds. The *twaitte* differs from a shad only in having one or more round black spots on the sides: if only one, it is always near the gill; but commonly there are three or four, placed one under the other.

9
Twaitte described.

5
Pickling of herrings, when invented.

2. The *sprattus* has 13 rays in the back fin. It is a native of the European seas, and has a great resemblance to the herring, only it is of a less size. They come into the river Thames below bridge in the beginning of November, and leave it in March; and are, during that season, a great relief to the poor of the capital. At Gravesend and at Yarmouth, they are cured like red-herrings: they are sometimes pickled, and are little inferior in flavour to the anchovy, but the bones will not dissolve like those of the latter.

4. The *encrascolus*, or *anchovy*, has its upper jaw longer than the under one, and is about three inches long. They are taken in vast quantities in the Mediterranean, and are brought over here pickled. The great fishery is at Georgia a small isle west of Leghorn. See *Anchovy-FISHERY*.

10
Anchovy described.

6
Sprattus, where found.

3. The *alosa*, or *shad*, has a forked snout, and black spots on the sides. According to Belonius and Hasselquist, this is a fish of passage in the Nile. The last says, it is found in the Mediterranean near Smyrna, and on the coast of Egypt near Rosetto; and that in the months of December and January it ascends the Nile as high as Cairo, where the people stuff it with pot marjoram; and when dressed in that manner, it will very nearly intoxicate the eater. In Great Britain the Severn affords this fish in higher perfection than any other river. It makes its first appearance there in May, but in very warm seasons in April; for its arrival sooner or latter depends much on the temper of the air. It continues in the river about two months, and then is succeeded by a variety which we shall have occasion to mention hereafter.

The other species are, 5. The *atherinoides* has a shining line on each side, and small belly-fins. It is a native of Surinam. 6. The *thrissa* has 28 rays in the fin at the anus. It is found in the Indian ocean. 7. The *lima* has yellow fins, those of the belly being very small. The mouth is flat; the upper jaw is very short; the body is of a shining silver colour; and the fins are yellow. It is a native of Asia. 8. The *sternicla* has no belly-fins, and the body is broad. It is a native of Surinam. 9. The *myxus* is shaped like a sword, and the fins at the anus are united. It is found in the Indian ocean. 10. The *tropica* has a wedge-like tail, and a white, broad, compressed body. It is found at Ascension island. 11. The *linensis* is very like the common herring, but broader. It has no teeth, and is a native of China.

7
Alofa, or shad where found.

8
The finest inhabit the Severn.

CLUSIA, the BALSAM-TREE: A genus of the monogynia order, belonging to the polygamia class of plants; and in the natural method ranking under those plants the order of which is doubtful. The calyx is tetraphyllous or hexaphyllous, with its leaflets opposite and imbricated; the corolla tetrapetalous, or hexapetalous; the stamina numerous. The calyx and corolla of the female as in the male; the nectarium

Clusina
||
Clutia.

rium of antheræ or glandules coalited, including the germen. The capsule is quinquelocular, quinquevalved, and full of pulp. There are four species, all natives of America. The most remarkable is the flava. This is pretty common in the British American islands, where the trees grow to the height of 20 feet, and shoot out many branches on every side, furnished with thick, round, succulent leaves placed opposite. The flowers are produced at the ends of the branches, each having a thick succulent cover. After the flowers are past, they are succeeded by oval fruit. From every part of these trees there exudes a kind of turpentine, which is called in the West Indies *bog-gum*; because they say, that when any of the wild hogs are wounded, they repair to these trees, and rub their wounded parts against the stem till they have anointed themselves with this turpentine, which heals their wounds. These plants are very tender, and in this country must be kept constantly in a stove; and sparingly watered, especially in winter; for they naturally grow in those parts of the islands where it seldom rains, and consequently cannot bear much moisture. They may be propagated from cuttings, which must be laid to dry for a fortnight or three weeks, that the wounded parts may be healed over, otherwise they will rot. The best time for planting these cuttings is in July, that they may be well rooted before the cold weather comes on in autumn.

CLUSINA PALUS, (anc. geog.) a lake of Tuscany, extending north-west between Clusium and Arretium, and communicating with the Arnus and Clanis. Now *Cbiana Palude*.

CLUSINI FONTES, (Horace), baths in Tuscany, in the territory of Clusium, between this last to the north, and Acula to the south, at the distance of eight miles from each. Now *Bagni di S. Casciana*.

CLUSIUM, anciently called *Camars*, (Virgil, *Livy*); a town of Tuscany, at the south end of the Palus Clusina, where it forms the Clanis; the royal residence of Porfena, three days journey from Rome to the north, (Polybius). *Clusinus* the epithet. *Clusini Veteres* the people. Now *Chiusi*. E. Long. 13. Lat. 43.—*Clusium Novum*, was a town of Tuscany, near the springs of the Tiber, in the territory of Arretium; where lies the Ager Clusinus; now called *Casentino*. *Clusini Novi*, the people, (Pliny).

CLUTIA, in botany: A genus of the gynandria order, belonging to the diœcia class of plants; and in the natural method ranking under the 38th order, *Tricocca*. The male calyx is pentaphyllous, the corolla pentapetalous: the calyx and corolla of the female as in the male; the styles are three, and the capsule is trilocular with a single seed. There are three species, all of them natives of warm climates. They are evergreen shrubby plants, rising six or eight feet high, garnished with simple leaves, and greenish-white quinquepetalous flowers. They are propagated by cuttings in spring or summer, planting them in pots of light earth, plunged in a hot-bed. The plants must always be kept in a stove.

Dr Wright, in his account of the medicinal plants of Jamaica, says that the *clusia elutheria* is the same as the *caecarilla* and *eletheria* of the shops. Other medical writers have supposed them to be distinct barks, and they are sold in the shops as different pro-

ductions. Linnæus's *croton caecarilla*, Dr Wright observes, is the wild rosemary shrub of Jamaica, the bark of which has none of the sensible qualities of the *caecarilla*.

CLUVIER (Philip), in Latin *Cluverius*, a celebrated geographer, born at Dantzic in 1580. He travelled into Poland, Germany, and the Netherlands, in order to study law; but, being at Leyden, Joseph Scaliger persuaded him to give way to his genius for geography. Cluvier followed his advice, and for this purpose visited the greatest part of the European states. He was well versed in many languages; and wherever he went, obtained illustrious friends and protectors. At his return to Leyden, he taught there with great applause; and died in 1623, aged 43. He wrote, 1. *De tribus Rheni alveis*. 2. *Germania antiqua*. 3. *Sicilia antiqua*. 4. *Italia antiqua*. 5. *Introductio in universam Geographiam*. All justly esteemed.

CLYDE, a river in Scotland, which, arising in Anandale, falls into the sea over against the isle of Bute. Next to the Tay, it is the largest river in Scotland; and is navigable for small craft up to Glasgow. The canal, which joins the Forth, falls into it a little below that city. The cataract called the *Frieth of the Clyde*, opposite to Lanark, is a great natural curiosity, and the first scene of the kind in Great Britain. This tremendous sheet of water for about a mile falls from rock to rock. At Stone-byers, the first fall is about 60 feet; the last, at Cory-Lynn, is over solid rock, not less than 100 feet high. At both these places this great body of water exhibits a grander and more interesting spectacle than imagination can possibly conceive.

At Cory-Lynn, the falls are seen to most advantage from a ruinous pavilion in a garden, placed in a lofty situation. The cataract is full in view, seen over the tops of trees and bushes, precipitating itself, for an amazing way, from rock to rock, with short interruptions, forming a rude slope of furious foam. The sides are bounded by vast rocks, clothed on their tops with trees: on the summit and very verge of one is a ruined tower, and in front a wood over-topped by a verdant hill. A path conducts the traveller down to the beginning of the fall, into which projects a high rock, in floods insulated by the water; and from the top is a tremendous view of the furious stream. In the cliffs of this savage retreat the brave Wallace is said to have concealed himself, meditating revenge for his injured country.

On regaining the top, the walk is formed near the verge of the rocks; which on both sides are perfectly mural and equidistant, except where they overhang: the river is pent up between them at a distance far beneath; not running, but rather sliding along a stony bottom sloping the whole way. The summits of the rock are wooded; the sides smooth and naked; the strata narrow and regular, forming a stupendous natural masonry. After a walk of above half a mile on the edge of this great chasm, on a sudden appears the great and bold fall of Boniton, in a foaming-sheet, far-projecting into a hollow, in which the water shows a violent agitation, and a wide extending mist arises from the surface. Above that is a second great fall; two lesser succeed: beyond them the river winds, grows more tranquil, and is seen for a considerable way, bounded

Clymene
||
Clytia.

Cneorum
||
Cnidus.

bounded on one side by wooded banks, on the other by rich and swelling fields.

The great fall of Stone-byers, first mentioned, has more of the horrible in it than any of the others, and is seen with more difficulty: it consists of two precipitous cataracts falling one above the other into a vast chasm, bounded by lofty rocks, forming an amazing theatre to the view of those who take the pains to descend to the bottom. Between this and Cory-Lynn there is another fall called *Dundofflin*.

CLYMENE, in fabulous history, the daughter of Oceanus: who, being beloved by Apollo, he had by her Phaëton, Lampatia, Egle, and Phebe. See PHÆTON.

CLYPEOLA, *TREACLE-MUSTARD*: A genus of the filiculosa order, belonging to the tetradynamia class of plants; and in the natural method ranking under the 39th order, *Siliquose*. The filicula is emarginated, orbiculated, compressed plane, and deciduous. There are two species, both natives of France, Italy, and the warm parts of Europe, but hardy enough to bear the winters in this country. One of them is an annual, and the other a perennial plant; both are low and herbaceous, bearing spikes of white flowers. They are propagated by seeds, which should be sown in autumn where they are to remain.

CLYSSUS, an extract prepared, not from one, but several bodies mixed together: and, among the moderns, the term is applied to several extracts prepared from the same body, and then mixed together.

CLYSTER, is a liquid remedy, to be injected chiefly at the anus into the larger intestines. It is usually administered by the bladder of a hog, sheep, or ox, perforated at each end, and having at one of the apertures an ivory pipe fastened with pack-thread. But the French, and sometimes the Dutch, use a pewter syringe, by which the liquor may be drawn in with more ease and expedition than in the bladder, and likewise more forcibly expelled into the large intestines. This remedy should never be administered either too hot or too cold, but tepid; for either of the former will be injurious to the bowels.

Clysters are sometimes used to nourish and support a patient who can swallow little or no aliment, by reason of some impediment in the organs of deglutition; in which case they may be made of broth, milk, ale, and decoctions of barley and oats with wine. The English introduced a new kind of clyster, made of the smoke of tobacco, which has been used by several other nations, and appears to be of considerable efficacy when other clysters prove ineffectual, and particularly in the iliac passion, in the *hernia incarcerata*, and for the recovery of drowned persons.

CLYTEMNESTRA, in fabulous history, the daughter of Jupiter and Leda. She married Agamemnon; but while that prince was at the siege of Troy, she had an amorous intrigue with Ægisthus, whom she engaged to murder Agamemnon at his return to his dominions. Her son Orestes, however, revenged the death of his father by killing Ægisthus, with his mother Clytemnestra; but was afterwards haunted by the Furies as long as he lived.

CLYTIA, or CLYTIÉ, daughter of Oceanus and Tethys, beloved by Apollo. She was deserted by her

lover, who paid his addresses to Leucothoe; and this so irritated her, that she discovered the whole intrigue to her rival's father. Apollo despised her the more for this; and she pined away, and was changed into a flower, commonly called a *sun-flower*, which still turns its head towards the sun in his course in token of her love.

CNEORUM, *WIDOW-WAIL*: A genus of the monogynia order, belonging to the triandria class of plants; and in the natural method ranking under the 38th order, *Tricocœa*. The calyx is tridentated; there are three equal petals, and a tricocous berry. There is but one species, a little evergreen and very ornamental shrub, adorned with simple leaves, and tripetalous flowers of a pale yellow colour. It is propagated from seeds, and requires no other care than to be kept free from weeds.

CNICUS, *BLESSED-THISTLE*: A genus of the polygama æqualis order, belonging to the syngenesia class of plants; and in the natural method ranking under the 49th order, *Compositæ*. The calyx is ovate, imbricated with spinous-branched scales, and encircled with bractææ. The florets are equal. There are seven species, of which the only remarkable one is that used in medicine under the name of *carduus benedictus*. This is an annual plant cultivated in gardens: it flowers in June and July, and perfects its seeds in autumn. For medical purposes the plant should be gathered when in flower, dried in the shade, and kept in a very dry airy place, to prevent its rotting or growing mouldy, which it is very apt to do. The leaves have a penetrating bitter taste, not very strong or durable, accompanied with an ungrateful flavour, which they are in a great measure freed from by keeping. Water extracts in a little time, even without heat, the lighter and more grateful parts of this plant; if the digestion is continued for some hours, the disagreeable parts are taken up; a strong decoction is very nauseous and offensive to the stomach. Rectified spirit gains a very pleasant bitter taste, which remains uninjured in the extract. The virtues of this plant are little known in the present practice. The nauseous decoction is sometimes used to provoke vomiting; and a strong infusion to promote the operation of other emetics. But this elegant bitter, when freed from the offensive parts of the herb, may be advantageously applied to other purposes. Dr Lewis informs us, that he has experienced excellent effects from a light infusion of carduus in loss of appetite, where the stomach was injured by irregularities. A stronger infusion made in cold or warm water, if drunk freely, and the patient kept warm, occasions a plentiful sweat, and promotes all the secretions in general. The seeds of the plant are also considerably bitter, and have sometimes been used with the same intention as the leaves.

CNIDUS, (anc. geog.) a Greek town of Caria; situated on a horn or promontory of a peninsula. It had in front a double port, and an island lying before it in form of a theatre, which being joined to the continent by moles or causeways, made *Cnidus* a Dipolis or double town, (Strabo), because a great number of Cnidians inhabited the island. Pausanias mentions a bridge which joined the island to the continent.—*Cnidii*, the people. *Cnidius*, the epithet.—*Cnidia Venus*, a principal divinity of the Cnidians, (Horace).

Her

Cnossus,
Coach

Her statue was executed by Praxiteles; and so exquisitely done, and so much admired, that people came from all parts to view it, (Pliny). Of this place was Eudoxus, the famous astronomer and geometrician, who had here an observatory, (Strabo).

CNOSSUS, or Cnosus, anciently called *Ceratos*, from a cognominal river running by it; a city of Crete, 23 miles to the east of Gortina, (Peutinger). Here stood the sepulchre of Jupiter, the famous labyrinth, and the palace of Minos a very ancient king; here happened the adventure of Ariadne his daughter with Theseus, called *Cnosus*, (Ovid). Its port-town was Heracleum, on the east side of the island.

COACH, a vehicle for commodious travelling, supported on leathers, and moved on wheels. In Britain, and throughout Europe, the coaches are drawn by horses, except in Spain, where they use mules. In a part of the east, especially the dominions of the great Mogul, their coaches are drawn by oxen. In Denmark they sometimes yoke rein-deer in their coaches; though rather for curiosity than use. The coachman is ordinarily placed on a seat raised before the body of the coach. But the Spanish policy has displaced him in that country by a royal ordonnance; on occasion of the Duke d'Olivares, who found that a very important secret, whereon he had conferred in his coach, had been overheard and revealed by his coachman: since that time the place of the Spanish coachman is the same with that of the French stage-coachman and our postilion, viz. on the first horse on the left.

The invention of coaches is owing to the French: yet coaches are not of any great antiquity, even in France, scarce reaching beyond the reign of their Francis I. Their use, at their first rise, was only for the country: and authors observe, as a thing very singular, that there were at first no more than two coaches in Paris; the one that of the queen, and the other that of Diana natural daughter of Henry II. The first courtier who had one was Jean de Laval de Bois Dauphin; whose enormous bulk disabled him from travelling on horseback. One may hence judge how much variety, luxury, and idleness, have grown upon our hands in later days; there being now computed in that same city no less than 15,000 coaches.

Coaches have had the fate of all other inventions, to be brought by degrees to their perfection; at present they seem to want nothing, either with regard to ease or magnificence. Louis XIV. of France made several sumptuary laws for restraining the excessive richness of coaches, prohibiting the use of gold, silver, &c. therein; but they have had the fate to be neglected.

By the act 25 Geo. III. c. 47. former duties on coaches, &c. are repealed, and the following charged in lieu thereof, namely: For every coach, berlin, landau, chariot, calash, with four wheels, chaise marine, chaise with four wheels, and caravan, or by whatever name such carriages may be called, kept by any person for his own use, or to be let out to hire (except hackney coaches), shall be paid the yearly sum of L. 7. And for every calash, chaise, chair, gig, or whiskey, or by whatever name they are known or called, having two or three wheels, to be drawn by one or more horses, that shall be kept by any person for his own use, or to be let out to hire, the yearly sum of L. 3, 10s.

Every maker of coaches, chaise, chariots, &c. must,

from and after the fifth day of July 1785, take out at the excise office in London, or of their agents in the country, a licence to be renewed annually at least ten days before the expiration of the former, for which they must pay 20s. They must also pay 20s. duty for every four-wheeled carriage newly built for sale, and 10s. for every two-wheel carriage. These duties are also payable to the commissioners of the excise in town, or their agents in the country.

Coach-makers in Scotland are to take out their licences and pay the duties to the commissioners of excise in Edinburgh, or their agents in the country of that part of Great Britain.

Every coach-maker neglecting to take out a licence, and renewing the same annually, forfeits L. 10; and neglecting or refusing to settle every six weeks, in the manner particularly directed by the act, is a forfeiture of L. 20.

Hackney-Coaches, those exposed to hire, in the streets of London, and some other great cities, at rates fixed by authority.

One thousand hackney-coaches are allowed in London and Westminster; which are to be licensed by commissioners, and to pay a duty to the crown. They are all numbered, having their numbers engraved on tin plates fixed on the coach-doors. Their fares or rates are fixed by act of parliament; and by a late act have been increased in consequence of a new weekly tax.

Stage-Coaches, are those appointed for the conveyance of travellers from one city or town to another. The masters of stage-coaches are not liable to an action for things lost by their coachmen, who have money given them to carry the goods, unless where such master takes a price for the same.

Persons keeping any coach, berlin, landau, or other carriage with four wheels, or any calash, chaise, chair, or other carriage with two wheels, to be employed as public stage coaches or carriages, for the purpose of conveying passengers for hire to and from different places, shall pay annually 5s. for a licence; and no person so licensed shall by virtue of one licence keep more than one carriage, under the penalty of L. 10.

Mail-Coaches, are stage-coaches of a particular construction to prevent overturns; and for a certain consideration carry his Majesty's mails, which are protected by a guard, and subject to the regulations of the post-office. They are pointed as to their time of arrival and departure, are restricted to four inside passengers, and from experience have proved very beneficial to the commerce and correspondence of this country. John Palmer, Esq; who has the merit of the invention, and been indefatigable in bringing the establishment to a permanent footing, has been greatly patronised by government; and got, as the reward of his service, a handsome appointment in the general post-office London.

COACH, or *Couch*, is also a sort of chamber or apartment in a large ship of war near the stern. The floor of it is formed by the aftmoist part of the quarter-deck, and the roof of it by the poop: it is generally the habitation of the captain.

COADUNATE, in botany, an order of plants in the *fragmenta methodi naturalis* of Linnæus, in which he has these genera, viz. annona, liriodendrum, magnolia, uvaria, michelia, thea.

COAGULATION, in chemistry, is performed by
5

Coach
||
Coagulation

Coagulum
 ||
 Coal.

fix different agents; and by each of these in several different manners. 1. It is performed with water, by congealing, crystallizing, and precipitating, as in the *mercurius vitæ* and some other preparations. 2. With oil, which, by the force of fire, unites with sulphur, salts, and metals. 3. With alcohol, upon the spirit of sal ammoniac, the white of eggs, the serum of the blood, &c. 4. With acid and alkali growing solid together, as in the *tartarum vitriolatum*. 5. With fixed alkali, as in milk. And, 6. With acid salts; as in milk, serum, and the whites of eggs.

COAGULUM, is the same with what in English we call *runnet*, or rather the curd formed thereby.

COAKS. For the exciting of intense heats, as for the smelting of iron ore; and for operations where the acid and oily particles would be detrimental, as the drying of malt, fossil-coals are previously charred, or reduced to *coaks*; that is, they are made to undergo an operation similar to that by which charcoal is made. By this operation coals are deprived of their phlegm, their acid liquor, and part of their fluid oil. Coaks, therefore, consist of the two most fixed constituent parts, the heavy oil and the earth, together with the acid concrete salt, which, though volatile, is dissolved by the oil and the earth.

COAL, among chemists, signifies any substance containing oil, which has been exposed to the fire in close vessels, so that all its volatile principles are expelled, and that it can sustain a red heat without further decomposition. Coal is commonly solid, black, very dry, and considerably hard. The specific character of perfect coal is its capacity of burning with access of air, while it becomes red-hot and sparkles, sometimes with a sensible flame which gives little light, with no smoke or foot capable of blackening white bodies.

Coal is capable of communicating its inflammable principle, either to the vitriolic acid with which it forms sulphur; or to the nitrous acid contained in nitre, which it inflames; or to metallic earths, which it reduces into metals. But the phlogiston cannot pass from coal to form these new combinations without the assistance of red-heat. Coal seems to be an unalterable compound in every instance but those mentioned, of burning in the open air, and of communicating its phlogiston to other bodies: for it may be exposed in close vessels to the most violent and long continued fire without suffering the least decomposition. No disposition to fuse, nor any diminution of weight, can be perceived. It is a substance exceedingly fixed, and perhaps the most refractory in nature. It resists the action of the most powerful menstrua, liver of sulphur alone excepted. Coal is evidently a result of the decomposition of the compound bodies from which it is obtained. It consists of the greatest part of the earthy principle of these compound bodies, with which a part of the saline principles, and some of the phlogiston of the decomposed oil, are fixed and combined very intimately. Coal can never be formed but by the phlogiston of a body which has been in an oily state: hence it cannot be formed by sulphur, phosphorus, metals, nor by any other substance the phlogiston of which is not in an oily state. Also every oily matter treated with fire in close vessels, furnishes true coal; so that whenever a charry residuum is left, we may be certain

that the substance employed in the operation contained oil. Lastly, the inflammable principle of coal, altho' it proceeds from oil, certainly is not oil; but pure phlogiston; since coal added to vitriolic acid can form sulphur, to phosphoric acid can form phosphorus, &c. and since oil can produce none of these effects till it has been decomposed and reduced to the state of coal. Besides, the phenomena accompanying the burning of coal are different from those which happen when oily substances are burnt. The flame of charcoal is not so bright as that of oil, and produces no flame or foot.

All the phlogiston of coal is not burnt in the open air, particularly when the combustion is slow. One part of it exhales without decomposition, and forms a vapour, or an invisible and insensible gas. This vapour (which is, or at least contains a great deal of, fixed air) is found to be very pernicious, and to affect the animal system in such a manner as to occasion death in a very short time. For this reason it is dangerous to remain in a close place, where charcoal or any other sort of coal is burnt. Persons struck by this vapour are stunned, faint, suffer a violent headache, and fall down senseless and motionless. The best method of recovering them is by exposure to the open air, and by making them swallow vinegar, and breathe its steam.

Amongst coals, some differences are observable, which proceed from the difference of the bodies from which they are made: some coals, particularly, are more combustible than others. This combustibility seems to depend on the greater or less quantity of saline principle they contain; that is, the more of the saline principle it contains, the more easily it decomposes and burns. For example, coals made of plants and wood containing much saline matter capable of fixing it, the ashes of which contain much alkaline salt, burn vigorously and produce much heat; whereas the coals of animal matters, the saline principles of which are volatile, and cannot be fixed but in small quantity, and the ashes of which contain little or no salt, are scarcely at all combustible. For they not only do not kindle so easily as charcoal does, nor ever burn alone, but they cannot be reduced to ashes, without very great trouble, even when the most effectual methods are used to facilitate the combustion. The coal of bullocks blood has been kept for six hours very red in a shallow crucible, surrounded with burning charcoal, and constantly stirred all the time, that it might be totally exposed to the air; yet could it not be reduced to white, or even grey, ashes: It still remained very black, and full of phlogiston. The coals of pure oils, or of concrete oily substances and foot, which is a kind of coal raised during inflammation, are as difficultly reduced to ashes as animal coals. These coals contain very little saline matter; and their ashes yield no alkali. The coals which are so difficultly burnt, are also less capable of inflaming with nitre than others more combustible; and some of them even in a great measure resist the action of nitre.

COAL, in mineralogy, a kind of solid inflammable substance, supposed to be of a bituminous nature, and commonly used for fuel. Of this substance there are various species.

1. *Pit-coal (Lithanthrax)*, is a black, solid, compact,

Coals.

Coal.

fact, brittle mass, of moderate hardness, lamellated structure, more or less shining, but seldom capable of a good polish; and does not melt when heated. According to Kirwan, it consists of petrol or asphaltum, intimately mixed with a small portion of earth chiefly argillaceous; seldom calcareous; and frequently mixed with pyrites. A red tincture is extracted from it by spirit of wine, but caustic alkali attacks the bituminous part. From some sorts of it a varnish may be made by means of fat oils. Fixed alkali has never been found in any kind of it, nor sulphur, unless when it happens to be mixed with pyrites.—None of the various kinds are found to be electric *per se* (A).

The varieties of lithanthrax, enumerated by Cronstedt, are, 1. With a small quantity of argillaceous earth and vitriolic acid. It is of a black colour, and shining texture: it burns, and is mostly consumed in the fire, but leaves, however, a small quantity of ashes. 2. Slaty coal.

2. *Culm coal*, called *kolm*, by the Swedes, has a greater portion of argillaceous earth and vitriolic acid, with a moderate proportion of petrol. It has the same appearance with the foregoing, though its texture is more dull: it burns with a flame, without being consumed, but leaves behind it a slag of the same bulk with the original volume of the coal. The following is Mr Kirwan's description of it from the memoirs of the Stockholm academy. "Its fracture has a rougher section than the cannel coal; its specific gravity from 1300 to 1370. The best kind affords by distillation, at first fixed air, then an acid liquor, afterwards inflammable air, and a light oil of the nature of petrol; then a volatile alkali; and lastly pitch-oil. The residuum is nearly three quarters of the whole; and being slowly burnt, affords 13 per cent. of ashes, which consist mostly of argillaceous earth; and about three hundredth parts of them are magnetic. It is found in England, and among some aluminous ores in Sweden."

3. *Slate-coal* contains such a quantity of argillaceous earth, that it looks like common slate; however, it burns by itself with a flame. M. Magellan is of opinion that this is the bituminous substance already described (see CLAY, p. 51.) This schistus is of a dark bluish rusty colour; when thrown on the fire it burns with a lively flame, and almost as readily as the oily wood of dry olive tree, or lignum vitæ; emitting the very disagreeable smell of petrol. Such large quarries

N^o 83.

of it are found near Purbeck in Dorsetshire, that the poorer part of the inhabitants are thence supplied with fuel. From the appearance of this slaty coal, Cronstedt has been induced to suppose that the earth of all kinds of coal is argillaceous, though it is not so easy to distinguish it after being burnt. The pit-coals, he says, contain more or less of the vitriolic acid; for which reason the smoke arising from them attacks silver in the same manner as sulphur does, let the coals be ever so free from marcasite, which, however, is often imbedded or mixed with them.

4. *Cannel coal* (*Ampelites*), is of a dull black colour; breaks easily in all directions; and, if broken transversely, presents a smooth conchoidal surface. It burns with a bright lively flame, but is very apt to fly in pieces in the fire; however it is said to be entirely deprived of this property by immersion in water for some hours previous to its being used. It contains a considerable quantity of petrol in a less condensed state than other coals. Its specific gravity is about 1.270. This kind of coal, being of an uniform hard texture, is easily turned on a lathe, and takes a good polish. Hence it is used for making various toys, which appear almost as well as if made of the finest jet.

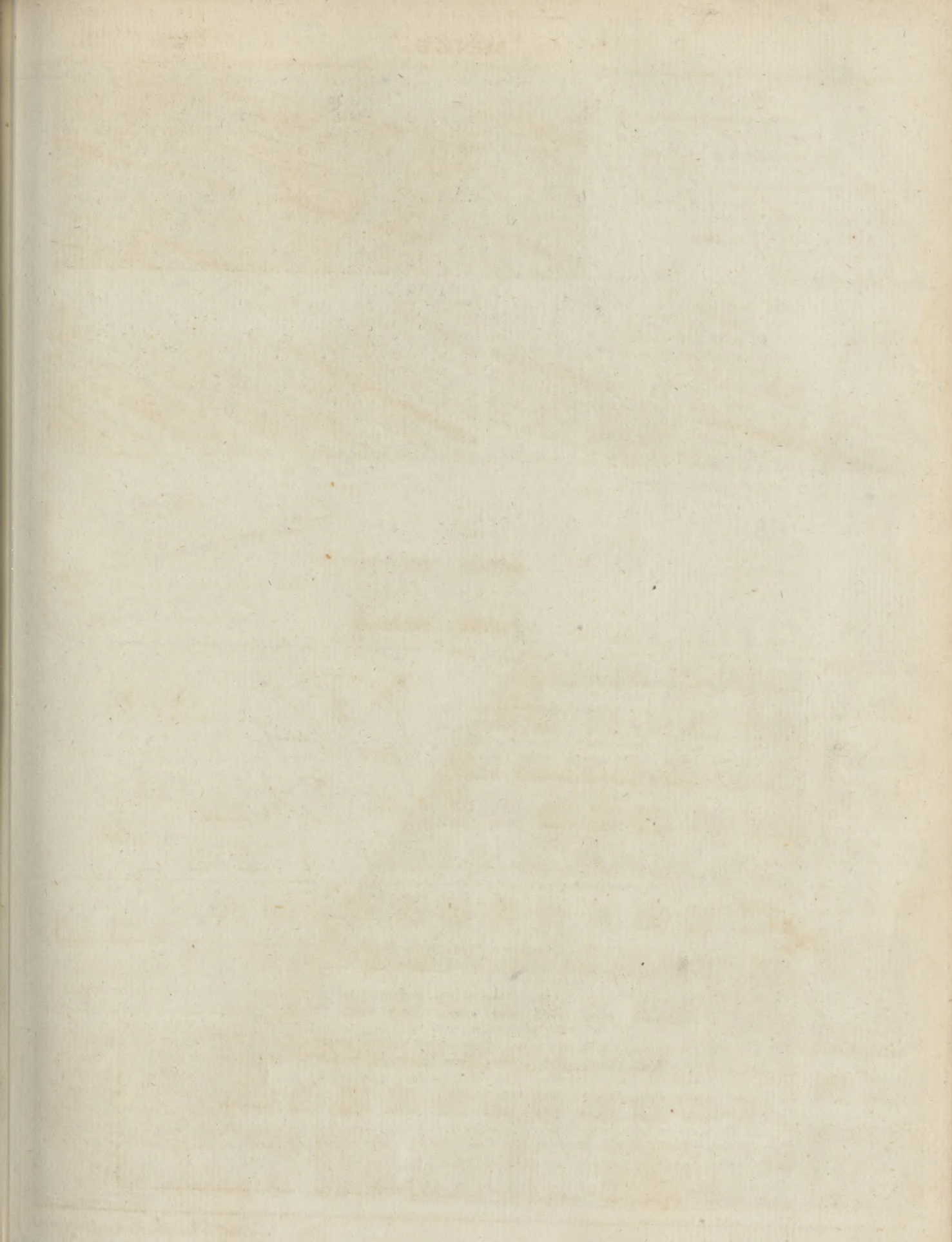
5. *Kilkenny coal* is the lightest of any; its specific gravity being only about 1.400. It contains the largest quantity of asphaltum; burns with less smoke and flame, and more intensely, though more slowly, than the cannel-coal. The quantity of earth it contains does not exceed one twentieth part of its weight; but this kind of coal is frequently mixed with pyrites. It is found in the county of Kilkenny, belonging to the province of Leinster in Ireland. The quality of it as burning without smoke, is proverbially used as an encomium on the county.

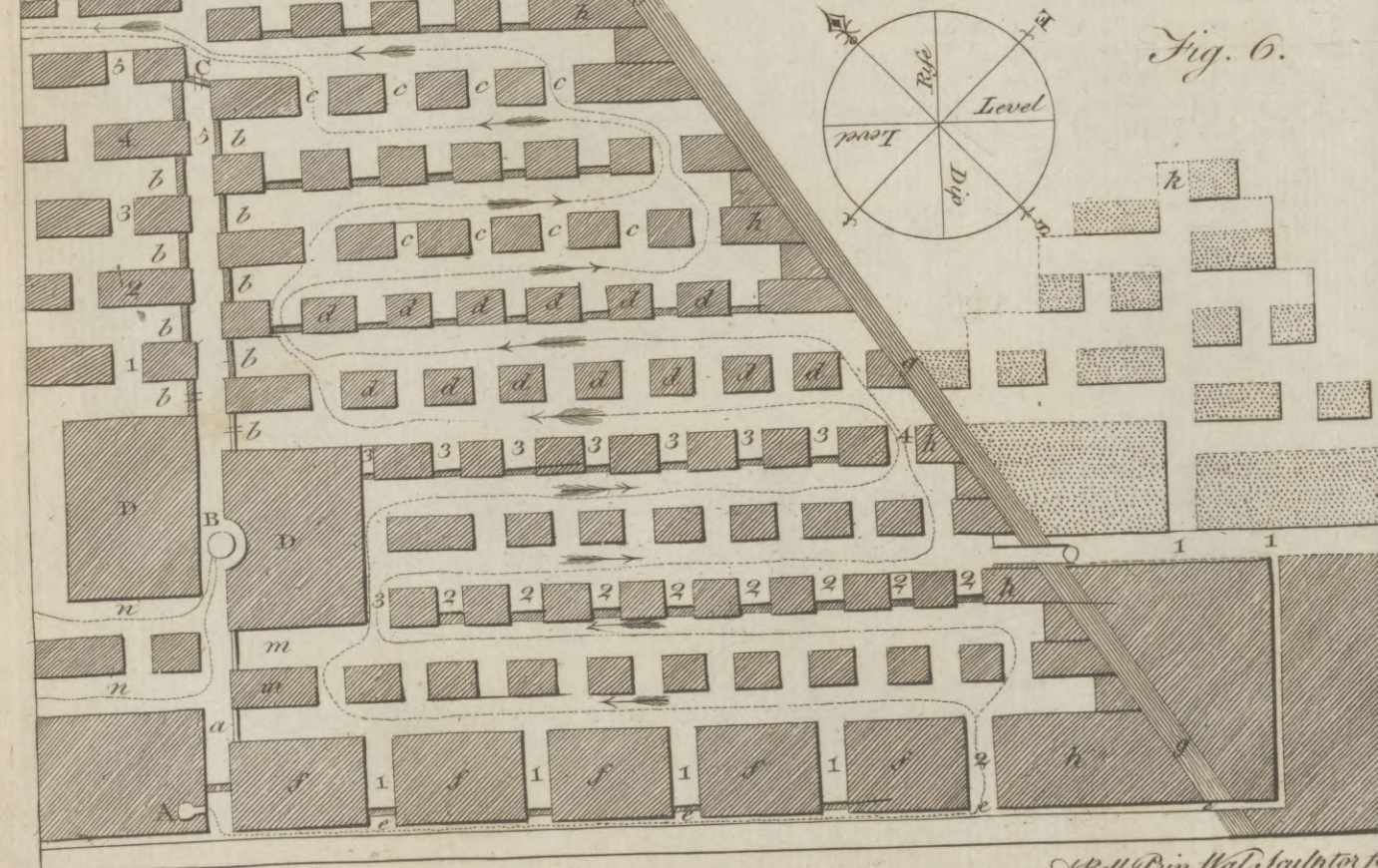
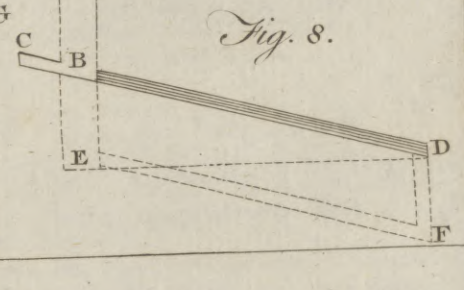
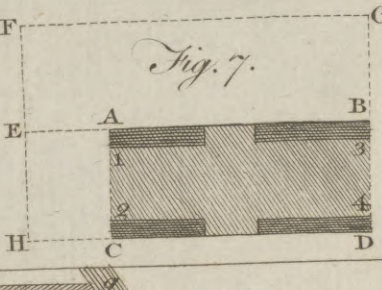
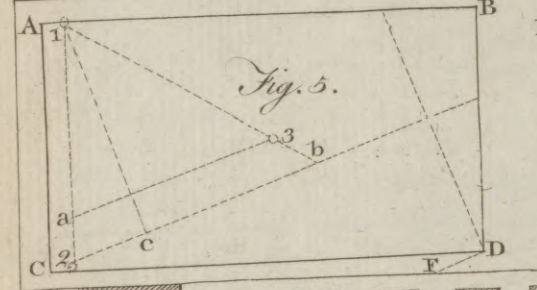
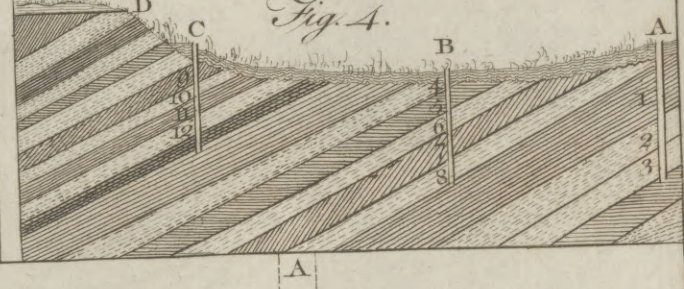
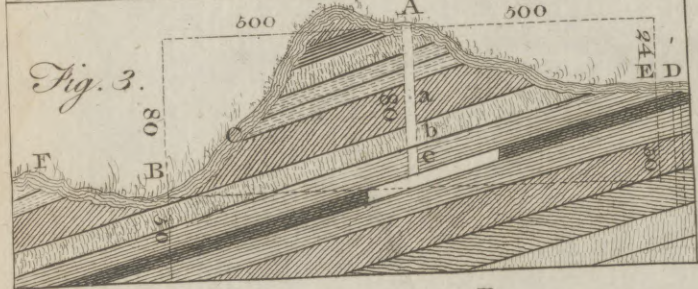
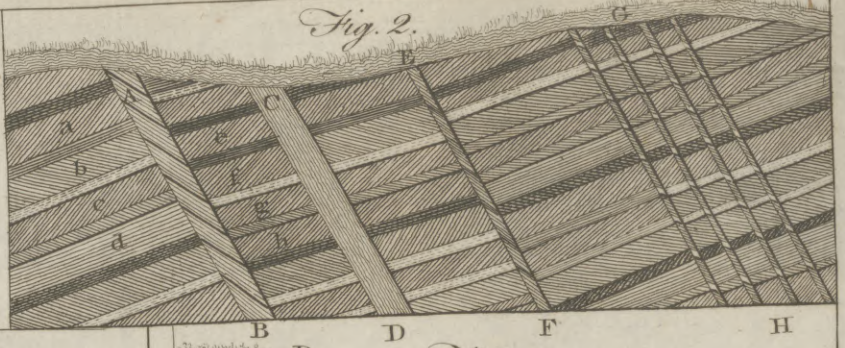
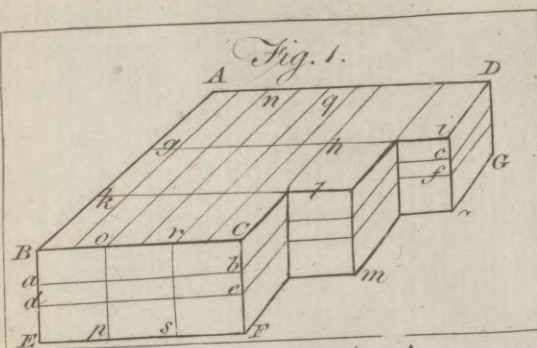
6. *Sulphureous coal* consists of the former kinds mixed with a very considerable portion of pyrites; whence it is apt to moulder and break when exposed to the air, after which water will act upon it. It contains yellow spots that look like metal; burns with a sulphureous smell, leaving behind it either slag or sulphureous ashes, or both. Its specific gravity is 1500 or more.

7. *Bovey coal* (*Xylanthrax*), is of a brown or brownish black colour, and of a yellow laminar texture. Its laminae are frequently flexible when first dug, though they generally harden when exposed to the

(A) "The varieties of this coal (says Mr Magellan) are very numerous according to the different substances with which it is mixed; but in regard to their economical uses, only two kinds are taken notice of by the British legislature, *viz.* culm and caking coals. The caking coals, in burning, show an incipient fusion, so that their smallest pieces unite in the fire into one mass; by which means the smallest pieces, and even the mere dust of this kind, are almost equally valuable with the largest pieces. The other sort called *culm*, does not fuse or unite in the fiercest fire; so that the small coal, being unfit for domestic purposes, can only be used in burning limestone.

"It should be an easy matter for any person to distinguish culm from small caking coal, either by trying to make fire with it in a common grate, without interposing any other fuel between it; when if it kindles, it is a caking coal; if not, it is culm: Or by putting some of these small fragments of coal on an ignited iron shovel; if they melt and run together, they belong to the caking kinds; if not, they are culm. But it seems that coal merchants are now in the custom of calling *culm* the powdery parts of pit-coal, of whatsoever kind they may happen to be. The reason of this is, that there is a difference in the duty payable by culm and by caking coals. There never was any difficulty, however, on the subject; nor would there be any difficulty in collecting the tax, were it not for the insufferable ignorance and love of despotic oppression which generally pervades the underling officers of the revenue."





Coal. the air. It consists of wood penetrated with petrol or bitumen, and frequently contains pyrites, alum, and vitriol. According to the German chemists its ashes contain a little fixed alkali; but Mr Mills differs from them on this subject. By distillation it yields a fetid liquor mixed with a volatile alkali and oil; part of which is soluble in spirit of wine, and part of a mineral nature, and insoluble. It is found in almost all the countries of Europe.

These are the most considerable varieties of coals commonly known; but we must not imagine that each of them is to be met homogenous in those places where they are found. On the contrary, the different qualities and proportions of their ingredients make a vast number of other varieties, fit for different purposes, according to the quality and quantity of those they contain. Thus, various kinds of coals are often found mixed with one another under ground; and some of the finer sorts sometimes run like veins between those of a coarser kind. Thus, M. Magellan observed in the fine coals employed in a curious manufactory at Birmingham, that they produced a much clearer flame than he had ever observed from common coal; yet, on inquiry, he found that these were picked out from the common coals of the country, through which they ran in veins, and were easily distinguished by the manufacturers, though they did not afford sufficient indications of a specific difference. The purpose to which they were applied was the moulding rods of transparent and coloured glass into the shapes proper for common buttons; which they performed with astonishing expedition.

Lourocroy remarks, that this fossil bitumen, when heated in contact with a body in combustion, and having a free access of air, kindles the more slowly and with the greater difficulty in proportion as it is more weighty and compact. When once kindled, it emits a strong and durable heat, and burns for a long time before it is consumed. The matter that is burned, and produces the flame, appears very dense, and seems united to some other substance which retards its destruction. On burning, it emits a particular strong smell, which is not at all sulphureous when the coal contains no pyrites. When the combustible, oily, and other volatile parts of the coal are dissipated, if the combustion be then stopped, the remainder is found to be reduced to a true charred state, and is called *coak*. This substance is capable of exciting the most intense heat, for which purpose it is used in metallurgic works all over Britain.

"It is well known (says M. Magellan), that the English method of burning pit coal into *coak* has been a most profitable and happy acquisition for the smelting our ores, and for many other metallurgical and chemical processes in this island. But the ingenious and advantageous undertaking of lord Dundonald, by which he turns to a very considerable profit the mines of coals in his and other estates, building ovens of a proper construction for burning pit-coal into coak, and at the same time for collecting, in separate receptacles, the volatile alkali, oil, tar, and pitch, which were generally lost by the usual method, deserves to be noticed, as it affords a very remarkable instance of the great losses to mankind, for want of carefully attending to every result from great processes of art

when made on a large scale. These ovens are so contrived, as to admit an under supply of air; and the coals, after being kindled, decompose themselves by a slow but incomplete combustion, which does not destroy the ingredients. The residuum left in the oven proves to be most excellent cinders or coaks; whilst the volatile parts, which otherwise would be dissipated in the air, are separated and condensed in reservoirs, or receptacles of capacious size, placed at proper distances beyond the reach of fire. Mons. Faujas de St Fond, who visited these works in a trip he made to Scotland, undertook to erect a similar kind of oven in France: and it is rather singular, that he endeavours to establish a claim of having discovered the same processes before he saw them in Scotland; as if it did not reflect a greater honour on his industry, to carry back to his country some useful knowledge, than to return as ignorant as our English travellers," &c.

On subjecting pit-coal of any kind to distillation in close vessels, it first yields a phlegm or watery liquor; then an ethereal or volatile oil; afterwards a volatile alkali; and lastly, a thick and greasy oil: but it is remarkable, that, by rectifying this last oil, a transparent thin and light oil of a straw colour is produced, which being exposed to the air becomes black like animal oils. From this and other observations, the general opinion is, that all coals, bitumens, and other oily substances found in the mineral kingdom, derive their origin from vegetables buried in the earth; since it is well known that only organized bodies have the power of producing oily and fat substances. "The amazing irregularities, gaps, and breaks (says M. Magellan) of the strata of coals, and of other fossil substances, evince that this globe has undergone the most violent convulsions, by which its parts have been broken, detached and overturned in different ways, burying large tracts of their upper surfaces, with all the animal and vegetable productions there existing, at the time of those horrible catastrophes, whose epoch far precedes all human records. And it is easy to be conceived, that the various heaps and congeries of these vegetable and animal substances, remaining for ages and ages in the bowels of the earth, have obtained various consistencies, and still produce those oily and bituminous juices, which find way to gush out, leaving behind their thickest parts on the same places where they are found, and in many others where the industry of mankind never will be able to penetrate."

COAL-MINE. See *COALERY*. -- Maliciously setting fire to coal-mines is felony, by stat. 10. Geo. II. c. 32. § 6.

Small COAL, a sort of charcoal prepared from the spray and brushwood stripped off from the branches of coppice wood, sometimes bound in bairns for that purpose, and sometimes charred without binding, in which case it is called "coming it together."

COALERY, COALIERY, or COLLIERY; a coal-^Iery of coals. ^{ry}

It is generally agreed, that our *cannel-coal* * is the *See Anse lapis ampelites* of the Romans; though it seems to *pelites*. have been used by them only for making toys, bracelets, &c. But of that common fuel which we denominate *coals*, the native Romans were entirely ignorant. It is certain that they are not, as some have imagined, the *lapis obsidianus* of Pliny, about which there have

Coalery. been great disputes †: nor the GAGATES, or JET, which others, again, have taken for the *lapis obsidianus*; though the lightness and texture show plainly that it is not either stone or coal. In fact, there are no beds of it in the compass of Italy. The great line of that fuel seems to sweep away round the globe, from north-east to south-west; not ranging at a distance even from the south-easterly parts of our island, as is generally imagined, but actually visiting Brabant and France, and yet avoiding Italy.

† L. xxxvi. cap. 26. Augustus placed the statues of four elephants made of it in the temple of Concord.

Whitaker's History of Manchester.

But the primæval Britons appear to have used it. And in the precincts of Manchester particularly, which are furnished with an inexhaustible abundance of it, they could not have remained unapprised of the agreeable combustible around them. The currents there frequently bring down fragments of coal from the mountains; and in the long and winding course of them through the parish, the Britons would soon mark the shining stones in the channels; and by the aid of accident, or the force of reflection, find out the utility of them. But we can advance still nearer to a certainty. Several pieces of coal were discovered some years ago in the sand under the Roman way to Ribchester, when both were dug up at the construction of a house in Quay-street. The number of pieces, several of them as large as eggs, was not less than 40; and a quantity of slack was dug up with them. These circumstances show the coals to have been lodged upon the spot, before the road of the Romans covered it.

† i. e. "the place of tents." An ancient British town, the site of which was the present Castlefield at Manchester.

That ground being in the neighbourhood of *Mance-nion* †, the Britons had there deposited a quantity of coals, probably for the use of the garrison; and many of the smaller fragments, and some of the slack, were buried in the sand upon which they were laid. And that the Britons in general were acquainted with this fuel, is evident from its appellation amongst us at present, which is not Saxon, but British; and subsists among the Irish in their *O gual*, and among the Cornish in their *kolan*, to this day.

The extensive beds of fuel, therefore, with which the kingdom of England and the precincts of Manchester are so happily stored, were first noticed by the skill, and first opened by the labour of the Britons; and some time before the arrival of the Romans among us. And the nearer quarries in the confines of Bradford, Newton, and Manchester, would naturally attract the notice, and invite the inquiries, of the Britons, before any others. The current of the Medlock, which washes the sides of them, would bring down specimens of the riches within, lodge many of them about the Castlefield, and allure the Britons successively to a collection of the one and a search after the other.

But, even for ages after the discovery, wood continued to compose the general firing of the nation. In 852, a grant was made of some lands by the abbey of Peterborough, under the reservation of certain boons and payments in kind to the monastery; as, one night's entertainment; 10 vessels of Welsh and two of common ale; 60 cart-loads of wood; and 12 of pit-coal; where we see the quantity of coal was only one cart-load to five of wood. The latter naturally continued the principle article of our fuel as long as the forests and thickets presented themselves so ready to the hand: and such it continued till a very late period. The first public notice of the former is mentioned by

Mr Hume to have been in the time of Henry III. who in the year 1272, granted a charter to the town of Newcastle, giving the inhabitants a licence to dig coals: and the first statute relating to this article was the 9 Henry V. c. 10. ordaining all keels in the port of Newcastle to be measured by commissioners, before carriage of coals, on pain of forfeiture. They were not brought into common use till the reign of Charles I.; and were then sold for about 17s. a chaldron. In some years after the restoration, there were about 200,000 chaldrons burnt in London; in 1670, about 270,000 chaldrons; and at the revolution, upwards of 300,000 chaldrons; and at present, full 600,000 are annually consumed there. There is, besides, an immense consumption in other parts of Britain, and in Ireland. In Scotland, they supply their own consumption, and also export. In Ireland, though they have coal, yet they take annually to the value of 30,000 l. from England, and 12,000 l. from Scotland.

Campbell's Political Survey.

The most remarkable coalery, or coal-work, that we have ever had in this island, was that wrought at Burrowitonnness, under the sea. The veins of coal were found to continue under the bed of the sea in this place, and the colliers had the courage to work the vein near half way over; there being a mote half a mile from the shore, where there was an entry that went down into the coal-pit, under the sea. This was made into a kind of round key or mote, as they call it, built so as to keep out the sea, which flowed there twelve feet. Here the coals were laid, and a ship, of that draught of water, could lay her side to the mote, and take in the coal.—This famous colliery belonged to the earl of Kincardine's family. The fresh water which sprung from the bottom and sides of the coal pit, was always drawn out upon the shore by an engine moved by water, that drew it forty fathom. This coal-pit continued to be wrought many years to the great profit of the owners, and the wonder of all that saw it; but, at last, an unexpected high tide drowned the whole at once: the labourers had not time to escape, but perished in it.

There are several other countries in Europe which possess considerable coal-mines; as France, Liege, Germany, and Sweden. Also on the other side of the Atlantic ocean, there has been coal discovered, and wrought; in Newfoundland, Cape-Breton, Canada, and some of the New-England provinces. But in all these countries, the coal is of a quality much inferior to the British, and entirely unfit to be used in many manufactures; so that they are obliged to import great quantities from Britain for the use of their manufactures of iron, &c.

Our inland coal trade, that is, carrying coals from Newcastle, Sunderland, Blith, and other adjacent places in the north of England, as also from the frith of Edinburgh in Scotland, and other places thereabouts, to the city of London, and to the port-towns on the coast all the way, as well on this side of Newcastle, north, as up the channel as high as Portsmouth west, is a prodigious article, and employs abundance of shipping and seamen; in so much that, in a time of urgent necessity, the coalery navigation alone has been able to supply the government with a body of seamen for the royal navy, able to man a considerable fleet at a very short warning, and that without difficulty, when

Coalery. no other branch of trade would do the like. Likewise the Whitehaven coaleries in Cumberland, belonging to Sir James Lowther, furnish several counties in Ireland with coals, and constantly employ upwards of 2000 seamen; which also is a noble nursery for the navy of this kingdom. And not only do the pit-coals sufficiently supply all the ports, but, by means of those ports and the navigable rivers, all the adjacent countries very far inland.

In short, coals, though not an exclusive, yet may, with propriety, be styled a peculiar blessing to Britain from their great plenty, their acknowledged excellence, and their being found in such places as are conveniently situated for exportation. Nor is there any danger of the export-trade being lessened even by the several duties that have been laid upon them; for the foreign consumpt being founded in necessity with regard to manufactures, and in œconomy where they are used for convenience (wood and turf being dearer than coals with the duty), we need be in no fear of the markets declining. There is as little room to be alarmed from an apprehension of their being exhausted, as the present works are capable of supplying us for a long series of years, and there are many other mines ready to be opened when these shall fail. Besides, there are known to be coals in many parts of the three kingdoms, which hitherto they have had no encouragement to work.

Besides the value of this commodity as a convenience of life, as an article of commerce, and as giving rise to a nursery of seamen for the increase of the marine; other important advantages deserve to be noticed. Coals are in many respects, and in a very high degree, useful to the landed interest; not only by raising exceedingly the real value, and of course the purchase, of those lands in which they are found, and those through which it is necessary to pass* from the works to the places where they are embarked, but from the general improvements they have occasioned; so that very few counties are now better cultivated than Northumberland, and the same effects they have had in a greater or less degree in other places. Thousands of laborious people are employed in and about the mines; thousands more in conveying them to the ports, and on board the ships; to say nothing of those that draw their subsistence from the carriage of them by land to supply families, &c. There are also great numbers that live in a superior station; as stewards, directors, factors, agents, book-keepers, &c. To these we may add the extraordinary encouragement given to ingenious artists who have invented, and the numerous workmen continually employed about those several curious and costly machines which, for a variety of purposes in this business, are in continual use, and of course in continual wear: we may join to these the multitudes that obtain their living from the many manufactures in which they are employed, and which could not be carried on but by the help and cheapness of coals. Lastly, the produce of coals exported, which amounts to a very considerable sum, besides being profitable to the owners, merchants, and mariners, is so much clear gain to the nation.

It might be expected, that a trade so beneficial to individuals, and to the nation in general, and which has been gradually increasing for several centuries past,

would have been advanced by this time to very great perfection, and reduced to a regular system. But, in one very essential respect, it is found to be quite otherwise. The art of working coal-mines in the most profitable manner is indeed highly improved: but the fundamental of the art, that of searching for and discovering coal in any district of country where it has not yet been found, has never, that we know of, been treated in a systematic manner. The reader, therefore, will not be displeas'd to find this defect supplied in the course of the present article, together with a detail of all the other operations in the business of coaleries.

The terrestrial matters which compose the solid parts of the earth are disposed in strata, beds, or layers, the under surface of one bearing against or lying upon the upper surface of that below it, which last bears or lies on the next below in the same manner.

These strata consist of very different kinds of matter, such as free stone, lime-stone, metal-stone or whinstone, coal, &c. as will be particularly specified in the sequel.

Some of these strata are of a considerable thickness, being often found from 100 to 200 feet or upwards, nearly of the same kind of matter from the superior to the inferior surface; and others are found of the least thickness imaginable, one inch or less.

All these strata are divided or parted from each other laterally, either by their even, smooth, polished surfaces, with very thin lamina of soft or dusty matter betwixt them, called *the parting*, which renders them easy to separate; or else only by the surfaces closely conjoined to each other, without any visible matter interposed betwixt them; yet the different substance of each stratum is not in the least intermixed, though sometimes they adhere so strongly together, that it is very difficult to part or disjoin them: in this last case they are said to have a *bad parting*.

Besides this principal division or parting laterally, there are, in some strata, secondary divisions or partings also laterally, separating or approaching towards a separation, of the same stratum, into parts of different thicknesses, nearly parallel to each other, in the same manner as the principal partings divide the different strata from each other: but these secondary ones are not so strong or visible, nor make so effectual a parting, as the principal ones do; and are only met with in such strata, as are not of an uniform hardness, texture, or colour, from the upper to the under surface.

There are other divisions or partings, called *backs*, in almost every stratum, which cross the former lateral ones longitudinally, and cut the whole stratum through its two surfaces into long rhomboidal figures. These again are crossed by others called *cutters*, running either in an oblique or perpendicular direction to the last mentioned backs, and also cut the stratum through its two surfaces. Both these backs and cutters generally extend from the upper or superior stratum down through several of the lower ones; so that these backs and cutters, together with the lateral partings before mentioned, divide every stratum into innumerable cubic, prismatic, and rhomboidal figures, according to the thickness of the stratum, and the position and number of the backs and cutters. They

Coalery.

sometimes have a kind of thin partition of dusty or soft matter in them, and sometimes none, like the first mentioned partings; but the softer kind of strata generally have more backs and cutters than the harder kind, and they do not extend or penetrate through the others.

Plate
CXLI.

To explain this a little further, let A, B, C, D, E, F, G, (fig. 1.) represent the principal partings before mentioned, or the upper and under surfaces of any stratum; then *a, b, c, d, e, f,* will represent the secondary lateral partings nearly parallel to the principal ones; *g, h, i, k, l, m,* the longitudinal partings called *backs*; *n, o, p, q, r, s,* the cross partings called *cutters*, crossing the last mentioned ones either obliquely or perpendicular.

In all places where the strata lie regular, they are divided and subdivided in the manner above mentioned; and sometimes in this manner extend through a pretty large district of country: though it is often otherwise; for their regularity is frequently interrupted, and the strata broken and disordered, by sundry chasms, breaches, or fissures, which are differently denominated according to their various dimensions, and the matters with which they are filled, *viz.* dikes, hitches, and troubles, which shall be explained in order.

5
Dikes.

Dikes are the largest kind of fissures. They seem to be nothing but a crack or breach of the solid strata, occasioned by one part of them being broken away and fallen from the other. They generally run in a straight line for a considerable length, and penetrate from the surface to the greatest depth ever yet tried, in a direction sometimes perpendicular to the horizon, and sometimes obliquely: the same kind of strata are found lying upon each other in the same order, but the whole of them greatly elevated or depressed, on the one side of the dike as on the other. These fissures are sometimes two or three feet wide, and sometimes many fathoms. If the fissure or dike be of any considerable width, it is generally filled with heterogeneous matter, different from that of the solid strata on each side of it. It is sometimes found filled with clay, gravel, or sand; sometimes with a confused mass of different kinds of stone lying edgeways; and at other times with a solid body of free-stone, or even whin-stone. When the fissure is of no great width, as suppose two or three feet only, it is then usually found filled with a confused mixture of the different matters which compose the adjoining strata, consolidated into one mass. If the dike runs or stretches north and south, and the same kind of strata are found on the east side of the dike, in a situation with respect to the horizon 10 or 20 fathoms lower than on the other side, it is then said to be a *dip-dike* or *downcast-dike* of 10 or 20 fathoms to the eastward;—or counting from the east side, it is then said to be a *rise-dike* or *upcast* of so many fathoms westward. If the strata on one side are not much higher or lower with respect to the horizontal line, than those on the other, but only broken off and removed to a certain distance, it is then said to be a dike of so many fathoms thick; and from the matter contained between the two sides of the fissure or dike, it is denominated a *clay-dike*, *stone-dike*, &c.

6
Hitches.

A *hitch* is only a dike or fissure of a smaller degree, by which the strata on one side are not elevated or separated from those on the other side above one fa-

thom. These hitches are denominated in the same manner as dikes, according to the number of feet they elevate or depress the strata. Coalery.

There are dikes (though they are not often met with in the coal-countries) whose cavities are filled with sparr, the ores of iron, lead, vitriol, or other metallic or mineral matters; and it is pretty well known, that all metallic veins are nothing else than what in the coal-countries are called *dikes*.

The strata are generally found lying upon each other in the same order on one side of the dike as on the other, as mentioned above, and nearly of the same thicknesses, appearing to have been originally a continuation of the same regular strata, and the dike only a breach by some later accident, perpendicularly or obliquely down through them, by which one part is removed to a small distance, and depressed to a lower situation than the other. But this is not the only alteration made in the strata by dikes; for generally to a considerable distance on each side of the dike, all the strata are in a kind of shattered condition, very tender, easily pervious to water, and debased greatly in their quality, and their inclination to the horizon often altered.

7
Troubles

Troubles may be denominated dikes of the smallest degree; for they are not a real breach, but only an approach towards it which has not taken a full effect. The strata are generally altered by a trouble from their regular site to a different position. When the regular course of the strata is nearly level, a trouble will cause a sudden and considerable ascent or descent: where they have, in their regular situation, a certain degree of ascent or descent, a trouble either increaseth it or alters it to a contrary position: and a trouble has these effects upon the strata in common with dikes, that it greatly debaseth them from their original quality; the partings are separated; the backs and cutters disjoined, and their regularity disordered; the original cubic and prismatic figures, of which the strata were composed, are broken, and the dislocation filled with heterogeneous matter; and the whole strata are reduced to a softer and more friable state.

The strata are seldom or never found to lie in a true horizontal situation; but generally have an inclination or descent, called the *dip*, to some particular part of the horizon. If this inclination be to the eastward, it is called an *east dip*, and a *west rise*; and according to the point of the compass to which the dip inclines, it is denominated, and the ascent or rise is to the contrary point. This inclination or dip of the strata is found to hold every where. In some places, it varies very little from the level; in others, very considerably; and in some so much, as to be nearly in a perpendicular direction: but whatever degree of inclination the strata have to the horizon, if not interrupted by dikes, hitches, or troubles, they are always found to lie in the first regular manner mentioned. They generally continue upon one uniform dip until they are broken or disordered by a dike, hitch, or trouble, by which the dip is often altered, sometimes to a different part of the horizon, and often to an opposite point; so that on one side of a dike, hitch, or trouble, if the strata have an east dip, on the other side they may have an east rise, which is a west dip; and in general, any considerable alteration in the dip is never met

Coalery. met with, but what is occasioned by the circumstances last mentioned.

Plate
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To illustrate what has been said, see fig. 2. where *abcd*, &c. represents a course of strata lying upon each other, having a certain inclination to the horizon. *AB*, is a downcast-dike, which depresseth the strata obliquely to *efgb*, &c. lying upon each other in the same order, but altered in their inclination to the horizon. *CD* represents a clay or free-stone dike, where the strata are neither elevated nor depressed, but only broken off and removed to a certain distance. *EF*, represents a hitch, which breaks off and depresseth the strata only a little, but alters their inclination to the horizon. *GH*, represents a trouble, where the strata on one side are not entirely broken off from those on the other, but only in a crushed and irregular situation.

As some particular strata are found at some times to increase, and at other times to diminish, in their thicknesses, whilst others remain the same, consequently they cannot be all parallel; yet this increase and diminution in their thicknesses comes on very gradually.

The strata are not found disposed in the earth according to their specific gravities: for we often find strata of very dense matter near the surface; and perhaps at 50 or even 100 fathoms beneath, we meet with strata of not half the specific gravity of the first. A stratum of iron ore is very often found above one of coal, though the former has twice the gravity of the latter; and, in short, there is such an absolute uncertainty in forming any judgment of the disposition of the strata from their specific gravities, that it cannot in the least be relied upon.

It has been imagined by many, that hills and valleys are occasioned by those breaches in the strata before mentioned called *dikes*: but this is contradicted by experience. If it was so, we should meet with dikes at the skirts of the hills, and by the sides of valleys, and the sea-shore; but instead of that, we generally find the strata lying as uniformly regular under hills and valleys, and beneath the bottom of the sea (as far as has been yet tried), as in the most campaign countries. It may happen, indeed, that a dike is met with in some of these places; but that being only a casual circumstance, can never be admitted as a general cause. Whatever irregularities are occasioned in the solid strata by dikes, or other breaches, are commonly covered over and evened by those beds of gravel, clay, sand, or soil, which lie uppermost, and form the outward surface of the earth. Wherever these softer matters have been carried off, or removed by accident, as on the tops of hills and the sides of valleys, there the solid strata are exposed, and the dip and rise and other circumstances of them may be examined; but no certain conclusions can be drawn, merely from the unevenness and inequalities of the outward surface.

The preceding observations, upon the general disposition of the solid strata, are equally applicable to the strata of coal as to those of stone or other matter.

⁹
Description of the strata connected with coal. We shall next give an account of the several strata of coal, and of stone and other matters, which are usually connected with coal, and are found to have a particular affinity with it: and, for the sake of distinction, shall arrange them into six principal classes,

which will include all the varieties of strata that have been found to occur in all those districts of country both in Scotland and England where coal abounds. **Coalery.**

1. *Of Whin-stone.*] The strata of what is denominated whin-stone are the hardest of all others; the angular pieces of it will cut glass; it is of a very coarse texture, and when broke across the grain exhibits the appearance of large grains of sand half vitrified; it can scarcely be wrought, or broke in pieces, by common tools without the assistance of gun-powder; each stratum is commonly homogeneous in substance and colour, and cracked in the rock to a great depth. The most common colours of these strata are black or dark blue, yet there are others of it ash-coloured and light brown. Their thickness in all the coal countries is but inconsiderable, from six or five feet down to a few inches; and it is only in a few places they are met with of these thicknesses. In the air it decays a little, leaving a brown powder; and in the fire it cracks, and turns reddish brown. Limestone, and what is called *lashed limestone*, is sometimes, though rarely, met with in coaleries. It is a well known stone; but from its resemblance in hardness and colour is often mistaken for a kind of whin. Sometimes, particularly in hilly countries, the solid matter next the surface is found to be a kind of soft or rotten whin;—but it may be noted, that this is only a mass of heterogeneous matter disposed upon the regular strata; and that beneath this, all the strata are generally found in as regular an order as where this heterogeneous matter does not occur.

2. *Of Post-stone.*] This is a free stone of the hardest kind, and next to the limestone with respect to hardness and solidity. It is of a very fine texture; and when broken appears as if composed of the finest sand. It is commonly found in a homogeneous mass, though variegated in colour; and, from its hardness, is not liable to injury from being exposed to the weather. Of this kind of stone there are four varieties, which may be distinguished by their colour: the most common is white post, which in appearance is like Portland stone, but considerably harder; it is sometimes variegated with streaks or spots of brown, red, or black.

Grey post is also very common; it appears like a mixture of fine black and white sand: it is often variegated with brown and black streaks; the last mentioned appear like small clouds composed of particles of coal.

Brown or yellow post is often met with of different degrees of colour; most commonly of the colour of light ochre or yellow sand: it is as hard as the rest, and sometimes variegated with white and black streaks.

Red post is generally of a dull red colour: this is but rarely met with; it is often streaked with white or black.

All these lie in strata of different thicknesses; but commonly thicker than any other strata whatever: they are separated from each other, and from other kinds of strata, by partings of coal, sand, or soft matter of different colours which are very distinguishable.

3. *Of Sand-stone.*] This is a free stone of a coarser texture than post, and not so hard; is so lax as to be easily pervious to water; when broke, is apparently of a coarse sandy substance; is friable and moulders to

sand.

Coalery.

found when exposed to the wind and rain; has frequently white shining spangles in it, and pebbles or other small stones inclosed in its mass. Of this, there are two kinds commonly met with, distinguished by their colours, grey and brown, which are of different shades, lighter or darker in proportion to the mixture of white in them. It is most generally found in strata of considerable thickness, without many secondary partings; and sometimes, though rarely, it is subdivided into layers as thin as the common grey slate. It has generally sandy or soft partings.

4. *Of Metal-stone.*] This is a tolerable hard stratum, being in point of hardness next to sand-stone; generally solid, compact, of considerable weight, and of an argillaceous substance, containing many nodules or balls of iron ore, and yellow or white pyrites; its partings, or the surfaces of its strata, are hard, polished, and smooth as glass. When broke, it has a dull dusky appearance (though of a fine texture), like hard dried clay mixed with particles of coal. Though hard in the mine or quarry, when exposed to the fresh air it falls into very small pieces. The most usual colour of this stone is black; but there are several other lighter colours, down to a light brown or grey. It is easily distinguished from free-stone by its texture and colour, as well as by its other characteristics. It lies in strata of various thicknesses, though seldom so thick as the two last mentioned kinds of stone.

5. *Of Shiver.*] This stratum is more frequently met with in coaleries than any other. There are many varieties of it, both in hardness and colour; but they all agree in one general characteristic. The black colour is most common; it is called by the miners *black shiver*, *black mettle*, or *bleas*. It is softer than metal-stone, and in the mine is rather a tough than a hard substance, is not of a solid or compact matter, being easily separable, by the multitude of its partings, &c. into very small parts, and readily absorbing water. The substance of this stratum is an indurated bole, commonly divided into thin lamina of unequal thicknesses, which break into long small pieces when struck with force; and, on examination, they appear to be small irregular rhomboids: each of these small pieces has a polished glassy surface; and, when broke cross the grain, appears of a dry, leafy, or laminated texture, like exceeding fine clay: it is very friable; feels to the touch like an unctuous substance; and dissolves in air or water to a fine pinguid black clay. There are almost constantly found inclosed in its strata lumps or nodules of iron ore; often real beds of the same.

There are other colours of this stratum besides black. The brown or dun shiver is very frequently met with; it agrees with the above description in every thing but colour. Grey shiver is also very common: it seems to be only a mixture of the black and dun; and by the different degrees of mixture of these colours others are produced. It lies in strata sometimes of considerable thickness, at other times not exceeding a few feet: they are commonly parted from each other by lamina of spar, coal, or soft matter.

6. *Of Coal.*] Referring the reader, for the scientific division of coals, to AMPELITES, LITHANTHRAX, and the preceding articles, we shall here consider them as

distinguishable into three kinds, according to their degrees of inflammability.

1. The least inflammable kinds are those known by the name of *Welsh coal*, which is found in Wales; *Kilkenny coal*, which is found near Kilkenny in Ireland; and *blind or deaf coal*, which is found in many parts of Scotland and England. This coal takes a considerable degree of heat to kindle it, but when once thoroughly ignited will burn a long time; it remains in the fire in separate pieces without sticking together or caking; it produceth neither flame nor smoke, and makes no cinder, but burns to a white stony slag; it makes a hot glowing fire like charcoal or cinders; and emits effluvia of a suffocating nature which renders it unfit for burning in dwelling-houses, its chief use being amongst maltsters, dyers, &c. for drying their commodities. 2. *Open burning coal*, soon kindles, making a hot pleasant fire, but is soon consumed: it produceth both smoke and flame in abundance; but lies open in the fire, and does not cake together so as to form cinders, its surface being burnt to ashes before it is thoroughly calcined in the midst; from this it has its name of an *open burning coal*; it burns to white or brown ashes very light. Of this kind is *cannel-coal*, *jett*, *parrot*, *splint*, and most of the coals in Scotland. 3. *Close burning coal*, kindles very quickly, makes a very hot fire, melts and runs together like bitumen, the very smallest culm making the finest cinders, which being thoroughly burnt are porous and light as a pumice stone, and when broke are of a shining lead colour; it makes a more durable fire than any other coal, and finally burns to brown or reddish coloured heavy ashes. Of this kind are the *Newcastle* and several other of the English coals, and the *smithy coals* of Scotland. The open burning and the close burning coal mixed together, make a more profitable fire for domestic uses than either of them separate.

In all those districts of country where coal is found, there are generally several strata of it; perhaps all the different kinds above mentioned will be found in some, and only one of the kinds in others; yet this one kind may be divided into many different seams or strata, by beds of shiver or other kinds of matter interposing, so as to give it the appearance of so many separate strata.

All these strata above described, with their several varieties, do not lie or bear upon each other in the order in which they are described, nor in any certain or invariable order. Though there be found the same kinds of strata in one coalery or district as in another, yet they may be of very different thicknesses. In some places there are most of the hard kinds, in others most of the softer; and in any one district it rarely happens that all the various kinds are found; for some kinds, perhaps, occur only once or twice, whilst others occur 10 or 20 times before we reach the principal stratum of coal.

In order to explain this, suppose the strata in the pit at A (fig. 3.) lie in the order *a, b, c, d, &c.* they may be so much altered in their thicknesses, by reason of some of them increasing and others diminishing, at the distance of B, that they may be found there of very different thicknesses; or if they are examined in a pit at D, by reason of its lower situation, and the

Coalery.

10
The order
in which
they lie.

Plate
CXLII.

Coalery. strata there not being a continuation of those in the other places, they may be very different both in their order and thicknesses, and yet of the same kinds.

Though they be thus found very different in one coalery or district from what they are found to be in another, with respect to their thicknesses, and the order in which they lie upon each other, yet we never meet with a stratum of any kind of matter but what belongs to some of those above described.

To illustrate how the various strata lie in some places, and how often the same stratum may occur betwixt the surface and the coal, we shall give the following example. The numbers in the left hand column refer to the classes of strata before described, to which each belongs. The second column contains the names of the strata; and the four numeral columns to the right hand, express the thickness of each stratum, in fathoms, yards, feet, and inches.

N ^o	EXAMPLE.	Fas	Yds	Ft	Ins.
	Soil and gravel	0	1	1	0
	Clay mixed with loose stones	1	1	0	0
3	Coarse brown sand-stone, with soft partings	3	0	2	6
2	White post, with shivery partings	1	1	0	5
5	Black shiver or bleas, with iron-stone balls	2	0	2	0
6	Coarse splinty coal	0	0	2	6
5	Soft grey shiver	0	1	0	7
2	Brown and grey post, streaked with black	1	0	2	0
5	Black shiver, with beds and balls of iron-stone	0	1	2	6
4	Grey and black mettle-stone	0	1	1	9
2	White and brown post	1	1	0	0
5	Black and grey shiver, streaked with white	0	1	0	6
3	Soft grey sand-stone, with shivery partings	0	1	1	0
2	Yellow and white post, with sandy partings	1	0	2	0
5	Black and don shiver, with iron-stone balls	0	1	2	6
2	White post streaked with black, and black partings	1	0	0	6
5	Grey shiver, with iron-stone balls	0	1	0	9
4	Brown and black mettle stone	1	1	2	6
5	Hard slaty black shiver	1	1	0	0
6	Coal, hard and fine splint	0	0	3	6
5	Soft black shiver	0	0	0	3
6	Coal, fine and clear	0	0	3	3
5	Hard black shiver	0	0	1	0
	Total Fathoms	25	0	0	0

In this instance the species of sand-stone only occurs twice, post five times, whilst the shiver occurs no less than nine times.

To apply the foregoing observations to practice.

Suppose it was required to examine whether there was coal in a piece of ground adjoining to, or in the neighbourhood of, other coaleries.

In the first place, it is proper to be informed, at some of the adjacent coaleries, of the number and kinds of strata; the order in which they lie upon each other; to what point of the horizon, and in what quantity, they dip; if any dikes, hitches, or troubles, and the course they stretch. Having learnt these circumstances, search in the ground under examination where the strata are exposed to view, and compare these with the other. If they be of the same kinds, and nearly correspond in order and thickness, and be lying in a regular manner, and agree by computation with the dip and rise, it may safely be concluded the coal is there; and the depth of it may be judged from the depth of the coal in the other coalery, below any particular stratum which is visible in this.

If the solid strata are not exposed to view, neither in the hills nor valleys of the ground under examination, then search in the adjoining grounds; and if the same kind of strata are found there as in the adjacent coalery, and there is reason, from the dip and other circumstances, to believe that they stretch through the ground to be examined; it may then be concluded that the coal is there, as well as these other strata.

Suppose a coalery is on the side of a hill at A, fig. 3. and you would search for a coal at B, on the other side of the hill, but in a much lower situation; by observing the several strata lying above the coal at A, and the point to which they dip, which is directly towards B (if clear of dikes), you may expect to find the same kind of strata on the other side of the hill, but much lower down. Accordingly, if some of the strata are visible in the face of the precipice C, they may be compared with some of those in the pit at A. Or, if they are not to be seen there, by searching in the opposite hill, they may perhaps be discovered at the place F; where, if they be found in the manner before mentioned, and there be reason to believe they extend regularly from the first place to this, it is more than probable the coal, as well as these strata, will be found in the intermediate ground.

If the ground to be examined lie more to the rise of the coal, as at E, which being supposed to be on a flat, perhaps the solid strata there may be wholly covered by the gravel, clay, &c. of the outward surface lying upon them: In this case, by measuring the horizontal distance and the descent of ground from A to E, and computing the quantity of ascent or rise of the coal in that distance: by comparing these together, it may be judged at what depth the coal will be found there, allowing that it lie regular. Thus, suppose the coal at A 80 yards deep, the distance from A to E 500 yards, and that the coal rises 1 yard in 10 yards of horizontal distance:

Then, from the depth of the pit 80
Deduct the descent of ground from A to E, suppose - - - 24

This remainder would be the depth, if the coal was level - - - 56
But as the coal rises 1 in 10 feet, then deduct what it rises in 500 yards, which is 50

And the remainder is the depth of that coal at E - - - 6 Yards.

Or suppose that the place at B is 500 yards the contrary way, or to the full dip of the coal at A; if a view of the solid strata cannot be obtained, then by proceeding in the same manner as before, the depth of the coal at that place may be computed. Thus,

To the depth of the coal at the pit A 80
Add the descent or inclination of the coal in 500 yards; which, as before, is 50

This sum would be the depth, if the ground was level - - - 130

But as the ground descends towards B, deduct the quantity of that, which suppose - - - 80

Remains the depth of the coal at B 50 Yards.

Coalery.

Rule 2d.

Plate CXLII.

Rule 3d.

Rule 4th.

Methods of searching for coal.

Rule 1st.

If

Coalery.

If the place to be examined be neither to the full dip nor full rise, but in some proportion towards either, the same method may be pursued, computing how much the coal rises or dips in a certain distance in that direction.

If there is known to be a dike in the workings of the pit at A, which elevates or depresseth the strata towards the place under examination, then the quantity of the elevation or depression must be accordingly added to or deducted from the computed depth of the coal at that place. Suppose there is an upcast dike of 10 fathoms or 20 yards towards B, then deduct 20 from 50, the depth before computed, there will remain 30 yards or 15 fathoms for the depth of the coal at B.

But it often happens that coal is to be searched for, in a part of the country, at such a considerable distance from all other coaleries, that by reason of the intervention of hills, valleys, unknown dikes, &c. the connection or relation of the strata with those of any other coalery cannot be traced by the methods last mentioned; in which case a more extensive view must be taken of all circumstances than was necessary in the former; and a few general rules founded on the foregoing observations, and on conclusions drawn from them, will greatly assist in determining sometimes with a great degree of probability, and sometimes with absolute certainty, whether coal be in any particular district of country or not.

Rule 5th.

The first proper step to be taken in such a case, is to take a general view of that district of country intended to be searched, in order to judge, from the outward appearance or face of the country, which particular part out of the whole is the most likely to contain those kind of strata favourable to the production of coal; and consequently such particular part being found, is the most advisable to be begun with in the examination.

Though the appearance of the outward surface gives no certain or infallible rule to judge of the kinds of strata lying beneath, yet it gives a probable one; for it is generally found, that a chain of mountains or hills rising to a great height, and very steep on the sides, are commonly composed of strata much harder and of different kinds from those before described wherein coal is found to lie, and therefore unfavourable to the production of coal; and these mountainous situations are also more subject to dikes and troubles than the lower grounds: so that if the solid strata composing them gave even favourable symptoms of coal, yet the last circumstance would render the quality bad, and the quantity precarious. And, on the whole, it may be observed, that mountainous situations are found more favourable to the production of metals than of coal. It is likewise generally found that those districts abounding with valleys, moderately rising hills, and interspersed with plains, sometimes of considerable extent, do more commonly contain coal, and those kinds of strata favourable to its production, than either the mountainous or champaign countries; and a country so situated as this last described, especially if at some considerable distance from the mountains, ought to be the first part appointed for particular examination. Plains, or level grounds of great extent,

Plains.

N^o 83.

such moderate rising grounds as last described, are also very favourable to the production of coal, if the solid strata, and other circumstances in the higher grounds adjoining, be conformable; for it will scarcely be found, in such a situation, that the strata are favourable in the rising grounds, on both sides of the plain, and not so in the space betwixt them. Though plains be so favourable, in such circumstances, to the production of coal, yet it is often more difficult to be discovered in such a situation, than in that before described; because the clay, soil, and other lax matter, brought off the higher grounds by rains and other accidents, have generally covered the surfaces of such plains to a considerable depth, which prevents the exploration of the solid strata there, unless they be exposed to view by digging, quarrying, or some such operation.

That part of the district being fixed upon which abounds with moderate hills and valleys as properest to begin the examination at, the first step to be taken is to examine all places where the solid strata are exposed to view (which are called the *crops* of the strata), as in precipices, hollows, &c. tracing them as accurately and gradually as the circumstances will allow, from the uppermost stratum or highest part of the ground to the very undermost: and if they appear to be of the kinds before described, it will be proper to note in a memorandum book their different thicknesses; the order in which they lie upon each other; the point of the horizon to which they dip or incline, and the quantity of that inclination; and whether they lie in a regular state. This should be done in every part of the ground where they can be seen: observing at the same time, that if a stratum can be found in one place, which have a connection with some other in a second place, and if this other has a connection with another in a third place, &c; then, from these separate connections, the joint correspondence of the whole may be traced, and the strata, which in some places are covered, may be known by their correspondence with those which are exposed to view.

If by this means the crops of all the strata cannot be seen (which is often the case), and if no coal be discovered by its crop appearing at the surface; yet if the strata that have been viewed consist of those kinds before described, and are found lying in a regular order, it is sufficiently probable that coal may be in that part of the district, although it be concealed from sight by the surface of earth or other matter. Therefore, at the same time that the crops of the strata are under examination, it will be proper to take notice of all such springs of water as seem to be of a mineral nature, particularly those known by the name of iron water, which bear a mud or sediment of the colour of rust of iron, having a strong astringent taste. Springs of this kind proceed originally from those strata which contain beds or balls of iron-ore; but by reason of the tenacity of the matter of those strata, the water only disengages itself slowly from them, descending into some more porous or open stratum below, where, gathering in a body, it runs out to the surface in small streams or rills. The stratum of coal is the most general reservoir of this water; for the iron-stone being lodged in different kinds of shiver, and the coal commonly

Coalery.

Rule 6th.

Mountainous situations.

Hills and valleys.

Coalery. monly connected with some of them, it therefore descends into the coal, where it finds a ready passage through the open backs and cutters. Sometimes, indeed, it finds some other stratum than coal to collect and transmit it to the surface; but the difference is easily distinguishable; for the ochrey matter in the water, when it comes from a stratum of coal, is of a darker rusty colour than when it proceeds from any other, and often brings with it particles and small pieces of coal; therefore, wherever these two circumstances concur in a number of these kind of springs, situated in a direction from each other answerable to the stretch or to the inclination of the strata, it may be certain the water comes off coal, and that the coal lies in a somewhat higher situation than the apertures of the springs.

There are other springs also which come off coal, and are not distinguishable from common water, otherwise than by their astringency, and their having a blue scum of an oily or glutinous nature swimming upon the surface of the water. These, in common with the others, bring out particles of coal, more especially in rainy seasons when the springs flow with rapidity. When a number of these kinds are situated from each other in the direction of the strata, as above described; or if the water does not run forth as in springs, but only forms a swamp, or an extension of stagnant water beneath the turf; in either case, it may be depended upon that this water proceeds from a stratum of coal.

Rule 7th.

If the stratum of coal is not exposed to view, or cannot be discovered by the first method of searching for the crop, although the appearance of the other strata be very favourable, and afford a strong probability of coal being there; and if the last-mentioned method of judging of the particular place where the crop of the coal may lie, by the springs of water issuing from it, should, from the deficiency of those springs or other circumstances, be thought equivocal, and not give a satisfactory indication of the coal; then a further search may be made in all places where the outward surface, or the stratum of clay or earth, is turned up by ploughing, ditching, or digging, particularly in the lower grounds, in hollows, and by the sides of streams. These places should be strictly examined, to see if any pieces of coal be intermixed with the substance of the superior lax strata; if any such be found, and if they be pretty numerous and in detached pieces, of a firm substance, the angles perfect or not much worn, and the texture of the coal distinguishable, it may be concluded, that the stratum of coal to which they originally did belong is at no great distance, but in a situation higher with respect to the horizon; and if there be also found along with the pieces of coal other mineral matter, such as pieces of flint or freestone, this is a concurrent proof, that it has come only from a small distance. Though the two fore-mentioned methods should only have produced a strong probability, yet if this last mentioned place, where the pieces of coal, &c. are found in the clay, be in a situation lower than the springs; when this circumstance is joined to the other two, it amounts to little less than a moral certainty of the stratum of coal being a very little above the level of the springs. But if, on the contrary, these pieces of coal are found more

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sparingly interpersed in the superior stratum, and if the angles are much fretted or worn off, and very little of other kinds of mineral matter connected with them; it may then be concluded, that they have come from a stratum of coal situated at a greater distance than in the former case; and by a strict search and an accurate comparison of other circumstances, that particular place may be discovered with as much certainty as the other.

Coalery.

After the place is thus discovered, where the stratum of coal is expected to lie concealed, the next proper step to be taken, is to begin digging a pit or hole there perpendicularly down to find the coal. If the coal has no solid strata above and beneath it, but be found only embodied in the clay or other lax matter, it will not be there of its full thickness, nor so hard and pure as in its perfect state when enclosed betwixt two solid strata, the uppermost called the *roof*, and the undermost called the *pavement*, of the coal: in such situation therefore it becomes necessary, either to dig a new pit, or to work a mine forward until the stratum of coal be found included betwixt a solid roof and pavement, after which it need not be expected to increase much in its thickness: yet as it goes deeper or farther to the dip, it most likely will improve in its quality; for that part of the stratum of coal which lies near the surface, or only at a small depth, is often debased by a mixture of earth and sundry other impurities, washed down from the surface, through the backs and cutters, by the rains; whilst the other part of the stratum which lies at a greater depth is preserved pure, by the other solid strata above it intercepting all the mud washed from the surface.

The above methods of investigation admit of many different cases, according to the greater or less number of favourable circumstances attending each of the modes of inquiry; and the result accordingly admits every degree of probability, from the most distant, even up to absolute certainty. In some situations, the coal will be discovered by one method alone; in others, by a comparison of certain circumstances attending each method; whilst in some others, all the circumstances that can be collected only lead to a certain degree of probability.

In the last case, where the evidence is only probable, it will be more advisable to proceed in the search by boring a hole through the solid strata (in the manner hereafter described), than by digging or sinking a pit, it being both cheaper and more expeditious; and in every case, which does not amount to an absolute certainty, this operation is necessary, to ascertain the real existence of the coal in that place.

We shall now suppose, that having examined a certain district, situated within a few miles of the sea or some navigable river, that all the circumstances which offer only amount to a probability of the coal being there, and that boring is necessary to ascertain it; we shall therefore describe the operation of boring to the coal; then the method of clearing it from water, commonly called *winning* it; and all the subsequent operations of working the coal and raising it to the surface, leading it to the river or harbour, and finally putting it on board the ships.

Suppose that the ground, A, B, C, D, fig. 4. has been examined, and from the appearance of the strata coal.

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Of boring for the coal.

N

where

where they are visible (as at the precipice D, and several other places), they are found to be of those kinds usually connected with coal, and that the point to which they rise is directly west towards A, but the ground being flat and covered to a considerable depth with earth, &c. the strata cannot be viewed in the low grounds; therefore, in this and all similar situations, the first hole that is bored for a trial for coal should be on the west side of the ground, or to the full rise of the strata as at A, where, boring down through the strata 1, 2, 3, suppose 10 fathoms, and not finding coal, it will be better to bore a new hole than to proceed to a great depth in that: therefore, proceeding so far to the eastward as B, where the stratum 1, of the first hole, is computed to be 10 or 12 fathoms deep, a second hole may be bored, where boring down through the strata 4, 5, 6, 7, 8, the stratum 1 is met with, but no coal; it would be of no use to bore farther in this hole, as the same strata would be found which were in the hole A: therefore, proceeding again so far to the eastward, as it may be computed the stratum 4 of the second hole will be met with at the depth of 10 or 12 fathoms, a new hole may be bored at C; where, boring through the strata 9, 10, 11, 12, the coal is met with at 13, before the hole proceed so deep as the stratum 4 of the former. It is evident, that, by this method of procedure, neither the coal nor any other of the strata can be passed over, as the last hole is always bored down to that stratum which was nearest the surface in the former hole.

The purposes for which boring is used are numerous, and some of them of the utmost importance in coaleries. In coaleries of great extent, although the coal be known to extend through the whole grounds, yet accidental turns, and other alterations in the dip, to which the coal is liable, render the boring of three or more holes necessary, to determine exactly to what point of the horizon it dips or inclines, before any capital operation for the winning of it can be undertaken; because a very small error in this may occasion the loss of a great part of the coal, or at least incur a double expence in recovering it.

Suppose A, B, C, D, fig. 5. to be part of an extensive field of coal, intended to be won or laid dry by a fire-engine; according to the course of the dip in adjoining coaleries, the point C is the place at which the engine should be erected, because the coal dips in direction of the line AC, consequently the level line would be in the direction CD; but this ought not to be trusted to. Admit two holes, 1, 2, be bored to the coal in the direction of the supposed dip, at 200 yards distance from each other, and a third hole 3 at 200 yards distance from each of them: suppose the coal is found, at the hole 1, to be 20 fathoms deep; at the hole 2, 10 fathoms deeper; but at the hole 3, only 8 fathoms deeper than at 1. Then to find the true level line and dip of the coal, say, As 10 fathoms the dip from 1 to 2, is to 200 yards the distance, so is 8 fathoms, the dip from 1 to 3, to 160 yards, the distance from one on the line 1 2, to a, the point upon a level with the hole 3. Again say, As 8 fathoms, the dip from 1 to 3, is to 200 yards the distance; so is 10 fathoms, the dip from 1 to 2, to 250 yards, the distance from 1, in direction of the line 1, 3, to b, the point upon a level with the hole 2. Then let fall the

perpendicular 1, c, which will be the true direction of the dip of the coal, instead of the supposed line AC; and by drawing ED, and DF, parallel to the other lines, the angle D, and no other place, is the deepest part of the coal, and the place where the engine should be erected. If it had been erected at the angle C, the level line would have gone in the direction cb, by which means about one third part of the field of coal would have been below the level of the engine, and perhaps lost, without another engine was erected at D.

Boring not only shows the depth at which the coal lies, but its exact thickness; its hardness; its quality, whether close burning or open burning, and whether any foul mixture in it or not; also the thickness, hardness, and other circumstances of all the strata bored through; and from the quantity of water met with in the boring, some judgment may be formed of the size of an engine capable of drawing it, where an engine is necessary. When holes are to be bored for these purposes, they may be fixed (as near as can be guessed) in such a situation from each other, as to suit the places where pits are afterwards to be sunk; by which means most of the expence may be saved, as these pits would otherwise require to be bored, when sinking, to discharge their water into the mine below. There are many other uses to which boring is applied, as will be explained hereafter.

For these reasons, boring is greatly practised in England, and is brought to great perfection; and as the operation is generally entrusted to a man of integrity, who makes it his profession, the accounts given by him of the thickness and other circumstances of the strata, are the most accurate imaginable, and are trusted to with the greatest confidence; for as very few gentlemen choose to take a lease of a new coalery which has not been sufficiently explored by boring, it is necessary the accounts should be faithful, being the only rule to guide the landlord in letting his coal, and the tenant in taking it. In Scotland it is not so generally practised; nor are there any men of character who are professed borers, that operation being commonly left to any common workman; whence it happens that it never has been in any esteem, the accounts given by them being so imperfect and equivocal as not to merit any confidence.

The tools or instruments used in boring are very simple. The boring rods are made of iron from 3 to 4 feet long, and about one inch and a half square, with a screw at each end, by which they are screwed together, and other rods added as the hole increases in depth. The chisel is about 18 inches long, and two and a half broad at the end, which being screwed on at the lower end of the rods, and a piece timber put through an eye at the upper end, they are prepared for work. The operation is performed by lifting them up a little, and letting them fall again, at the same time turning them a little round; by a continuance of which motions, a round hole is fretted or worn through the hardest strata. When the chisel is blunt, it is taken out, and a scooped instrument called a *wimble* put on in its stead; by which the dust or pulverised matter which was worn off the stratum in the last operation is brought up. By this substance, the borers know exactly the nature of the stratum they

Coalery. they are boring in; and by any alteration in the working of the rods (which they are sensible of by handling them), they perceive the least variation of the strata. The principal part of the art depends upon keeping the hole clean, and observing every variation of the strata with care and attention.

The established price of boring in England is 5 s. per fathom for the first five fathoms, 10 s. per fathom for the next five fathoms, and 15 s. per fathom for the next five fathoms; and so continually increasing 5 s. per fathom at the end of every five fathoms; the borer finding all kinds of boring instruments, and taking his chance of the hardness of the strata, except above one foot in thickness of whin occur, when the former price ceases, and he is paid per day.

13
Of winning
the coal.

It is exceedingly uncommon to meet with a stratum of coal which is naturally dry, or whose subterranean springs or feeders of water are so very small as to require no other means than the labour of men to draw off or conduct them away; for it most commonly happens, that the stratum of coal, and the other strata adjacent, abound so much in feeders of water, that, before access can be had to the coal, some other methods must be pursued to drain or conduct away these feeders: therefore, after the deepest part of the coal is discovered, the next consideration is of the best method of draining it, or, in the miner's language, of *winning the coal*.

If the coal lies in such an elevated situation, that a part of it can be drained by a level brought up from the lower grounds, then that will be the most *natural* method; but whether it be the most *proper* or not, depends upon certain circumstances. If the situation of the ground be such, that the level would be of a great length, or have to come through very hard strata, and the quantity of coal it would drain, or the profits expected to be produced by that coal, should be inadequate to the expence of carrying it up; in such case some other method of winning might be more proper. Or suppose, in another case, it be found, that a level can be had to a coalery, which will cost L. 2000, and require five years to bring it up to the coal, and that it will drain 30 acres of coal when completed; yet if it be found that a fire engine, or some other machine, can be erected on that coalery, for the same sum of money, in one year, which will drain 50 acres of the same coal, then this last would be a more proper method than the level; because four years profit would be received by this method before any could come in by the other; and after the 30 acres drained by the level is all wrought, a machine of some kind would nevertheless be necessary to drain the remaining 20 acres: so that erecting a machine at first would be on all accounts the most advisable.

Where a level can be drove, in a reasonable time, and at an adequate expence, to drain a sufficient tract of coal, it is then the most eligible method of winning; because the charge of upholding it is generally less than that of upholding fire-engines or other machines.

If a level is judged properest after consideration of every necessary circumstance, it may be begun at the place appointed in the manner of an open ditch, about three feet wide, and carried forward until it be about six or seven feet deep from the surface, taking care to secure the bottom and sides by timber-work or build-

ing; after which it may be continued in the manner of a mine about three feet wide, and three feet and a half high, through the solid strata, taking care all along to keep the bottom upon a level, and to secure the roof, sides, and bottom, by timber or building, in all places where the strata are not strong enough to support the incumbent weight, or where they are liable to decay by their exposure to the fresh air. If the mine has to go a very long way before it reach the coal, it may be necessary to sink a small pit, for the convenience of taking out the stones and rubbish produced in working the mine, as well as to supply fresh air to the workmen; and if the air should afterwards turn damp, then square wooden pipes made of dales closely jointed (commonly called *air-boxes*), may be fixed in the upper part of the mine, from the pit-bottom all the way to the end of the mine, which will cause a sufficient circulation of fresh air for the workmen; perhaps in a great length it will be found proper to sink another or more pits upon the mine, and by proceeding in this manner it may be carried forward until it arrive at the coal; and after driving a mine in the coal a few yards to one side, the first coal-pit may be sunk.

If a level is found impracticable, or for particular reasons unadvisable; then a fire-engine*, or some other machine, will be necessary, which should be fixed upon the deepest part of the coal, or at least so far towards the dip as will drain a sufficient extent of coal, to continue for the time intended to work the coalery; and whether a fire-engine, or any other machine, is used, it will be of great advantage to have a partial level brought up to the engine-pit, if the situation of the ground will admit it at a small charge, in order to receive and convey away the water without drawing it so high as to the surface: for if the pit was 30 fathoms deep to the coal, and if there was a partial level, which received the water five fathoms only below the surface, the engine by this means would be enabled to draw 1-6th part more water than without it; and if there were any feeders of water in the pit above this level, they might be conveyed into it, where they would be discharged without being drawn by the engine.

The engine-pit may be from seven to nine feet wide; and whether it be circular, oval, or of any other form, is not very material, provided it be sufficiently strong, though a circular form is most generally approved. If any feeders of water are met with a few fathoms from the surface, it will be proper to make a circular or spiral cutting about one foot deep, and a little hollowed in the bottom, round the circumference of the pit, in order to receive and conduct the water down, without flying over the pit and incommoding the workmen. If the strata are of so tender or friable a nature as not to bear this operation, or if the water leaks through them, then it will be necessary to insert in the forementioned cutting a circular piece of timber called a *crib*, hollowed in the same manner to collect the water; and a second may be inserted two or three yards below the first, with a sloping notch down the wall or side of the pit, to convey the water from the former into it; proceeding by some of these methods until the pit is sunk 15 or 20 fathoms; at which place it would be proper to fix a

Coalery.

* See article *Steam-engine*.

Coalery. cistern or reservoir, for the first or upper set of pumps to stand in; for if the pit be 30 fathoms as supposed, it would be too great a length for the pumps to be all in one set from bottom to top; therefore, if any extraordinary feeders are met with, betwixt 15 and 20 fathoms deep, it would be best to fix the cistern where it may receive them, and prevent their descending to the bottom; observing that the upper set of pumps be so much larger than the lower one, as the additional feeders may require; or if there are no additional feeders, it ought then to be a little smaller.

After the upper cistern is fixed, the operation may be pursued by the other set of pumps in much the same manner as has been described, until the pit is sunk to the coal; which being done, it would be proper to sink it six or eight feet deeper, and to work some coal out from the dip side of the pit, to make room for a large quantity of water to collect, without incommoding the coal-pits when the engine is not working.

It would exceed the proper bounds of this article, to enumerate all the accidents to which engine-pits are liable in sinking; we shall therefore only recite a few which seem important.

If a quicksand happen to lie above the solid strata, next the surface, it may be got through by digging the pit of such a wideness at the top (allowing for the natural slope or running of the sand) as to have the proper size of the pit on the uppermost solid stratum; where fixing a wooden frame or tube as the timber-work of the pit, and covering it round on the outside with wrought clay up to the top, the sand may again be thrown into the excavation round the tube, and levelled with the surface.

If the quicksand should happen to lie at a considerable depth betwixt the clay and solid strata, then a strong tube of timber closely jointed and shod with iron, of such a diameter as the pit will admit, may be let down into it; and by fixing a great weight upon the top, and by working out the sand, it may be made to sink gradually, until it come to the rock or other solid stratum below; and when all the sand is got out, if it be lightly calked and secured it will be sufficient.

It sometimes happens, that a stratum of soft matter, lying betwixt two hard solid ones, produces so large a quantity of water as greatly to incommode the operations. In such a case, a frame-work of plank, strengthened with cribs and closely calked, will stop back the whole or the greatest part of it, provided the two strata which include it are of a close texture; or let an excavation of about two feet be made in the soft stratum, quite round the circumference of the pit; and let that be filled close up betwixt the hard strata, with pieces of dry fir-timber about ten inches square inserted endwise, and afterwards as many wooden wedges driven in to them as they can be made to receive; if this be well finished, little or no water will find a passage through it.

It rarely happens that any suffocating damp or foul air is met with in an engine-pit; the falling of water, and the working of the pumps, generally causing a sufficient circulation of fresh air. But that kind of combustible vapour, or inflammable air, which will catch fire at a candle is often met with. It proceeds from the partings, backs, and cutters, of the solid strata,

exhaling from some in an insensible manner, whilst Coalery. from others it blows with as great impetuosity as a pair of bellows. When this inflammable air is permitted to accumulate, it becomes dangerous by taking fire, and burning or destroying the workmen, and sometimes by its explosion will blow the timber out of the pit, and do considerable damage. If a considerable supply of fresh air is forced down the pit by air-boxes and a ventilator, or by dividing the pit into two by a close partition of deals from top to bottom, or by any other means, it will be driven out, or so weakened, that it will be of no dangerous consequence: or when the inflammable air is very strong, it may be safely carried off by making a close sheathing or lining of thin deals quite round the circumference of the pit, from the top of the solid strata to the bottom, and lengthening it as the pit is sunk, leaving a small vacancy behind the sheathing; when the combustible matter, which exhales from the strata, being confined behind these deals, may be vended by one or two small leaden pipes carried from the sheathing to the surface; so that very little of it can transpire into the area of the pit. If a candle be applied to the orifice of the pipe at the surface, the inflammable air will instantly take fire, and continue burning like an oil-lamp until it be extinguished by some external cause. Upon the whole, every method should be used to make the pit as strong in every part, and to keep it as dry as possible; and whenever any accident happens, it should be as expeditiously and thoroughly repaired as possible, before any other operation be proceeded in, lest an additional one follow, which would more than double the difficulty of repairing it.

The first operations, after sinking the engine-pit, are the working or driving a mine in the coal, and sinking the first coal-pit. The situation of the first coal-pit should be a little to the rise of the engine-pit, that the water which collects there may not obstruct the working of the coals every time the engine stops: and it should not exceed the distance of 20, 30, or 40 yards; because when the first mine has to be driven a long way, it becomes both difficult and expensive. If there be not a sufficient circulation of fresh air in the mine, it may be supplied by the before described air-boxes and a ventilator, until it arrive below the intended coal pit, when the pit may be bored and sunk to the coal, in the manner before mentioned.

After the pit is thus got down to the coal, the next consideration should be of the best method of working it. The most general practice in Scotland is to excavate and take away a part only of the stratum of coal in the first working of the pit, leaving the other part as pillars for supporting the roof; and after the coal is wrought in this manner to such a distance from the pit as intended, then these pillars, or so many of them as can be got, are taken out by a second working, and the roof and other solid strata above permitted to fall down and fill up the excavation. The quantity of coal wrought away, and the size of the pillars left in the first working, is proportioned to the hardness and strength of the coal and other strata adjacent, compared with the incumbent weight of the superior strata.

The same mode of working is pursued in most parts of England, differing only as the circumstances of the coalery

Coalery. coalery may require: for the English coal, particularly in the northern counties, being of a fine tender texture, and of the close-burning kind, and also the roof and pavement of the coal in general not so strong as in Scotland, they are obliged to leave a larger proportion of coal in the pillars for supporting the roof, during the first time of working; and, in the second working, as many of these pillars are wrought away as can be got with safety.

The Scots coal in general being very hard, and of the open-burning kind, it is necessary to work it in such a manner as to produce as many *great coals* as possible, which is best effected by taking away as high a proportion of the coal as circumstances will allow in the first working; on the contrary, the English coal being very tender cannot possibly be wrought large, nor is it of much importance how small they are, being of so rich a quality; so that a larger proportion may be left in pillars in this coal than could with propriety be done in the other; and, when all circumstances are considered, each method seems well adapted to the different purposes intended.

The ancient method of working was, to work away as much of the coal as could be got with safety at one working only: by which means the pillars were left so small as to be crushed by the weight of the superior strata, and entirely lost. As great quantities of coals were lost by this method, it is now generally exploded, and the former adopted in its place; by which a much larger quantity of coal is obtained from the same extent of ground, and at a much less expence in the end.

The exact proportion of coal proper to be wrought away, and to be left in pillars at the first working, may be judged of by a comparison of the circumstances before mentioned. If the roof and pavement are both strong, as well as the coal, and the pit about 30 fathoms deep, then two-thirds, or probably three-fourths, may be taken away at the first working, and one-third or one-fourth left in pillars. If both roof and pavement be soft or tender, then a larger proportion must be left in pillars, probably one-third or near one-half; and in all cases the hardness or strength of the coal must be considered. If tender, it will require a larger pillar than hard coal; because, by being exposed to the air after the first working, a part of it will moulder and fall off, by which it will lose much of its solidity and resistance.

The proportion to be wrought away and left in pillars being determined, the next proper step is to fix upon such dimensions of the pillars to be left, and of the excavations from which the coal is to be taken away, as may produce that proportion. In order to form a just idea of which, see a plan of part of a pit's workings (fig. 6.), supposed to be at the depth of 30 fathoms, and the coal having a moderate rise. A, represents the engine-pit; B, the coal-pit; A a B, the mine from the former to the latter; B C, the first working or excavation made from the coal-pit, commonly called the *winning mine* or *winning headway*, nine feet wide; *b b b b*, &c. the workings called *rooms*, turned off at right angles from the others, of the width of 12 feet; *c c c c*, &c. the workings called *throughs* or *thirlings*, 9 feet wide, wrought through at right angles from one room to another; *d d d*, &c. the pil-

lars of coal left at the first working for supporting the roof, 18 feet long and 12 feet broad; DD, two large pillars of coal near the pit bottom, 15 or 20 yards long, and 10 or 15 broad, to support the pit, and prevent its being damaged by the roof falling in; *e e*, the level mine wrought in the coal from the engine-pit bottom, 4 or five feet wide; *f f*, &c. large pillars of coal left next the level, to secure it from any damage by the roof falling in; *g g*, a dike which depresseth the coal, 1 fathom; *b b*, &c. large pillars and barriers of coal left unwrought, adjoining to the dike where the roof is tender, to prevent its falling down. The coal taken out by the first working in this pit is supposed to be one-third of the whole; and allowing the rooms 12 feet wide, and the thirlings 9 feet wide, then the pillars will require to be 12 feet wide and 18 feet long; for if one pillar be in a certain proportion to its adjoining room and thirling, the whole number of pillars will be in the same proportion to the whole number of rooms and thirlings in the pit. Suppose ABCD, (fig. 7.), to be a pillar of coal 18 feet long and 12 feet broad, its area will be 216 square feet; ACHE, the adjoining thirling, 12 feet by 9 feet, and its area 108 square feet; BA EFG, the adjoining room, 27 feet long and 12 feet broad, and its area 324 square feet; which added to 108 gives 432 square feet, or two-thirds wrought, and 216 square feet left, or one-third of the whole area F G H D.

It is proper to observe, that in the prosecution of the workings, the rooms to the right of the winning headway should be opposite to the pillars on the left; and the first, third, and fifth pillar, or the second, fourth, and sixth, adjoining to the said headway, should be of such a length as to overlay the adjoining thirlings; as, in the plan, the pillar 2 overlays the thirlings 1 and 3; and the pillar 4, overlays the thirlings 3 and 5; this will effectually support the roof of the main road B C, and will bring the other pillars into their regular order, by which means each pillar will be opposite to two thirlings. Also a larger proportion of coal than common should be left in all places which are intended to be kept open after the second working; such as the pit-bottoms, air-courses, roads, and water-courses, or where the roof is tender, as it generally is near dikes, hitches, and troubles; and if the roof should continue tender for a considerable space, it will perhaps be found proper to leave a few inches of coal adhering to the roof, which, together with a few props of timber fixed under it, may support it effectually for a long time. The level mine *e e*, and the winning headway B C, should be wrought forward a considerable length before the other rooms, in order to be drove through any dikes that might interpose; otherwise the progress of the workings might probably be stopped a considerable time, waiting until a course of new rooms were procured on the other side of the dike. Suppose the dike *g g*, fig. 6. to depress the coal six feet or one fathom, and that it rises in the same manner on the under side of the dike as it does on the upper side; in such a case, the only remedy would be to work or drive a level mine through the strata of stone from the engine-level at *e*, over the dike, until it intersect the coal at *i*; and from thence to drive a new level mine in the coal at *i i*, and a new winning headway *i k*. In order to gain a new set of

Coalery.

rooms.



Coalery.

rooms, and to supply fresh air to this new operation, a small mine might be drove from the room *b*, and a hole funk down upon the level room *ii*; therefore, if the level mine *ee* was not drove so far forward as to have all these operations completed before the rooms and other workings were intercepted by the dike, the working of the pit might cease until these new places were ready.

If there be two or three strata or seams of coal in the same pit (as there often are) having only a stratum of a few feet thick lying betwixt them, it is then material to observe, that every pillar in the second seam be placed immediately below one in the first, and every pillar in the third seam below one in the second; and in such a situation the upper stratum of coal ought to be first wrought, or else all the three together: for it would be unsafe to work the lower one first, lest the roof should break, and damage those lying above.

It sometimes becomes necessary to work the coal lying to the dip of the engine or the level; which coal is consequently drowned with water, and must therefore be drained by some means before it can be wrought. If the quantity of water proceeding from it be considerable, it may then be drained by small pumps laid upon the pavement of the coal, and wrought by men or horses, to raise the water up to the level of the engine-pit bottom: or if the feeders of water be more considerable, and the situation be suitable, the working rod of these pumps might be connected with those in the engine-pit; by which means the water would be raised up to the level: but if the quantity of water be very great; or if, from other circumstances, these methods may not be applicable; then the engine-pit may be funk as deep below the coal as may be necessary, and a level stone mine drove from its bottom to the dip of the strata, until it intersect the stratum of coal, from whence a new level mine might be worked, which would effectually drain it. Suppose A B, fig. 8. to be a section of the engine-pit; B C, the coal drained by the engine; B D, the coal to the dip of the engine intended to be drained; then if the engine-pit be funk deeper to E, a stone mine may be wrought in the direction E D, until it intersect the coal at D, by which the water will have a free passage to the engine, and the coal will be drained.

If there be another stratum of coal lying at such a depth below the first as the engine-pit is intended to be funk to, the upper seam may in some situations be conveniently drained, by driving a mine in the lower seam of coal from E to F, and another in the upper one from B to D; and by boring a hole from D to F, the water will descend to F, and, filling the mine E F, rise up to the engine-pit bottom at E, which is upon a level with D.

Whenever it is judged necessary to work the pillars, regard must be had to the nature of the roof. If the roof is tender, a narrow room may be wrought through the pillar from one end to the other, leaving only a shell of coal on each side for supporting the roof the time of working. Suppose A B C D, fig. 7. to be a pillar of coal 18 feet long and 12 feet broad: if the roof is not strong, the room 1, 2, 3, 4, of eight feet wide, may be wrought up through that pillar, leaving a shell of two feet thick on each side; and if it can be

safely done, a part of these shells may also be wrought away, by working two places through them as at 5 and 6. By this means very little of the coal will be lost; for two-thirds of the whole being obtained by the first working, and above two-thirds of the pillar by the second working, the loss upon the whole would not exceed one-tenth: but it may be observed, that some pillars will not produce so great a proportion, and perhaps others cannot be wrought at all; so that, upon the whole, there may be about one-eighth, one-seventh, or in some situations one-sixth part of the coal lost. If the roof be hard and strong, then as much coal may be wrought off each side and each end of the pillar as can be done with safety, leaving only a small piece standing in the middle; and when the roof is very strong, sometimes several pillars may be taken entirely out, without any loss of coal: and in general this last method is attended with less loss, and produces larger coals, than the former. In all cases it is proper to begin working those pillars first which lie farthest from the pit bottom, and to proceed working them regularly away towards the pit; but if there be a great number of pillars to the dip of the pit, it is the safest method to work these out before those to the rise of the pit are begun with.

There is no great difference in the weight of different kinds of coals, the lightest being about 74 pounds avoirdupois, and the heaviest about 79 pounds the cubic foot; but the most usual weight is 75 pounds the foot, which is 18 hundred weight and 9 pounds the cubic yard. The statute chalders is 53 hundred weight; or when measured is as follows: 268.8 cubic inches to the Winchester gallon; $4\frac{1}{2}$ gallons to the coal peck, about 3 pounds weight; 8 coal pecks to the boll, about $24\frac{1}{2}$ pounds; and 24 bolls to the chalders, of 53 hundred weight. If one coal measuring exactly a cubic yard (nearly equal to 5 bolls) be broken into pieces of a moderate size, it will measure seven coal bolls and a half. If broken very small, it will measure 9 bolls; which shows, that the proportion of the weight to the measure depends upon the size of the coals; therefore accounting by weight is the most rational method.

A TABLE of the weight and quantity of coal contained in one acre Scots measure, allowing one sixth part to be lost below ground, in seams of the following thicknesses.

Thickness of coal.		Weight in tuns.	Quantity in chalders.
Fect.	Inches.		
2	0	3068	1158
2	6	3835	1447
3	0	4602	1736
3	6	5369	2025
4	0	6136	2314
4	6	6903	2603
5	0	7670	2892
5	6	8437	3181
6	0	9204	3470

We shall next mention some of the various methods of bringing the coals from the rooms and other workings to the pit bottom. Where the stratum of coal is of a sufficient thickness, and has a moderate rise and dip, the coals are most advantageously brought out by horses, who draw out the coals in a tub or basket placed

Coalery.

Coalery. ced upon a sledge: a horse by this means will bring out from four to eight hundred weight of coals at once, according to the quantity of the ascent or descent. In some coaleries they have access to the workings by a mine made for them, sloping down from the surface of the earth to the coal; and where that convenience is wanting, they are bound into a net, and lowered down the pit. If the coal be not of such a height as to admit horses, and has a moderate rise like the last, then men are employed to bring out the coals: they usually draw a basket of four or five hundred weight of coals, fixed upon a small four-wheeled carriage. There are some situations in which neither horses nor men can be properly used; particularly where the coal has a great degree of descent, or where many dikes occur: in such a case the coals are best brought out by women called *bearers*, who carry them in a kind of basket upon their backs, usually a hundred, or a hundred weight and a half, at once.

When the coals are brought to the pit bottom, the baskets are then hooked on to a chain, and drawn up the pit by a rope to the surface, which is best effected by a machine called a *gin*, wrought by horses. There are other kinds of gins for drawing coals, some wrought by water, others by the vibrating lever of a fire-engine; but either of these last is only convenient in some particular situations, those wrought by horses being in most general use. After the coals are got to the surface, they are drawn a small distance from the pit, and laid in separate heaps: the largest coals in one heap, the smaller pieces called *chevons* in another, and the *culm* or *pan-coal* in a separate place.

15
Of crushes
and lifts.

There is an accident of a very dangerous nature to which all coaleries are liable, and which has been the ruin of several: it is called a *crush*, or a *fall*. When the pillars of coal are left so small as to fail, or yield under the weight of the superior strata; or when the pavement of the coal is so soft as to permit the pillars to sink into it, which sometimes happens by the great weight that lies upon them; in either case the solid stratum above the coal breaks and falls in, crushes the pillar to pieces, and closeth up a great extent of the workings, or probably the whole coalery. As such an accident seldom comes on suddenly, if it be perceived in the beginning, it may sometimes be stopped by building large pillars of stone amongst the coal pillars: but if it has already made some progress, then the best method is to work away as many of the coal pillars adjoining to the crush as may be sufficient to let the roof fall freely down; and if it makes a breach of the solid strata from the coal up to the surface, it will very probably prevent the crush from proceeding any farther in that part of the coalery. If the crush begins in the rise part of the coalery, it is more difficult to stop it from proceeding to the dip, than it is to stop it from going to the rise when it begins in a contrary part.

16
Foul air.

Another circumstance proper to be taken notice of is the foul or adulterated air so often troublesome in coaleries. Of this there are two kinds: the black damp or styth, which is of a suffocating nature; and the inflammable or combustible damp. Without staying to inquire, in this place, into the origin and effects of these damps, it may be sufficient to observe, that, in whatever part of any coalery a constant supply or a circulation of fresh air is wanting, there some of

these damps exist, accumulate in a body, and become noxious or fatal: and whenever there is a good circulation of fresh air, they cannot accumulate, being mixed with and carried away by the stream of air as fast as they generate or exhale from the strata. Upon these principles are founded the several methods of ventilating a coalery. Suppose the workings of the pits A and B (fig. 6.) to be obnoxious to the inflammable damps; if the communication was open betwixt the two pits, the air which went down the pit A would proceed immediately along the mine *a*, and ascend out of the pit B; for it naturally takes the nearest direction: so that the air in all the workings would be stagnant; and they would be utterly inaccessible from the accumulation of the combustible damp. In order to expel this, the air must be made to circulate through all the different rooms by means of collateral air-courses made in this manner: The passage or mine *a* must be closed up or stopped by a partition of deals, or by a wall built with bricks or stones, to prevent the air passing that way. This building is called a *stopping*. There must also be stoppings made in the thirlings 1 1 1, &c. betwixt the pillars *ff*, &c. which will direct the air up the mine *ee*, until it arrive at the innermost thirling *z*, which is to be left open for its passage. There must also be stoppings made at the side of the mine *a* at *mm*, and on both sides of the main headway BC at *bb*, &c. then returning to the innermost thirling *z*, proceed to the third row of pillars, and build up the thirlings *z z*, &c. leaving open the thirling *3* for a passage for the air; and proceeding on to the fifth row of pillars, build up in the same manner the stoppings *3 3*, &c. leaving open *4* for an air course: and by proceeding in this manner to stop up the thirlings or passages in every other row of pillars, the current of fresh air will circulate through and ventilate the whole workings, in the direction pointed to by the small arrows in the plan, clearing away all the damps and noxious vapours that may generate. When it is arrived at C, it is conducted across the main headway, and carried through the other part of the pit's workings in the same manner, until it return through *nn* to the pit B, where it ascends; and as the rooms advance farther, other stoppings are regularly made.

In some of those stoppings, on the sides of the main headway, there must be doors to admit a passage for the bringing out of the coals from the rooms to the pit, as at *5 5*: these doors must be constantly shut, except at the time of passing through them.

There are other methods of disposing the stoppings so as to ventilate the pit; but none which will so effectually disperse the damps as that described above. If the damps are not very abundant, then the course of stoppings 1 1 1, &c. in the level mine, and the others at *bbb*, &c. in the main headway, without any others, may perhaps be sufficient to keep the pit clear. If at any time the circulation of the fresh air is not brisk enough, then a large lamp of fire may be placed at the bottom of the pit B, which, by rarefying the air there, will make a quicker circulation.

Most of the larger coaleries send their coals to the ¹⁶Of leading ships for the coasting trade or exportation; and, as the ¹⁷and ship- quantity is generally very large, it would take a greater ¹⁸ing the number of carts than could conveniently be obtained at ¹⁹coals. all times to carry them; besides the considerable expence.

Coalery.

Plate
CXLII.

Coalery,
||
Coallier.

of that manner of carriage: they therefore generally use waggons, for carrying them along waggon-ways, laid with timber; by which means one horse will draw from two to three tuns at a time, when in a cart not above half a tun could be drawn.

The first thing to be done in making a waggon-way is to level the ground in such a manner as to take off all sudden ascents and descents: to effect which, it is sometimes necessary to cut through hills, and to raise an embankment to carry the road through hollows. The road should be formed about 12 feet wide; and no part should have a greater descent than of one yard perpendicular in 10 of a horizontal line, nor a greater ascent than one yard in 30. After the road is formed, pieces of timber, about six feet long and six inches diameter, called *sleepers*, are laid across it, being 18 or 24 inches distant from each other. Upon these sleepers other pieces of timber, called *rails*, of four or five inches square, are laid in a lateral direction, four feet distant from each other, for the waggon-wheels to run upon; which being firmly pinned to the sleepers, the road may then be filled with gravel and finished.

The waggons have four wheels, either made of solid wood or of cast iron. The body of the carriage is longer and wider at the top than at the bottom; and usually has a kind of trap-door at the bottom, which, being loosed, permits the coals to run out without any trouble. The size of a waggon to carry 50 hundred weight of coals is as follows:

	Feet.	Inches.
Length of the top,	7	9
Breadth of the top,	5	0
Length of the bottom,	5	0
Breadth of the bottom,	2	6
Perpendicular height,	4	3

Where the pits are situated at some considerable distance from the harbour, it becomes necessary to have a store-house near the shipping place, where the coals may be lodged, until the lighters or ships are ready to take them in. The waggon-way should be made into the store-house, at such a height from the ground, as to permit the coals to run from the waggons down a spout into the vessels; or else to fall down into the store-house, as occasion may require.

This kind of store-house is well adapted to dispatch and saving expence: for a waggon-load of coals may be delivered either into the store-house or vessels instantly with very little trouble: and if the coals were exposed to the effects of the sun and rain, they would be greatly injured in their quality; but being lodged under cover of the store-house, they are preserved.

COALESCENCE, the union or growing together of two bodies before separate. It is principally applied to some bones in the body, which are separate during infancy, but afterwards grow together; or to some morbid union of parts, which should naturally be distinct from each other. Thus there is a coalescence of the sides of the vulva, anus, and nares; of the eye-lids, fingers, toes, and many others parts.

COALLIER, a vessel employed to carry coals from one port to another; chiefly from the northern parts of England to the capital, and more southerly parts, as well as to foreign markets. This trade is known to be an excellent nursery for seamen; although they

are often found, from the constitution of their climate, not to be so well calculated for southern navigation.

COAMINGS, in ship-building, are those planks, or that frame, forming a border round the hatches, which raise them up higher than the rest of the deck. Loop-holes for muskets to shoot out at, are often made in the coamings, in order to clear the deck of the enemy when the ship is boarded.

COANE, among the Greeks, a name given to a peculiar species of *tutia* or *tutty*, which was always found in a tubular form. It had its name from *κωνη*, a word used to express a sort of cylindric tube, into which the melted brass was received from the furnace, and in which it was suffered to cool. In cooling, it always deposited a sort of recement on the sides of the vessel or tube, and this was the *tutty* called *coane*.

COAST, a sea-shore, or the country adjoining to the edge of the sea. Dr Campbell, in his political survey of Great Britain, considers an extensive sea-coast as of great advantage to any kingdom; and consequently that this island hath many conveniences resulting from the extent of its coasts, superior to other kingdoms which are much larger. The chief advantages arising from an extensive sea-coast are, that thus there is a convenient opportunity for exportation and importation to or from all parts of the kingdom. Thus, a number of cities are formed on the coasts; by this means the internal parts are improved, &c. The extent of the sea-coasts of Arabia, he looks upon as the genuine source of wealth and splendour to the ancient inhabitants of that peninsula; the same was the instrument of the greatness of ancient Egypt, of Phœnicia, &c. In short, according to him, no country or city can for any length of time be flourishing unless it hath a considerable connection with the sea. "It is indeed true (says he) that the wisdom and industry of man, taking hold of some peculiar circumstances, may have rendered a few inland cities and countries very fair and flourishing. In ancient history we read of Palmyra, and the district round it, becoming a luxuriant paradise in the midst of inhospitable deserts. But this was no more than temporary grandeur; and it has now lain for some ages in ruins. The city and principality of Kandahar was in like manner rendered rich and famous, in consequence of its being made the centre of the Indian commerce; but, long ago declining, its destruction has been completed, in our days, from that dreadful desolation which Thamas Kouli Khan spread through Persia and the Indies. Here, in Europe, many of the large cities in Germany, which for a time made a great figure from the freedom and industry of the inhabitants, and diffused ease, plenty, and prosperity, through the districts dependent on them, which of course rendered them populous, are now so much sunk, through inevitable accidents, as to be but shadows of what they were; and though they still continue to subsist, subsist only as the melancholy monuments of their own misfortunes. We may therefore, from hence, with great certainty, discern, that all the pains and labour that can be bestowed in supplying the defect of situation in this respect, proves, upon the whole, but a tedious, difficult, and precarious expedient. But, however, we must at the same time admit, that it is not barely

Coamings,
||
Coast.

Cape-Coast
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Coasting.

the possession even of an extended coast that can produce all these desirable effects. That coast must likewise be distinguished by other natural advantages; such as capes and promontories, favourably disposed to break the fury of the winds; deep bays, safe roads, and convenient harbours. For, without these, an extended coast is no more than a maritime barrier against the maritime force of other nations; as is the case in many parts of Europe: and is one of the principal reasons why Africa derives so little benefit from a situation which has so promising an appearance; there being many considerable tracts upon its coasts, equally void of havens and inhabitants, and which afford not the smallest encouragement to the attempting any thing that might alter their present desolate condition. It is, however, a less inconvenience, and in some cases no inconvenience at all, if, in the compass of a very extended coast, there should be some parts difficult or dangerous of access, provided they are not altogether inaccessible.—The sea coast of Britain, from the figure, in some measure, of the island, but chiefly from the inlets of the sea, and the very irregular indented line which forms its shore, comprehends, allowing for those sinuosities, at least 800 marine leagues: we may, from hence, therefore, with safety affirm, that in this respect it is superior to France, though that be a much larger country; and equal to Spain and Portugal in this circumstance, though Britain is not half the size of that noble peninsula, which is also singularly happy in this very particular.”

CAPE-COAST, the name of the chief British settlement on the coast of Guinea in Africa. The name is thought to be a corruption of *Cabo Corso*, the ancient Portuguese appellation. This cape is formed by an angular point, washed on the south and east by the sea, on which stands the English fort. Here the Portuguese settled in 1610, and built the citadel of Cape Coast upon a large rock that projects into the sea. A few years afterwards they were dislodged by the Dutch, to whom this place is principally indebted for its strength. In 1664 it was demolished by Admiral Holmes, and in 1665 the famous Dutch Admiral De Ruyter was ordered by the States to revenge the insults of the English. With a squadron of 13 men of war, he attacked all the English settlements along the coast; ruined the factories; and took, burnt, and sunk all the shipping of the English Company: however, after all his efforts, he was baffled in his attempts on Cape Coast. By the treaty of Breda it was confirmed to the English, and the king granted a new charter in 1672; on which the Company applied all their attention to the fortifying and rendering it commodious.

COASTING, in navigation, the act of making a progress along the sea-coast of any country. The principal articles relating to this part of navigation are, the observing the time and direction of the tide: knowledge of the reigning winds; of the roads and havens; of the different depths of the water, and qualities of the ground.

COASTING-Pilot, a pilot who by long experience has become sufficiently acquainted with the nature of any particular coast, and of the requisites mentioned in the preceding article, to conduct a ship or fleet from one part of it to another.

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COAT, or COAT of ARMS, in heraldry, a habit worn by the ancient knights over their arms both in war and tournaments, and still borne by heralds at arms. It was a kind of fur-coat, reaching as low as the navel, open at the sides, with short sleeves, sometimes furred with ermine and hair, upon which were applied the armories of the knights embroidered in gold and silver, and enamelled with beaten tin coloured black, green, red, and blue; whence the rule never to apply colour on colour, nor metal on metal. The coats of arms were frequently open, and diversified with bands and fillets of several colours, alternately placed, as we still see cloths scarleted, watered, &c. Hence they were called devises, as being divided and composed of several pieces sewed together; whence the words *false, pale, chevron, bend, cross, saltier, losenge*, &c. which have since become honourable pieces, or ordinaries of the shield. See CROSS, BEND, CHEVRON, &c.

Coats of arms and banners were never allowed to be worn by any but knights and ancient nobles.

COAT, in anatomy. See TUNIC and EYE.

COAT of Mail, a kind of armour made in form of a shirt; consisting of iron rings wove together netwise. See MAIL.

COATI, in zoology, a synonyme of a species of VIVERRA, and URSUS.

COATIMUNDI, a variety of the above.

COATING, among Chemists. See CHEMISTRY, n^o 580.

COATING of Vials, Panes of Glass, &c. among electricians, is usually performed by covering the outside of the vial with tinfoil, brass or gold-leaf, &c. and filling its inside with loose pieces of brass-leaf, by which means it becomes capable of being charged. See ELECTRICITY.

COATZONTECOXOCHITL, or *Flower with the viper's head*, in botany, a Mexican flower of incomparable beauty. It is composed of five petals or leaves, purple in the innermost part, white in the middle, the rest red but elegantly stained with yellow and white spots. The plant which bears it has leaves resembling those of the iris, but longer and larger; its trunk is small and slim; this flower was one of the most esteemed amongst the Mexicans. The Lincean academicians of Rome, who commented on and published the History of Hernandez in 1651, and saw the paintings of this flower, with its colours, executed in Mexico, conceived such an idea of its beauty, that they adopted it as the emblem of their very learned academy, denominating it *Fior di Lince*. See Plate CXLIII.

COBALT, one of the semimetals, according to Cronstedt, of a whitish-grey colour, nearly resembling fine hardened steel, and of the specific gravity of 6.000; but according to others, of a bluish grey, or reddish white colour, and of the specific gravity of 7.700. It is as difficult of fusion as copper, or even gold; and when well purified, scarcely yields to iron itself in this respect. When slowly cooled, it crystallizes, forming on its surface small bundles of needles, or needle-formed prisms, laid on one another, and united into bundles; greatly resembling, according to Mongez, a mass of shaken basalt. In order to succeed in this crystallization, it is sufficient to melt the cobalt in a crucible till it suffers a kind of ebullition; and, after having

O

takes

Coat
||
Cobalt.

Cobalt.

taken it from the fire, to incline the vessel while the surface of the femimetal is congealing. By this inclination the portion of metal still fused is poured out, and that which adheres to this kind of geode formed by the cooling of the surfaces of the cobalt is found covered with the crystals sought for. When melted with borax it affords a blue glass, which is the most obvious method of distinguishing its ores amongst all others. It cannot be calcined without considerable difficulty; and the calx, though black in appearance, is in reality of a deep blue. This calx melted with borax, or potash and siliceous sand, affords the blue glass called *smalt*, very much used in enamel painting and tinging of other glass, being the most fixed of all colours in the fire.

Cobalt, when calcined along with the calx of arsenic in a gentle heat, assumes a red colour. The same is naturally produced by way of efflorescence, and is then called the *bloom* or *flowers* of cobalt. When cobalt and arsenic are melted in a strong fire, they burn with a blue flame. It does not mix either with mercury by any means hitherto known, nor will it form any union with bismuth without the addition of some medium. It is easily soluble in spirit of nitre, and the solution either in this or any other acid is of a red colour; and it is observable that the colour of the acid solutions of this femimetal, instead of fading by dilution with water, becomes more vivid. It is precipitated of a pale red colour from its solutions by acid of fugar, which has the greatest attraction for it; though acid of sorrel likewise precipitates it.

Cronstedt, in speaking of this femimetal, makes mention of native cobalt; but other mineralogists assure us that it has never been found perfectly pure in the bowels of the earth. What passes for such, is said by Kirwan to be mineralized by arsenic. That called the *grey* cobalt ore comes nearest to the purity of the native femimetal, but always holds some quantity of arsenic and iron. It is found in Sweden, Saxony, Norway, and England, particularly at Mendip hills in Somersetshire, and in Cornwall, where Dr Lewis says it has lately been dug up in large quantities. Here it is sometimes found in conjunction with bismuth, and sometimes without it, resembling very much in appearance the Saxon ores from Schnuberg in Misnia, and produces the finest blue colours by proper management. An arsenicated grey cobalt ore has also been found at Chatelaudren in France.

This kind of ore is solid, heavy, and compact, sometimes dull and sometimes of a bright appearance, crystallized frequently in a tessular and sometimes in a dendritical form; being generally hard enough to strike fire with steel, when an arsenical smell is perceived. It grows black in the fire, is soluble with effervescence in the nitrous acid, from which it may be precipitated by the marine, and affords the *Sympathetic Ink* mentioned under the article CHEMISTRY, n^o 822. This and the blue colour communicated by it to glass are indeed the two characteristics by which the ores of cobalt are distinguished from other arsenical ores.

The most common ore of cobalt is that called the *black* or *vitreous ore*, and *Kobalt Mulm* or *Schlagen Kobalt* by the Germans. It is found in a loose powdery form, sometimes resembling lamp-black, sometimes of a grey colour, in which state it is called *cobalt*

ochre; but when in scoriform half vitrified masses, it obtains the name of *vitreous* or *glassy ore*. When this kind of ore contains any sulphur or arsenic, they are only mechanically mixed with it. A small portion of copper, however, is sometimes found in it. It is frequently embodied in stones or sands of a black colour; sometimes it is contained in argillaceous earths of a blue or green colour. Talc, chalk, and gypsum, impregnated with it, are called by the same name; and by some *spiegel cobalt*.

3. Cobalt mineralized by the *arsenical acid*, is found either loose and pure, or mixed with chalk or gypsum, or indurated and crystallized in tetrahedral crystals. It is also found in a stalaetitical form. It melts easily, and then becomes blue. It frequently invests other cobaltic ores; and is found sometimes in stone and sand. From the experiments of Bergman it appears, that the arsenical acid, and not the calx of arsenic, enters into this combination; for cobalt is never red but when united to an acid. Flowers of cobalt, mineralized by arsenic without any silver, and intermixed with galena, have also been discovered in France.

The flowers or efflorescence of cobalt are often found of a red colour, like other earths, spread very thin on the cobalt ores; and is, when of a pale colour, erroneously called flowers of bismuth. A white cobalt earth or ochre is said to have been found, and examined by a celebrated mineralogist, who found it to resemble the cobalt flowers in every respect except the colour; and indeed it is possible that in these flowers the colour might by length of time, or some other accident, have lost their colour. The indurated flowers of cobalt are commonly crystallized in form of deep red semitransparent rays or radiations. It is found at Schnuberg in Saxony.

Cobalt, mineralized by *sulphurated iron*, is of a colour nearly resembling tin or silver. It is sometimes found in large masses, sometimes in grains crystallized of a dull white colour, and frequently has the appearance of *mispickles*. It has no mixture of arsenic. By calcination it becomes black and not red, which distinguishes it from the pyrites; and it contains so little sulphur, that none can be extracted from it. When dissolved in aqua regia the solution is yellow, but becomes green when boiling hot; which alternation, says Kirwan, is peculiar to marine cobalt. A coarse grained kind of this ore, found in Sweden, becomes slimy in the fire, and sticks to the iron rods employed in stirring it while calcining. The slaggy kind contains a large quantity of iron, and affords a very beautiful colour as well as the former.

Cobalt mineralized by *sulphur*, *arsenic*, and *iron*, has a great resemblance to the harder kinds of grey cobalt ore, formerly mentioned; but it is never hard enough to strike fire with steel, and sometimes may even be scraped with a knife. The most shining kinds of this and the former species are called *cobalt glantz*.

The great consumption of cobalt is for the permanent blue colour which it communicates to glasses and enamels, either upon metals, porcelains, or earthen wares of any kind. It is the same blue prepared in a very cheap way by the Dutch, chiefly from the coarse glass or blue glass of cobalt, and called *azur de Hollande* by the French, and which is employed by laundresses.

Cobalt.

Cobalt
||
Coblentz

dress. But although cobalt is applied to few or no other purposes, the quantities consumed in this way afford sufficient profit to those who have cobalt mines in their possession.

Ores of cobalt, as has already been said, are met with in many parts of Europe. The greatest quantities are found near Schnuberg in the district of Misnia in Saxony; also at St. Andreasberg in the Upper Hartz, where large quantities have been met with for upwards of 30 years past. Formerly an iron ore only was found in this place; but about the beginning of the 14th century, on sinking deeper, it was succeeded by a very rich ore of silver; which also being in length of time exhausted, gave place to cobalt ores. Some pieces, however, are still found in these mines, that contain silver and gold.

The general method of preparing cobalt ores in the large way seems confined to Saxony alone; from whence all other parts of the world, even the East Indies, are constantly supplied. It is supposed that the Chinese, and more particularly the Japanese, had formerly mines of excellent cobalt, with which the fine blues of their ancient porcelains were painted; but it appears that these mines are now exhausted, and that the inferior blues of their present wares are painted with the Saxon zaffre imported to them by the Dutch. For the management of the ore in such a manner as to fit it for giving the desired colour, see the article ZAFFRE.

When cobalt is united to bismuth, by means of nickel, the compound is called *speiss*. This name is also given to a mixture of cobalt, nickel, bismuth, sulphur, and arsenic.

In Germany and Saxony, the word cobalt is applied to the damps, arsenical vapours, and their effects on the miners; which has induced the vulgar to apply it to an evil spirit whom they suppose to dwell in the mines.

Regulus of COBALT, a kind of semimetal prepared from cobalt, of a whitish colour inclining to red. See ZAFFRE, and CHEMISTRY, n° 1294, &c.

COBBING, a punishment sometimes inflicted at sea. It is performed by striking the offender a certain number of times on the breech with a flat piece of wood called the *cobbing-board*. It is chiefly used as a punishment to those who quit their station during the period of the night-watch.

COBITIS, the LOACHE, in ichthyology, a genus of fishes belonging to the order of abdominales. The eyes are in the upper part of the head; the branchiostege membrane has from four to five rays; and the body is nearly of an equal thickness throughout. The species are five; three of which are natives of Europe. The loache is found in several of our small rivers, keeping at the bottom on the gravel; and is, on that account, in some places called the *groundling*: It is frequent in the stream near Amesbury in Wiltshire, where the sportsmen, through frolic, swallow it down alive in a glass of white-wine.

COBLE, a boat used in the turbot fishery, twenty feet six inches long, and five feet broad. It is about one ton burthen, rowed with three pair of oars, and admirably constructed for encountering a mountainous sea.

COBLENTZ, an ancient, handsome, and strong

town of Germany, in the electorate of Triers or Treves, seated at the confluence of the rivers Rhine and Moselle, in a fertile country, with mountains covered with vineyards. It is the usual residence of the elector of Treves, to whom it belongs. Over the Rhine is a bridge of twelve arches, built for the convenience of the inhabitants of Coblentz and the adjacent places. A ferry machine is constantly going from the city to the other side of the Rhine, where there is a little town and very strong castle built on an eminence named *the rock of honour*. This machine is erected on two boats, in the form of a large square gallery, encompassed with ballustrades; and carries a tall flag-staff, on which are displayed the arms of the electorate of Treves. It is put in motion by the ferry-man's pulling a rope, which is fixed to a standard on each side the river. The castle appears to be almost inaccessible to an enemy, and entirely commands the city of Coblentz. The archbishop's palace stands at the foot of this rock, and the arsenal at a little distance. E. Long. 7. 18. N. Lat. 50. 24.

COBOB, the name of a dish among the Moors. It is made of several pieces of mutton wrapt up in the cawl, and afterwards roasted in it; the poorer people, instead of the meat, use the heart, liver, and other parts of the entrails, and make a good dish, though not equal to the former.

COBOOSE, in sea-language, is derived from the Dutch *kambuis*, and denotes a sort of box, resembling a sentry-box, used to cover the chimneys of some merchant ships. It generally stands against the barricade, on the fore-part of the quarter deck. It is called in the West Indies *cobre vega*.

COBURG, a town of Germany in the circle of Franconia, and capital of a territory of the same name, with a famous college, a fort, and a castle. This town, with its principality, belongs to the house of Saxony, and the inhabitants are Protestants. It is seated on the river Itch, in E. Long. 11. 5. N. Lat. 50. 20.

COBWEB, in physiology, the fine net-work which spiders spin out of their own bowels, in order to catch their prey. See ARANEA.

COCCEIUS (John), professor of theology at Bremen, was founder of a sect called *Cocceians*: they held, amongst other singular opinions, that of a visible reign of Christ in this world, after a general conversion of the Jews and all other people to the true Christian faith, as laid down in the voluminous works of Cocceius. He died in 1699, aged 66.

COCCINELLA, in zoology, a genus of insects of the Plate order of coleoptera; the characters of which are these: CXLIII. The antennæ are subclavated; the palpi are longer than the antennæ, the last articulation heart-shaped; the body is hemispheric; the thorax and elytra are margined; the abdomen is flat. This genus is divided into sections, from the colour of the elytra, and of the spots with which they are adorned. The females, impregnated by the males, deposit their eggs, which turn to small larvæ, slow in their progress, and are enemies to the plant-lice. Those larvæ are frequently found upon leaves of trees covered with plant-lice. On the point of being metamorphosed, they settle on a leaf by the hinder part of their body, then bend and swell themselves, forming a kind of hook. The skin extends, grows hard; and in a fortnight's time the chrysalis opens

Cobob
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Coccinella.

Coccolobo
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Coccus.

opens along the back. The insect in its perfect state receives the impressions of the air, that gives its elytra a greater degree of consistence. It seldom flies, and cannot keep long on the wing. Of all the different larvæ of the coccinella, the most curious is the white hedgehog, a name given it by M. de Reaumur on account of the singularity of its figure, and the tufts of hair which render it remarkable. It seeks its food on the leaves of trees. After a fortnight, it settles on one spot, and without parting with its fur, turns to a chrysalis; three weeks after which, it becomes a coccinella. The slough appears nowise impaired by its transformation. M. de Reaumur has observed it on a plum-tree. It is likewise found upon the rose-tree.

When the coccinellæ first arrive at the state of perfection, the colours of their elytra are very pale, nearly bordering upon white or cream colour; and the elytra are very soft and tender, but soon grow hard, and change to very lively brilliant colours. Their eggs are of an oblong form, and of the colour of amber.

COCCOLOBO, in botany: A genus of the trigynia order, belonging to the octandria class of plants; and in the natural method ranking under the 12th order, *Holoracea*. The calyx is quinquepartite and coloured; there is no corolla; the berry is formed of the calyx, and is monospermous. The species called *uvifera*, or *sea-side grape*, grows upon the sandy shores of most of the West India islands, where it sends up many woody stems, eight or ten feet high, covered with a brown smooth bark, and furnished with thick, veined, shining, orbicular leaves, five or six inches diameter, standing upon short foot-stalks. The flowers come out at the wings of the stalks, in racemi of five or six inches long; they are whitish, have no petals, but each is composed of a monophyllous calyx, cut at the brim into five oblong obtuse segments, which spread open, continue, and surround seven or eight awl-shaped stamina, and three short styles, crowned with simple stigmata. The germen is oval, and becomes a fleshy fruit, wrapped round by the calyx, and includes an oval nut or stone. These plums are about the size of gooseberries, of a purple red colour, and a tolerable good flavour. There are some other species of this genus whose fruits are eaten by the inhabitants where they grow, but they are smaller and not so well tasted.

COCCOTHRAUSTES, in ornithology, the trivial name of a species of *LOXIA*.

COCCULUS INDICUS, the name of a poisonous berry, too frequently mixed with malt-liquors in order to make them intoxicating; but this practice is expressly forbidden by act of parliament. It is the fruit of the *MENISPERMUM Coccus*. Fishermen have a way of mixing it with paste: this the fish swallow greedily, and are thereby rendered lifeless for a time and float on the water. The good women use it with stavesacre, for destroying vermin in childrens heads.

COCCUS, in zoology, a genus of insects belonging to the order of hemiptera. The rostrum proceeds from the breast; the belly is bristly behind; the wings of the male are erect; and the female has no wings. The species are 22, denominated principally from the plants they frequent. The most remarkable species are:

1. The coccus hesperidum, or green-houfe bug, which

is oval, oblong, of a brown colour, covered with a kind of varnish: it has six legs; with a notch and four bristles at the tail. It infests orange trees and other similar plants in green-houfes. When young, it runs upon the trees; but afterwards fixes on some leaf, where it hatches an infinity of eggs, and dies. The male is a very small fly.

2. The coccus phalaridis. The male of this species is small. Its antennæ are long for its size. The feet and body are of a reddish colour, nearly pink, and sprinkled with a little white powder. Its two wings, and the four threads of its tail, are snow white, and of those threads two are longer than the rest. It is to be found upon the species of grameu which Linnæus calls *phalaris*. The female contrives, along the stalks of that dog-grass, little nests, of a white cottony substance, in which she deposits her eggs. The small threads of her tail are scarce perceptible.

3. The coccus cacti, a native of the warmer parts of America, is the famous cochineal animal, so highly valued in every part of the world for the incomparable beauty of its red colour, which it readily communicates to wool and silk, but with much more difficulty to linen and cotton. This insect, like all others, is of two sexes, but exceedingly dissimilar in their appearance. The female, which alone is valuable for its colour, is ill-shaped, tardy, and stupid: its eyes, mouth, and antennæ, are fixed so deep, and are so concealed in the folds of the skin, that it is impossible to distinguish them without a microscope. The male is very scarce, and is sufficient for 300 females or more; it is active, small, and slender, in comparison with the female; its neck is narrower than the head, and still narrower than the rest of the body. Its thorax is of an elliptic form, a little longer than the neck and head put together, and flattened below; its antennæ are jointed, and out of each joint issue long slender hairs that are disposed in pairs on each side. It has six feet, each formed of distinct parts. From the posterior extremity of its body two large hairs or bristles are extended, which are four or five times the length of the insect. It bears two wings that are fixed to the upper part of the thorax, which falls like the wings of common flies when it walks or rests. These wings, which are of an oblong form, are suddenly diminished in breadth where they are connected to the body. They are strengthened by two oblong muscles, one of which extends itself on the outside all round the wing; and the other, which is internal and parallel to the former, seems interrupted towards the summit of the wings. The male is of a bright red; the female of a deeper colour. They are bred on a plant known in Oaxaca in New Spain, and all those parts where it abounds, by the name of *nopal*, or *nopalleca*, the *Indian fig-tree*. See *CACTUS*.

The cochineal was formerly imagined to be a fruit or seed of some particular plant; an error which probably arose from an ignorance of the manner in which it is propagated; but at present every one is convinced of its being an insect, agreeably to its name, signifying a wood-louse, which generally breeds in damp places, especially in gardens. These insects, by rolling themselves up, form a little ball something less than a pea: and in some places are known by the name of *baquilas de San Anton*, i. e. St. Anthony's little

Coccus.

Coccus.

little cows: and such is the figure of the cochineal, except that it has not the faculty of rolling itself up; and its magnitude, when at its full growth, does not exceed that of a tick common in dogs and other animals.

The juice of the plant on which these insects breed, is their sole nourishment, and becomes converted into their substance; when, instead of being thin and watery, and to all outward appearance of little or no use, it is rendered of a most beautiful crimson colour. The plant is in May or June in its most vigorous state, and at this most favourable season the eggs are deposited among the leaves. In the short space of two months, from an animalcule, the insect grows up to the size above mentioned: but its infant state is exposed to a variety of dangers; the violent blasts of the north wind sweep away the eggs from the foliage of the plant; and, what is equally fatal to their tender constitutions, showers, fogs, and frosts, often attack them, and destroy the leaves, leaving the careful cultivator this only resource, namely, that of making fires at certain distances, and filling the air with smoke, which frequently preserves them from the fatal effects of the inclemency of the weather.

The breeding of cochineal is also greatly obstructed by birds of different kinds, which are very fond of these insects; and the same danger is to be apprehended from the worms, &c. which are found among the plantations of nopals: so that unless constant care be taken to fright the birds away from the plantation, and to clear the ground of those various kinds of vermin which multiply so fast in it, the owner will be greatly disappointed in his expectations.

When the insects are at their full growth, they are gathered and put into pots of earthen ware; but much attention is requisite to prevent them from getting out, as in that case great numbers of them would be lost; though there is no danger of it, where they are at liberty on the nopal leaves, those being their natural habitation, and where they enjoy a plenty of delicious food: for though they often remove from one leaf to another, they never quit the plant; nor is it uncommon to see the leaves entirely covered with them, especially when they are arrived at maturity. When they have been confined some time in these pots, they are killed and put in bags. The Indians have three different methods of killing these insects; one by hot water, another by fire, and a third by the rays of the sun: and to these are owing the several gradations of the colour, which in some is dark, and in others bright; but all require a certain degree of heat. Those therefore who use hot water are very careful to give it the requisite heat, and that the quantity of water be proportioned to the number of insects. The method of killing the creatures by fire is to put them on shovels into an oven moderately heated for that intention; the fine quality of the cochineal depending on its not being over dried at the time of killing the insects: and it must be owned, that among the several ways made use of to destroy this valuable creature, that of the rays of the sun seems to bid fairest for performing it in the most perfect manner.

Besides the precaution requisite in killing the cochineal, in order to preserve its quality, it is equally necessary to know when it is in a proper state for being

Coccus.

removed from the leaves of the nopal; but as experience only can teach the cultivator this necessary criterion, no fixed rule can be laid down. Accordingly, in those provinces where the cultivation of these insects is chiefly carried on, those gathered by Indians of one village differ from those gathered in another; and even those gathered by one person in the same village, are often different from those gathered by another; every individual adhering to his own method.

The cochineal-insect may, in some circumstances, be compared to the silk-worm, particularly in the manner of depositing its eggs. The insects destined for this purpose are taken at a proper time of their growth, and put into a box well closed, and lined with a coarse cloth that none of them be lost: and in this confinement they lay their eggs and die. The box is kept close shut till the time of placing the eggs on the nopal, when, if any motion is perceived, it is a sufficient indication that the animalcule has life, though the egg is so minute as hardly to be perceived; and this is the seed placed on the foliage of the nopal, and the quantity contained in the shell of a hen's egg is sufficient for covering a whole plant. It is remarkable that this insect does not, or at least in any visible manner, injure the plant, but extracts its nourishment from the most succulent juice, which it sucks by means of its proboscis through the fine teguments of the leaves.

The principal countries where the cochineal insects are bred, are Oaxaca, Tlascala, Chulula, Nueva Galicia, and Chiapa, in the kingdom of New Spain; and Hambato, Loja, and Tucuman in Peru: but it is only in Oaxaca that they are gathered in large quantities, and form a branch of commerce, the cultivation of these little creatures being there the chief employment of the Indians.

Though the cochineal belongs to the animal kingdom, of all others the most liable to corruption, yet it never spoils. Without any other care than merely that of keeping in a box, it has been preserved for ages. In drying, it loses about two-thirds of its weight. When dried, it is sorted into large entire grains, and small or broken ones: the first are called by the Spaniards *grana*, the latter *granilla*. In trade, four sorts are distinguished, *Mastique*, *Campeschane*, *Tetrachale*, and *sylvestre*; of which, the first is accounted the best, and the last the worst. The three first are named from the places where they are produced; the latter from its being found wild without any culture.

In medicine, cochineal has been strongly recommended as a sudorific, cardiac, and alexipharmac; but practitioners have never observed any considerable effects from it. Its principal consumption is among dyers. See the article DYEING.

4. The coccus ilicis, or that forming the kermes grains, inhabits the quercus coccifera of the southern parts of Europe. Mr Hellot of the French Academy of Sciences, in his Art of Dyeing, chap. 12. says it is found in the woods of Vauvert, Vendeman, and Narbonne; but more abundantly in Spain, towards Alicante and Valencia. It not only abounds in Valencia, but also in Murcia, Jaen, Cordova, Seville, Estremadura, la Mancha, Serranias de Cuenca, and other places.

Coccus.

Dillon's
Travels
through
Spain.

In Xixona and Tierra de Rellu, there is a district called *De la Grana*, where the people of Valencia first began to gather it, whose example was followed all over Spain. It has some years produced 30,000 dollars (5000 l.) to the inhabitants of Xixona.

Both ancients and moderns seem to have had very confused notions concerning the origin and nature of the kermes; some considering it as a fruit, without a just knowledge of the tree which produced it; others taking it for an excrescence formed by the puncture of a particular fly, the same as the common gall observed upon oaks. Tournefort was of this number. Count Marfigli, and Dr Nisole a physician of Montpellier, made experiments and observations, with a view of further discoveries; but did not perfectly succeed. Two other physicians at Aix in Provence, Dr Emeric and Dr Garidel, applied themselves about the same time, and with greater success; having finally discovered that the kermes is in reality nothing else but the body of an insect transformed into a grain, berry, or husk, according to the course of nature.

The progress of this transformation must be considered at three different seasons. In the first stage, at the beginning of March, an animalcule, no larger than a grain of millet, scarce able to crawl, is perceived sticking to the branches of the tree, where it fixes itself, and soon becomes immovable; at this period it grows the most, appears to swell and thrive with the sustenance it draws in by degrees. This state of rest seems to have deceived the curious observer, it then resembling an excrescence of the bark; during this period of its growth, it appears to be covered with a down, extending over its whole frame like a net, and adhering to the bark: its figure is convex, not unlike a small shoe; in such parts as are not quite hidden by this soft garment, many bright specks are perceived of a gold colour, as well as stripes running across the body from one space to another. At the second stage, in April, its growth is completed; its shape is then round, and about the size of a pea: it has then acquired more strength, and its down is changed into dust, and seems to be nothing but a husk or a capsule, full of a reddish juice not unlike discoloured blood. Its third state is towards the end of May, a little sooner or later according to the warmth of the climate. The husk appears replete with small eggs, less than the seed of a poppy. These are properly ranged under the belly of the insect, progressively placed in the nest of down that covers its body, which it withdraws in proportion to the number of eggs: after this work is performed, it soon dies, though it still adheres to its position, rendering a further service to its progeny, and shielding them from the inclemency of the weather, or the hostile attacks of an enemy. In a good season they multiply exceedingly, having from 1800 to 2000 eggs, which produce the same number of animalcules. When observed with the microscope in July or August, we find, that what appeared as dust, are so many eggs or open capsules, as white as snow, out of each of which issues a gold-coloured animalcule, of the shape of a cockroach, with two horns, six feet, and a forked tail. In Languedoc and Provence the poor are employed to gather the kermes, the women letting their nails grow for that purpose, in order to pick them off with greater facility.

Coccus.

The custom of lopping off the boughs is very injudicious, as by this means they destroy the next year's harvest. Some women will gather two or three pounds a-day: the great point being to know the places where they are most likely to be found in any quantity, and to gather them early with the morning-dew, as the leaves are more pliable and tender at that time than after they have been dried and parched by the rays of the sun: strong dews will occasionally make them fall from the trees sooner than usual: when the proper season passes, they fall off of themselves, and become food for birds, particularly doves. Sometimes there will be a second production, which is commonly of a less size with a fainter tinge. The first is generally found adhering to the bark, as well as on the branches and stalks; the second is principally on the leaves, as the worms choose that part where the nutritious juice preserves itself the longest, is most abundant, and can be most easily devoured in the short time that remains of their existence, the bark being then drier and harder than the leaves.

Those who buy the kermes to send to foreign parts, spread it on linen; taking care to sprinkle it with vinegar, to kill the worms that are within, which produces a red dust, which in Spain is separated from the husks. Then they let it dry, passing it through a sieve, and make it up into bags. In the middle of each, its proportion of red dust, put in a little leather bag, also belongs to the buyer; and then it is ready for exportation, being always in demand on the African coast. The people of Hinojos, Bonares, Villalba, and other parts of the kingdom of Seville, dry it on mats in the sun, stirring it about, and separating the red dust, which is the finest part, and being mixed with vinegar goes by the name of *passel*. The same is done with the husks; but these have but half the value of the dust. The kermes of Spain is preferred on the coast of Barbary, on account of its goodness. The people of Tunis mix it with that of Tetuan, for dyeing those scarlet caps so much used in the Levant. The Tunisians export every year above 150,000 dozen of these caps, which yields to the Dey a revenue of 150,000 hard dollars (33,750 l.) *per annum* for duties; so that, exclusive of the uses and advantages of kermes in medicine, it appears to be a very valuable branch of commerce in Spain.

5. The coccus lacca, or gum-lac animal, is a native of the East Indies. The head and trunk form one uniform, oval, compressed, red body, of the shape and magnitude of a very small louse, consisting of twelve transverse rings. The back is carinate; the belly flat; the antennæ half the length of the body, filiform, truncated, and diverging, sending off two, often three, delicate, diverging hairs, longer than the antennæ: the mouth and eyes could not be seen with the naked eye. The tail is a little white point, sending off two horizontal hairs as long as the body. It has three pair of limbs, half the length of the insect.

This is its description in that state in which it falls forth from the womb of the parent in the months of November and December. They traverse the branches of the trees upon which they were produced for some time, and then fix themselves upon the succulent extremities of the young branches. By the middle of January they are all fixed in their proper

situa-

situations; they appear as plump as before, but show no other marks of life. The limbs, antennæ, and setæ of the tail are no longer to be seen. Around their edges they are environed with a spissid subpellucid liquid, which seems to glue them to the branch: it is the gradual accumulation of this liquid, which forms a complete cell for each insect, and is what is called *gum lacca*. About the middle of March the cells are completely formed, and the insect is in appearance an oval, smooth, red-bag, without life, about the size of a small cucurbitular insect, emarginated at the obtuse end, full of a beautiful red liquid. In October and November we find about 20 or 30 oval eggs, or rather young grubs, within the red fluid of the mother. When this fluid is all expended, the young insects pierce a hole through the back of their mother, and walk off one by one, leaving their exuvixæ behind, which is that white membranous substance found in the empty cells of the stick lac.

The insects are the inhabitants of four trees: 1. *Ficus religiosa*, *Linnei*; 2. *Ficus indica*, *Linnei*; 3. *Plaso*, *Hortus Malabarici*; and 4. *Rhamnus jujuba*, *Linnei*.

The insects generally fix themselves so close together, and in such numbers, that scarcely one in six can have room to complete her cell: the others die, and are eat up by various insects. The extreme branches appear as if they were covered with a red dust, and their sap is so much exhausted, that they wither and produce no fruit, the leaves drop off, or turn to a dirty black colour. These insects are transplanted by birds: if they perch upon these branches, they must carry off a number of the insects upon their feet to the next tree they rest upon. It is worth observing, that these fig-trees when wounded drop a milky juice, which instantly coagulates into a viscid rosey substance, which, hardened in the open air, is similar to the cell of the *coccus lacca*. The natives boil this milk with oils into a bird-lime, which will catch peacocks or the largest birds.

A red medicinal gum is procured by incision from the *plaso* tree, so similar to the *gum lacca*, that it may readily be taken for the same substance. Hence it is probable, that those insects have little trouble in animalizing the sap of these trees in the formation of their cells. The *gum lacca* is rarely seen upon the *rhamnus jujuba*; and it is inferior to what is found upon the other trees. The *gum lacca* of this country is principally found upon the uncultivated mountains on both sides the Ganges, where bountiful nature has produced it in such abundance, that was the consumption ten times greater the markets might be supplied by this minute insect. The only trouble in procuring the lac is in breaking down the branches, and carrying them to market. The present price in *Dacca* is about twelve shillings the hundred pounds weight, although it is brought from the distant country of *Affam*. The best lac is of a deep red colour. If it is pale, and pierced at top, the value diminishes, because the insects have left their cells, and consequently they can be of no use as a dye or colour, but probably they are better for varnishes.

This insect and its cell has gone under the various names of *gum lacca*, *lack*, *loc tree*. In *Bengal*, *la*; and by the English it is distinguished into four kinds,

differently demominated: for which, and their several uses, see the article *LACCA*.

In the figure, *a* represents the insect at its birth; *b* ditto, big with young; both the natural size. *γ* The embryo before birth inclosed in its membrane; *δ* The *coccus*, with two hairs from each antenna; *ε* Ditto, with three hairs from each antenna; these three figures are magnified.

6. *Coccus Polonicus*, an insect which may properly enough be called the *cochineal* of the northern part of the world. As the *cochineal* loves only the hot climates, this creature affects only the cold ones. It is collected for the use of dyers: but the crops of it are much smaller, more difficultly made, and the drug itself greatly inferior to the true *cochineal*. It is commonly known by the name of *coccus Polonicus*, or the *scarlet grain of Poland*. That country is indeed the place where it is gathered in the greatest abundance; but it is not the only one where it is found. It is to be met with in many of the northern countries; and possibly may be found in some of the more temperate ones, where it is not yet known; as it is very much hid by nature from the eyes of common observers. It is found affixed to the root of a plant, and usually to plants of that species from thence called *polygonum cocciferum*: though authors have informed us of the same *berry*, as it is often called, being found at the roots of the mouse-ear, rupture-wort, pimpernel, and pellitory of the wall; and that it is in no other than sandy places that it is found at the roots of those plants. *Breynius*, in 1731, printed at *Dantzick* a very curious account of this production, which proves it incontrovertibly to be an animal. Towards the end of June the *coccus* is in a fit state for being gathered. Every one of the creatures is then nearly of a spherical form, and of a fine violet colour. Some of them, however, are not larger than poppy seeds, and others of the size of a pepper-corn; and each of them is lodged, either in part or entirely, in a sort of cup like that of an acorn. More than half the surface of the body of the animal is covered by this cup. The outside of the covering is rough, and of a blackish brown; but the inside is smooth, polished, and shining. On some plants they find only one or two of these, and on others more than forty; and they are sometimes placed near the origin of the stalks of the plants.

Breynius began his observations on the animals in this state, several of them being put into vessels of glass; and by the 24th of July, there was produced from every one of them a hexapod, or six-legged worm, with two antennæ on its head. Several of these were kept a fortnight, and showed no inclination to eat any thing. They run about, however, very swiftly for some time; but then began to be more quiet, drew up their bodies shorter, and ceased to run about any longer. They were now of a purple colour; but in this state, though they did not walk about, they were subject to various contortions. At length, when they were become wholly motionless, their bodies became covered with a fine down: this was white, and formed them a perfect covering, which was sometimes of a spherical, and sometimes of an irregular figure: it was always, however, very elegant; and the downy matter plainly enough transpired out of the animal's body. The creatures

Coccus.

creatures remained in this state of rest, and covered with this down, for five or six days; but at the end of that time, every one of them laid more than 150 eggs. These eggs were deposited upon the paper on which the animals were placed, and were enveloped in some measure by a downy matter. When the creatures had laid all their eggs, they died; and about the 24th of August there came from every egg a small insect, which to the eye scarce seemed any other than a red point; it might, however, be observed very plainly to move about. These young animals lived about a month, wholly without sustenance. Mr Breynius was induced at first to believe, that these animals came to be in a state to produce perfect eggs, without any congress with the male; but farther observations convinced him of the error of this opinion. He saw afterwards a sort of very small flies with two white wings bordered with red, produced from several of the cocci. These flies are plainly of the same kind with the male gall-insects.

It has before been observed, that these cocci differ in size. The flies are produced by the small ones not bigger than a poppy seed; the others produce the worms before described: and one observation of Mr Breynius's affords a plain proof that these flies are the male insects of the species; since all those of the females, which had been a day or two accompanied by those flies, quickly covered themselves with down and began to lay their eggs; whereas those which had not this commerce with the flies remained in the same state, or else got only a very thin and slight covering of down, and never laid any eggs. The manner of this creature's life, however, from its being hatched, to its being found in the shape of a berry at the roots of the plants, is yet unknown: and how they assume the shape of a ball lodged in a cup, must require a nice observation to discover.

The proper time for gathering this insect, as we have already observed, is about the end of June, when it is quite full of purple juice. Those who gather it have a hollow spade with a short handle; then, taking hold of the plant with one hand, they raise it out of the ground with the tool held in the other; after which they very quickly and dexterously detach the insects, and replace the plant in the ground, where it again takes root. The coccus is then separated from the earth by means of a sieve; and in order to prevent them from turning into worms, they sprinkle them with very cold water or vinegar. Lastly, they are killed by exposure to the sun, or keeping them for some time in a warm place; but this must be done with caution, as too hasty drying would spoil the colour. Sometimes they separate the insects from the vesicles with their fingers, and form them into balls; but by this operation the price is greatly increased.

We are informed by Bernard de Bemith, from whom this account is taken, that the harvest of coccus was farmed out to the Jews by some Polish lords, who had possessions in the Ukraine; that it was used by them, as well as the Turks and Armenians, for dyeing not only wool and silk, but the tails and manes of their horses; that by its means the Turkish women dyed the tips of their fingers of a beautiful carnation; and that it was formerly used by the Dutch along with an equal quantity of cochineal, the coccus being pur-

N^o 83.

chased at a very dear rate; that beautiful paints may be prepared from this insect and pounded chalk, &c. All this, however, M. Macquer supposes to have been exaggerated, as he never could produce with it any other than lilach, flesh-colour, or crimson; and he found it, moreover, vastly more expensive than cochineal, as not yielding one-fifth part of the colour. Hence this drug is almost entirely fallen into disuse, being scarce known in any of the European cities remarkable for having good dyers.

COCYCYÆUS MUSCULUS. See ANATOMY, Table of the muscles.

COCYX, or COCCYGIS OS. See ANATOMY, n^o 35.

COCHIN, a Dutch settlement on the coast of Malabar in N. Lat. 9^o. 58. E. Long. 75. 58.—The town is not unpleasant, though it falls far short of their settlement at Columbo in the island of Ceylon. The fortification is irregular, but strong enough to resist any of the Indian powers, and has 40 or 50 cannon facing the sea. The people in this town and the country adjacent are subject to a strange disorder of the legs called *Cochin* or *elephant legs*, in which the swelled limb is sometimes of such an enormous bulk as to have greatly the appearance both in shape and size of the leg of an elephant. According to Mr Ives, this disorder seems to be merely an oedematous swelling, occasioned by an impoverished state of the blood and juices. The persons afflicted with this distemper very seldom apply to European surgeons, and thus are rarely, if ever cured. Indeed, our author observes, that their application would probably be of little avail, as the only thing that could be prescribed would be an alteration from the poorest to the most cordial and nutritious diet; and the Indians are so invincibly wedded to their own customs, that they would sooner die than break through them. Of this he says there were several instances in their long passage to Bengal, during which some of the Sepoys perished for want of food, rather than save themselves by partaking of the ship's provisions after their own had been expended. Most of those afflicted with the disorder we speak of, are unable to call any assistance, being the very poorest of the people, who live entirely upon a kind of fish called *Sardinia*, without being able to purchase even the smallest quantity of rice to eat along with it; their drink is also mere water, unless they sometimes procure a draught of the simple unfermented juice called *toddy*. Cochin is the principal place from whence the Dutch import their pepper into Europe.

COCHIN-CHINA, a kingdom of Asia, bounded on the north by Tonquin; on the east, by the sea of China; on the south, by the Indian ocean; and on the west, by Cambodia, and a ridge of mountains inhabited by a savage people called *Kemois*, who live independent of any government. Little of the history of this kingdom is known. M. le Poivre, a French traveller, informs us, that about half a century before the French first arrived in these distant regions, a prince of Tonquin, as he fled from his sovereign, by whom he was pursued as a rebel, had with his soldiers and adherents crossed the river, which serves as a barrier between Tonquin and Cochin-China. The fugitives, who were warlike and civilized men, soon expelled the scattered inhabitants, who wandered about without any society

Coccyzus

Cochin.



Coccus lacca.



Coccinella.



Coatzontecoxochitl.

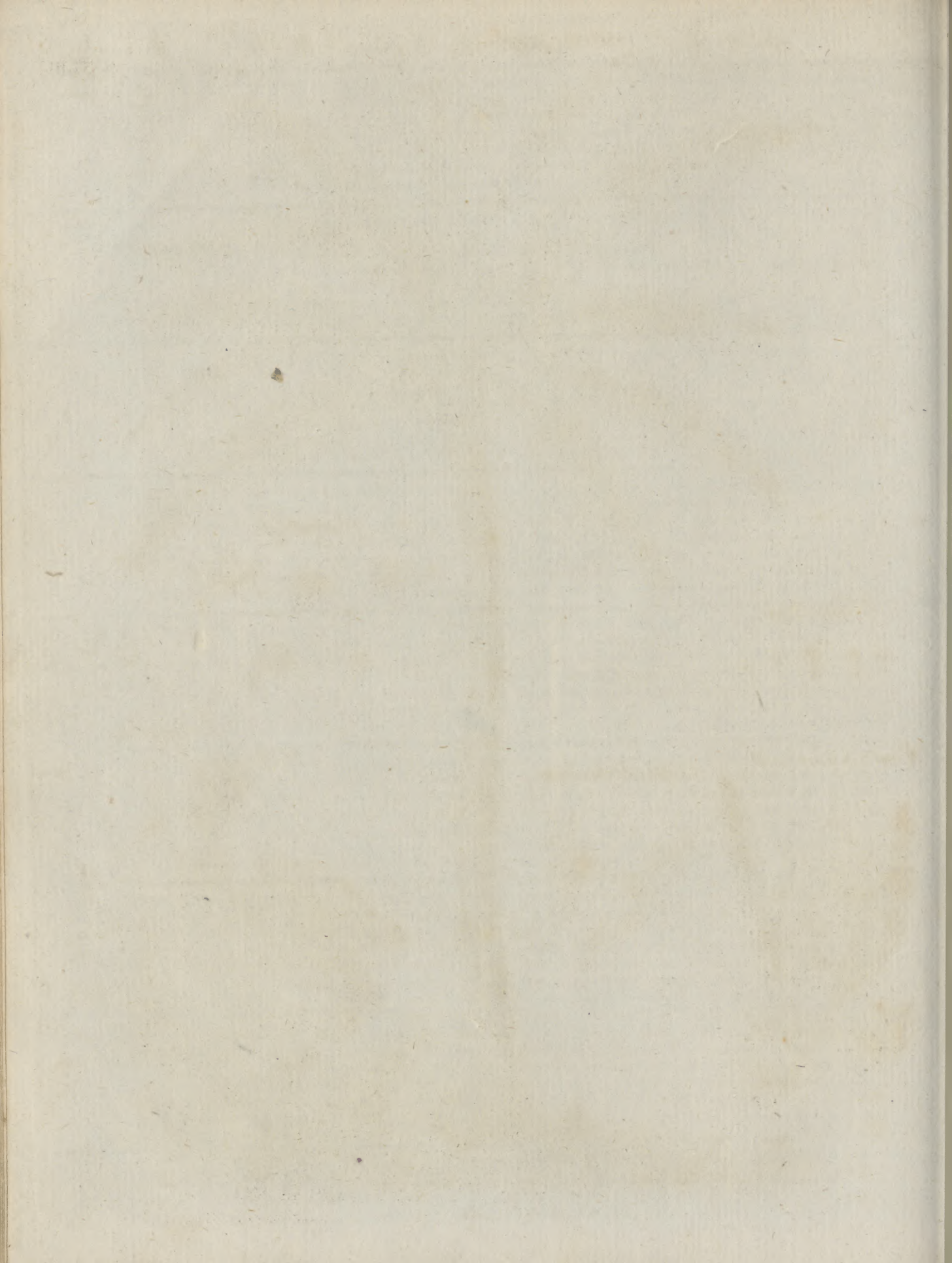


Coccus hesperidum.



Colymbus.





Cochin-
China.

ciety or form of government, and founded a new kingdom, which soon grew rich and populous. During the reigns of the first six kings, no nation could be happier than the Cochin-Chinese. Their monarchs governed them as a father does his family, establishing no laws, but those of nature, to which they themselves were the first to pay obedience. They honoured and encouraged agriculture, as the most useful employment of mankind; and required from their subjects only a small annual free-gift to defray the expence of their defensive war against the Tonquinese, who were their enemies. This imposition was regulated, by way of poll-tax, with the greatest equity. Every man, able to till the ground, paid into the prince a small sum proportioned to the strength of his constitution, and the vigour of his arm; and nothing more.

Cochin-China continued happy under these princes for more than a century; but the discovery of gold-mines put a stop to the above mild regulations. Luxury immediately took place. The prince began to despise the simple habitation of his ancestors, and caused a superb palace to be built a league in circumference, surrounded with a wall of brick in the model of that of Peking, and defended by 1600 pieces of cannon. Not content with this, he would needs have a winter palace, an autumn palace, and a summer palace. The old taxes were by no means sufficient to defray these expences; new ones were devised; and oppression and tyranny every where took place. His courtiers, to flatter their prince, gave him the title of the *king of heaven*, which he still continues to assume. When speaking of his subjects, he styles them his *children*, but by no means behaves as if he was their father: for our author informs us, that he has seen whole villages newly abandoned by their inhabitants, who were harassed with toil and insupportable exactions; the necessary consequence of which was, that their lands returned to their former uncultivated state.

M. le Poivre represents the Cochin-Chinese as gentle, hospitable, frugal, and industrious. There is not a beggar in the country; and robbery and murder are absolutely unknown. A stranger may wander over the kingdom from one end to the other (the capital excepted) without meeting with the slightest insult. He will be every where received with the most eager curiosity, but at the same time with the greatest benevolence. A Cochin-Chinese traveller, who has not money sufficient to defray his expences at an inn, enters the first house of the town or village he arrives at, and waiting the hour of dinner, takes part with the family, and goes away when he thinks proper, without speaking a word, or any person's putting to him a single question.

The country of Cochin-China is much of the same temperature with that of Tonquin; though rather milder, as lying nearer the sea. Like Tonquin, it is annually overflowed, and consequently fruitful in rice, which requires no other manure than the mud left by the inundations. They have sugar-canes, and the same kinds of fruits common to other parts of India. The country produces no grapes, and therefore they drink a liquor brewed from rice. They have vast woods of mulberry-trees, which run up as fast as our hemp. Their silk is stronger than that of China, but

not so fine. They have the best timber in the world, particularly a sort which abounds in the mountains, and is called the *incorruptible tree*; because it never rots under earth or water, and is so solid that it serves for anchors. There are two kinds, black and red. The trees are very tall, straight, and so big that two men can scarce fathom them. They have also on the mountains of the Kemois a tree of the most fragrant scent, which is supposed to be the same with lignum aloes. This, being reckoned the best product of the country, is engrossed by the king, and is sold from five to 16 ducats *per* pound. It is highly valued both in China and Japan, where the logs of it are sold for 200 ducats a pound, to make pillows for the king and nobility; and among those Indians which continue to burn their dead, great quantities of it are used in the funeral piles. The young trees called *aquila*, or eagle-wood, are every one's property, which makes the old ones called *calamba* so scarce and dear. They have oak, and large pines, for the building of ships; so that this country is of the same use to China that Norway is to Britain. In general, they have the same kind of trees and plants that are to be met with in Tonquin. They have mines of gold, as well as diamonds; but the last they do not value so highly as pearl. They also esteem their coral and amber very much. In all the provinces there are great granaries filled with rice, in some of which that grain is kept upwards of 30 years. One of the greatest rarities in these parts, especially in grand entertainments, is a ragout made of the eatable birds nests, which some say are found only in Cochin-China, and others in four islands that lie south of its coast. See BIRDS-NESTS.

The merchants of Cambodia, Tonquin, China, Macao, Manila, Japan, and Malacca, trade to Cochin-China with plate, which they exchange for the commodities of the country. The Portuguese are the most favoured here of any Europeans. The Cochin-Chinese themselves, not being inclined to travel, seldom fail out of sight of their own shore, but purchase many trifles from foreigners at great rates, particularly combs, needles, bracelets, glass pendants, &c. They are very fond of our hats, caps, girdles, shirts, and other clothes; and, above all, set a great value on coral. The country is said to have 700 miles of coast, with many large inlets of the sea, and above 60 convenient landing places; which, however, according to Captain Hamilton, are but seldom visited by strangers.

The people of this country have a great affinity with those of Tonquin, with whom they have a common origin, and from whom they differ very little in their manner of living, as well as their manners and customs, all of which they have in a great measure borrowed from the Chinese. The principal exports of the country are silk, sugar, ebony, and calamba-wood; gold in dust or in bars, which is sold for only ten times its weight in silver; and copper and porcelain brought from China and Japan. From this country also are exported the birds-nests esteemed such a delicacy at the table. They are found in four islands situated near the coasts of Cochin-China, to the eastward of which are five other smaller ones, where are found prodigious numbers of turtles, the flesh of which is so delicate that the Tonquinese and people of Cochin-China frequently fight desperate battles,

Cochin-
China.

Cochin-
China.

in order to take them from one another.—The commodities which sell most readily in this country are, salt-petre, sulphur, lead, fine cloths, and barred or flowered chintz. Pearls, amber, and coral, were formerly in great request, but at present only the two last are saleable; and even these will not answer unless the beads of coral be round, well polished, and of a beautiful red colour; the amber must also be extremely clear, the beads of an equal size, and not larger than an hazel nut.

The only money current in Cochin-China is that of Japan, which is paid and received by weight. The money of the country is of copper, and as large as our counters; of a round figure, and having an hole in the middle by which the pieces may be strung like beads. Three hundred of these are put on one side, and as many on the other, which in Cochin-China pass for a thousand; because in 600 are found ten times 60, which make a century among almost all the people of the east. There is, however, scarce any country in which merchants are more apt to be deceived with regard to the value of money than Cochin-China; owing to the pieces being unequal in figure and quality, and the difficulty of determining their value, which is regulated only by a few characters stamped upon them. The dealers must therefore be at pains to have honest and skilful people to ascertain the value of the pieces they receive; otherwise they run a great risk of being deceived in their value, as the Cochin-Chinese make a great merit of being able to cheat an European.

European merchants complain, according to M. Grosier, unjustly of the demands made in Cochin-China for entrance, clearance, and anchorage. The duties indeed are very trifling, amounting only, even those of the customhouse, to 4 per cent.; but nothing can be removed from a ship which arrives there until she has first been inspected, when the customhouse officers unload her, weigh and count the smallest pieces, and generally take what they look upon to be most valuable, in order to send it to the king. The monarch takes what he thinks proper, and returns the value; but the grandees are said to keep part of the goods also, without paying any thing for them. Thus the ordinary goods, which, had they been accompanied with the more valuable part of the cargo, would have found a ready market, can now scarcely be disposed of; though our author is of opinion, that the matter is not altogether without remedy. When the Dutch sent to this country, vessels loaded with cloths, lead, and saltpetre, their cargoes were suffered to remain entire, because they had taken the precaution to pay every year a certain sum for each vessel that entered. Other nations, by endeavouring to avoid the payment of this duty, entirely destroyed their commerce: the people of Cochin-China, however, for some years past, have been much more moderate in their demands; and whatever their exactions may be, they are far less exorbitant than those of the Tonquinese.

M. Grosier observes, that a false report has gained ground in Europe, that when a trading vessel happens to run a-ground in Cochin-China, or to be driven into any of its harbours by stress of weather, the king seizes the cargo if the rudder be broken. He assures us, however, that, so far from this being the case, a ves-

sel in distress is much safer on the coasts of Cochin-China than almost any where else. Barks are immediately sent to the relief of the crew, and people employed to drag the sea with nets in order to recover the goods that are lost; and, in short, neither labour nor expences are spared to put the ship in the best condition possible. Only two things can hurt the trade of foreigners at Cochin-China, one of which may be easily avoided. This regards the clearing out of vessels. Thus, while the master is waiting on the evening before his departure, or on the day fixed for sailing, in order to receive his dispatches, it often happens that he loses his voyage, which may prove the ruin of a trader. For this reason, care must be taken to solicit a clearance a month before; by which means one is always certain of obtaining it, and departing on the day appointed. The other difficulty is occasioned by the necessity of selling goods on credit, which are seldom paid at the stipulated time. This, however, is contrary to the inclination of the prince; for every merchant who can convey to him an account of these unjust delays, is sure to be paid, and sometimes even with interest.

COCHINEAL, or COCHENEEL, a drug used by the dyers, &c. for giving red colours, especially crimsons and scarlets, and for making carmine; and likewise in medicine as a cardiac, cordial, sudorific, alexipharmac, and febrifuge.

The cochineal, in the state in which it is brought to us, is in small bodies of an irregular figure, usually convex, and ridged and furrowed on one side, and concave on the other. The colour of the best is a purplish grey, powdered over with a sort of white dust. All that the world knew of it for a long time was, that it was gathered from certain plants in Mexico; and therefore it was naturally supposed to be a seed, till in the year 1692 Father Plumier gave Pomet an account of its being an animal. And this, though then disregarded, has been confirmed by subsequent observations. Indeed, to determine the point, we have now the means in our own hands, even in this part of the world.—We need only moisten and soak in water, or in vinegar, a number of cochineals till they are swelled and distended, to know that every one is the more or less perfect body of an insect; the most imperfect and mutilated specimens always show the rings of the body; and from observing others, it will be easy to find the number and disposition of the legs; parts, or even whole ones, being left on several, and often complete pairs. In this way the legs, antennæ, and proboscis, may be discovered. See *Coccus* above.

M. Macquer observes, that the cochineal of Sylvestre is gathered in the woods of Old and New Mexico. The insect lives, grows, and multiplies on the uncultivated opuntias, which grow there in great abundance. It is there exposed to the inclemencies of the weather, and dies naturally. The colour is more durable than that of the common cochineal, but less bright: but there is no advantage in using it; for, though cheaper, a greater quantity is requisite.

COCHLEA, the shell-snail, in zoology. See *HELIX*.

COCHLEA, in Anatomy. See *ANATOMY*, p. 765, col. 1.

COCHLEARIA.

Cochinea,
Cochinea.

Cochlearia
||
Cocintum.

COCHLEARIA, SCURVY-GRASS: A genus of the filiculosa order, belonging to the tetradynamia class of plants; and in the natural method ranking under the 39th order, *Siliquosa*. The filicula is emarginated, turgid, and scabrous; with the valves gibbous and obtuse. There are six species; the most remarkable of which are, 1. The angelica, or garden scurvy-grass, grows naturally on the sea-shore, in the north of England and in Holland; but is cultivated for use in the gardens near London. It hath a fibrous root, from which arise many round succulent leaves, which are hollowed like a spoon; the stalks rise from six inches to a foot high: these are brittle, and garnished with leaves which are oblong and sinuated. The flowers are produced in clusters at the end of the branches, consisting of four small white petals which are placed in the form of a cross; and are succeeded by short, roundish, swelling, seed-vessels, having two cells divided by a thin partition. In each of these are lodged four or five roundish seeds. 2. The armoracia, or horse-radish, is so well known as to need no description.

The first is propagated by seeds, which are to be sown in July, in a moist spot of ground; and when the plants are come up, they should be thinned, so as to be left at about six inches distance each way. The plants that are taken out may be transplanted into other borders. In the spring these plants will be fit for use; those that are left will run up to seed in May, and perfect their seeds in June. If the seeds are sown in the spring, they seldom grow well. The horse-radish is propagated by cuttings or buds from the sides of the old roots. The best season for this work is in October or February; the former for dry lands, the latter for moist.

Uses. Scurvy-grass is a pungent stimulating medicine; capable of dissolving viscid juices, opening obstructions of the viscera and the more distant glands, and promoting the more fluid secretions. It is particularly celebrated in scurvies, and is the principal herb employed in these disorders in the northern countries. Horse-radish root has a quick pungent smell, and a penetrating acrid taste; it nevertheless contains in certain vessels a sweet juice, which sometimes exudes on the surface. By drying it loses all its acrimony, becoming first sweetish, and then almost insipid: if kept in a cool place in sand, it retains its qualities for a considerable time. The medical effects of it are to stimulate the solids, attenuate the juices, and promote the fluid secretions: it seems to extend its action through the whole habit, and to affect the minutest glands. It has frequently done service in some kinds of scurvies, and other chronic disorders proceeding from a viscidness of the juices or obstructions of the excretory ducts. Sydenham recommends it likewise in dropsies, particularly those which follow intermittent fevers. Both water and rectified spirit extract the virtues of this root by infusion, and destate them in distillations: along with the aqueous fluid an essential oil rises, possessing the whole taste and pungency of the horse-radish.

COCHLITES, in natural history, an appellation given to the petrified shells of the cochleæ or snails.

COCINTUM (anc. geog.), a promontory of the Bruttii, reckoned the longest in Italy: and which

Holstenius and Vossius have restored to Ovid, reading *Cocintia* for *Ceurania*, Metam. XV. v. 704.—*Cocintum*, also a town, 22 miles to the south of Scylaceum, almost on the spot where now *Stilo* stands; from which the opposite promontory *Cocintum* is commonly called *Capo de Stilo*.

COCK, in zoology, the English name of the males of gallinaceous birds, but more especially used for the common dunghill cock. See PHASIANUS.

Black Cock. }

Cock of the Wood. }

Cock-Chaffer. See SCARABÆUS.

Cock-Paddle, Lump-fish, or Sea-owl. See CYCLOP-TERUS.

Cock-Pit, a sort of theatre upon which game-cocks fight.

It must appear astonishing to every reflecting mind, that a mode of diversion so cruel and inhuman as that of cock-fighting should so generally prevail, that not only the ancients, barbarians, Greeks, and Romans, should have adopted it; but that a practice so savage and heathenish should be continued by Christians of all sorts, and even pursued in these better and more enlightened times.

The ancient Greeks and Romans, as is well known, were wont to call all the nations in the world barbarians; yet certainly, if we consider the many instances of cruelty practised among them, there was very little reason for the distinction. Human sacrifices were common both to them and the barbarians; and with them the exposing of infants, the combats of men with wild beasts, and of men with men in the gladiatorial scenes, were spectacles of delight and festivity.

The islanders of Delos, it seems, were great lovers of cock-fighting; and Tanagra a city in Bœotia, the isle of Rhodes, Chalcis in Eubœa, and the country of Media, were famous for their generous and magnanimous race of chickens. The kingdom of Persia was probably included in the last, from whence this kind of poultry was first brought into Greece; and if one may judge of the rest from the fowls of Rhodes and Media, the excellency of the broods at that time consisted in their weight and largeness (as the fowls of those countries were heavy and bulky), and of the nature of what our sportsmen call *shakebags* or *turnpokes*. The Greeks, moreover, had some method of preparing the birds for battle, by feeding; as may be collected from Columella.

It should seem, that at first cock-fighting was partly a religious and partly a political institution at Athens; and was there continued for the purpose of improving the seeds of valour in the minds of their youth; but was afterwards abused and perverted both here and in the other parts of Greece to a common pastime, without any moral, political, or religious intention, and as it is now followed and practised among us.

At Rome, as the Romans were prone to imitate the Greeks, we may expect to find them following their example in this mode of diversion, and in the worst way, viz. without any good or laudable motives; since, when they took and brought it to Rome, the Greeks had forgotten every thing that was commendable in it, and had already perverted it to a low and unmeaning sport. Signior Hyam thinks the Romans borrowed the pastime from Dardanus in Asia; but there is little

Cock
||
Cock Pit.

Cock Pit. reason for making them go so far from it, when it was so generally followed in Greece, whose customs the Romans were addicted to borrow and imitate. However, it is probable, they did not adopt this opinion very early. It may be gathered from Columella, that the Romans did not use the sport in his time. This author styles cock fighting a *Grecian diversion*; and speaks of it in terms of ignominy, as an expensive amusement, unbecoming the frugal householder, and often attended with the ruin of the parties that followed it. The words are remarkable. "Nos enim censemus instituisse vestigialium industrii patris familias, non rixosarum avium lanistæ, cujus plerumque totum patrimonium pignus alæ, victor gallinaceus pycetibus abstulit." Where he describes, as we think, the manner, not of the Romans, but of the Greeks, who had in his time converted the diversion of cock-fighting into a species of gaming, and even to the total ruin of their families, as happens but too often in England at this day. The Romans, however, at last gave into the custom, tho' not till the decline of the empire. The first cause of contention between the two brothers Bassianus and Geta, sons of the emperor Septimus Severus, happened, according to Herodian, in their youth, about the fighting of their cocks; and if the battling between these two princes was the first instance of it, probably they had seen and learned it in Greece, whither they had often accompanied the emperor their father.

It is observable, that cocks and quails pitted for the purpose of engaging one another, a *outrance*, or to the last gasp, for diversion, are frequently compared, and with much propriety, to gladiators. Hence Pliny's expression, *Gallorum—ceu gladiatorum*; and that of Columella, *rixosarum avium lanistæ*; *lanistæ* being the proper term for the master of the gladiators. Consequently one would expect, that when the bloody scenes of the amphitheatre were discarded, as they were soon after the Christian religion became the establishment of the empire, the wanton shedding of mens blood in sport, being of too cruel and savage a nature to be patronised and encouraged in an institution so harmless and innocent as the Christian was, one might justly expect that the *orturomania* and the *alextroumania* would have ceased of course. The fathers of the church are continually inveighing against the spectacles of the arena, and upbraiding their adversaries with them. These indeed were more unnatural and shocking than a main of cocks; but this, however, had a tendency towards infusing the like ferocity and implacability in the breasts and dispositions of men.

Besides, this mode of diversion has been in fact the bane and destruction of thousands here, as well as those of *lanistæ avium*, "cock-feeders," mentioned by Columella, whose patrimonial fortunes were totally dissipated and destroyed by it.

The cock is not only a useful animal, but stately in his figure, and magnificent in his plumage. "*Imperitant suo generi*, says Pliny, *et regnum*, in quacunque sunt domo, *exercent*." Aristophanes compares him to the king of Persia; most authors also take notice of the "*spectatissimum infigne, ferratum, quod eorum verticem regia corona modo exornat.*" His tenderness towards his brood is such, that, contrary to the custom

Cock Pit. of many other males, he will scratch and provide for them with an assiduity almost equal to that of the hen; and his generosity is so great, that, on finding a hoard of meat, he will chuckle the hens together, and without touching one bit himself will relinquish the whole of it to them. He was called *the bird*, κατ' εἶρησιν, by many of the ancients; he was highly esteemed in some countries, and in others was even held sacred, inasmuch that one cannot but regret that a creature so useful and noble, should, by a strange fatality, be so enormously abused by us. It is true, our *alextroumania*, or the massacre of Shrove Tuesday, is now in a declining way; and, in a few years, it is to be hoped will be totally disused: but the cock-pit still continues a reproach to the humanity of Englishmen, and to their religion; the purest, the tenderest, and most compassionate, of all others, not excepting even the Brachmannic.

It is unknown when the pitched battle first entered England; but it was probably brought thither by the Romans. The bird was here before Cæsar's arrival, but no notice of his fighting occurs earlier than the time of William Fitz-Stephen, who wrote the life of archbishop Becket, some time in the reign of Henry II. and describes the cocking as a sport of school-boys on Shrove Tuesday. From this time at least the diversion, however absurd, and even impious, was continued amongst us. It was followed, though disapproved and prohibited 39 Edward III.; also in the reign of Henry VIII.; and A. D. 1569. It has by some been called a *royal diversion*; and, as every one knows, the cock-pit at Whitehall was erected by a crowned head, for the more magnificent celebration of it. There was another pit in Drury-lane, and another in Javin-street. It was prohibited, however, by one of Oliver's acts, March 31. 1664. What aggravates the reproach and disgrace upon Englishmen, are those species of fighting which are called the *batle-royal* and the *Welsh-main*, known no where in the world but there; neither in China, nor in Persia, nor in Malacca, nor among the savage tribes in America. These are scenes so bloody as almost to be too shocking to relate; and yet, as many may not be acquainted with the horrible nature of them, it may be proper for the excitement of our aversion and detestation to describe them in a few words. In the former, an unlimited number of fowls are pitted, and when they have slaughtered one another for the diversion (*Dii boni!*) of the otherwise generous and humane Englishman, the single surviving bird is to be esteemed the victor, and carries away the prize. The *Welsh-main* consists, we will suppose of 16 pair of cocks; of these, the 16 conquerors are pitted a second time; the 8 conquerors of these are pitted a third time; the 4 conquerors the fourth time; and lastly, the two conquerors of these are pitted the fifth time; so that (incredible barbarity!) 31 cocks are sure to be most inhumanely murdered for the sport and pleasure, the noise and nonsense, the profane cursing and swearing, of those who have the effrontery to call themselves, with all these bloody doings, and with all this impiety about them, *Christians*; nay, what with many is a superior and distinct character, men of benevolence and morality. But let the morality and benevolence of such be appreciated from the following instance recorded as authentic in the obituary of the Gentleman's.

Cock-Pit,
Cockburne.

Gentleman's Magazine for April 1789. "Died, April 4. at Tottenham, John Ardefoif, Esq; a young man of large fortune, and in the splendor of his carriages and horses rivalled by few country gentlemen. His table was that of hospitality, where it may be said he sacrificed too much to conviviality; but if he had his foibles, he had his merits also that far outweighed them. Mr Ardefoif was very fond of cock-fighting; and had a favourite cock upon which he had won many profitable matches. The last bet he laid upon this cock he lost; which so enraged him, that he had the bird tied to a spit and roasted alive before a large fire. The screams of the miserable animal were so affecting, that some gentlemen who were present attempted to interfere; which so enraged Mr Ardefoif, that he seized a poker, and with the most furious vehemence declared, that he would kill the first man who interposed; but, in the midst of his passionate assertions, he fell down dead upon the spot. Such, we are assured, were the circumstances which attended the death of this great pillar of humanity."

COCK-PIT, of a ship of war, the apartment of the surgeon and his mates; being the place where the wounded men are dressed in time of battle, or otherwise. It is situated under the lower deck.

COCKBURN (Mrs Catharine), a most accomplished lady and celebrated writer, was the daughter of Captain David Trotter, a native of Scotland, and a sea-commander in the reign of King Charles II. She was born in London, August 16. 1679, and baptized in the Protestant church, according to which she was bred up in her infancy a Protestant; but being a sprightly, ingenious, and beautiful child, she was particularly caressed by some considerable families among the Papists. This favour naturally wrought a good opinion of such friends; and entering into an intimacy with them as she grew up, she became an easy conquest to their faith, in which she continued many years. In the mean time her genius ripened apace, and shot forth proofs of her talents for poetry, even before she had passed her childhood. In her 17th year she produced a tragedy called *Agnes de Castro*, which was acted in 1695. This performance, and some verses addressed to Mr Congreve upon his *Mourning Bride* in 1697, brought her into the acquaintance of that gentleman. Thus encouraged in her first attempt, her Muse brought upon the stage three plays more, before the death of Mr Dryden in 1701, to whose memory she joined with several other ladies in paying a tribute of verse. However, poetry and dramatic writing was not the most distinguished of Miss Trotter's talents; she had a remarkable philosophic turn, and equal to such researches. Mr Locke's Essay on Human Understanding came out during this interval: that famous philosopher had dressed out logic and metaphysics in such a new mode as was very agreeable to the taste of the sex in general, and particularly engaged the attention and admiration of our young authoresses. She had begun to project a defence of the Essay against some remarks of Dr Burnet of the Charter-house, which was finished so early as the beginning of December 1701. She had but lately passed the 22d year of her age; and the masterly way in which the piece was drawn, must needs have given singular pleasure to her great champion, who accordingly expressed his satisfaction by a present of

books 'o his fair defendress. Philosophy sojourns in the neighbourhood of religion; these philosophic reveries would naturally lead a thoughtful mind to that subject; and taking into her consideration the tenets of her present faith, she began to discover their indefensible grounds: she therefore resolved to renounce it, and published a vindication of her change in 1707; and returning to the established church of Scotland, she changed her condition likewise the next year, 1708; and was married to Mr Cockburne, a learned divine of that church. The duties of a wife and mother called Mrs Cockburne from her books and pen many years; and domestic cares engaging her attention, we hear nothing of her as a writer till 1726, when her zeal for Mr Locke's opinions drew her again into public light. She exercised her pen afterwards as occasion offered; and in 1739 she entered into the controversy concerning the foundation of moral duty and obligation. In that controversy she wrote two treatises, the first of which she transmitted in manuscript to Mr afterwards Dr Warburton, the late bishop of Gloucester, who published it, with a preface of his own, in 1747. Mrs Cockburne survived this publication two years only. She died in 1749, and was interred at Long Holsley, near her husband, who died the year before her, with this short sentence upon the tomb, "Let their works praise them in the gates." Prov. xxx. 31. Her works were collected and published in 1751, in two volumes 8vo, with an account of her life prefixed.—This collection is an incontestable proof of the author's genius. But her abilities as a writer will not be seen without attending to the peculiar circumstances in which her writings were produced: her early youth, for instance, when she wrote some; her very advanced age, and ill state of health, when she drew up others; the uneasy situation of her fortune during the whole course of her life; and an interval of near 20 years, in the vigour of it, spent in the cares of a family, without the least leisure for reading or contemplation; after which, with a mind so long diverted and encumbered, resuming her studies, she instantly recovered its entire powers; and, in the hours of relaxation from domestic employments, pursued to the utmost limits some of the deepest researches the human understanding is capable of. Her character is that of a most uncommon lady, no less celebrated for her beauty in her younger years, than for her genius and accomplishments. She was small of stature, but had a remarkable liveliness in her eyes, and a delicacy of complexion which continued to her death.

COCKERMOUTH, a town of Cumberland in England, situated in W. Long. 3. 12. N. Lat. 54. 35. It is a large town irregularly built, with broad streets. It is washed by the Derwent on the western side; divided in two by the Cocker; and the parts are connected by a stone-bridge of one single arch. The number of inhabitants is between three and four thousand: the manufactures are shalloons, worsted stockings, and hats; the last exported from Glasgow to the West Indies. It is a borough-town, and the right of voting is vested by burges tenure in certain houses: this is also the town where the county elections are made.—Here is a castle seated on an artificial mount on a bank above the Derwent. It has a square building, and strengthened with several square towers: on each side.

Cockle,
Cockle.

side of the inner gate are two deep dungeons capable of holding 50 persons in either; they are vaulted at top, and have only a small opening in order to lower through it the unhappy prisoners into this dire prison; and on the outside of each is a narrow slit with a slope from it, down which were shot the provisions allotted for the wretched inhabitants. This castle was founded by Waldof, first lord of Allerdale, and son of Gospatrick earl of Northumberland, cotemporary with William the Conqueror. Waldof resided first at Papcastle, which he afterwards demolished; and with the materials built that at Cockermouth, where he and his family long resided; but several arms over the gateway, which Camden says are those of the *Multons*, *Humfravilles*, *Lucies*, and *Percies*, evince it to have belonged in latter times to those families. It appears that it was first granted by Edward II. to Anthony de Lucie, son of Thomas de Multon, who had assumed that name, because his mother was daughter and co-heiress to Richard de Lucie; and afterwards, by marriages, this castle and its honours descended to the Humfravilles, and finally to the Percies. In 1658, it was garrisoned for the king; and being besieged and taken by the rebels, was burnt, and never afterwards repaired.—Cockermouth is now in the possession of the Lowther family, who have here a great property in coal-works. The town sends two members to parliament.

COCKET, is a seal belonging to the king's custom-house, or rather a scroll of parchment sealed and delivered by the officers of the customs to merchants, as a warrant that their merchandises are customed.

It is also used for the office where goods transported were first entered, and paid their custom, and had a cocket or certificate of discharge.

COCKLE, in ichthyology. See CARDIUM.

COCKLE, or SHIRLE, in mineralogy, a species of stones of the garnet kind, belonging to the siliceous class. It is called *Schoerlus* by Bergman, *Lapis corneus crystallizatus* by Wallerius, and *Stannum crystallis columnaribus* by Linnæus. It is hard and heavy, shooting into crystals of a prismatic figure, principally of a black or green colour. The name *cockle* for these kinds of stones is an old Cornish word; but is sometimes also applied to very different substances. The term *shirl* is adopted from the Germans. The English mineral name of *call* has also been used by some authors as synonymous with *cockle*, and these are even confounded together at the mines; but the *call*, definitively speaking, is the same with the substance called *wolfram* by the Germans.

The specific gravity of these stones is between 3000 and 3400, though always in proportion to their different solidities. They crack in the fire, and are very difficult to be fused; resisting both microcosmic salt and mineral alkali. They cannot totally be dissolved in aqua fortis; but the dissolved part is precipitated in a gelatinous form on the addition of an alkali. On a chemical analysis they are found to contain siliceous earth, argil, calcareous earth, and iron; which last is found in a much greater quantity when they are opaque than when transparent. According to Bergman, some contain 55 parts of siliceous earth, 39 of argillaceous, and six of pure calcareous earth: but some contain ten or twelve of magnesia. In Britain they

are chiefly found in Cornwall, about the tin mines, and some fine crystallized kinds have been brought from Scotland. The varieties are,

1. The *schoerlus martialis*, or cockle mixed with iron. It is of a green colour, and found in most of the Swedish iron mines. It is coarse, and without any determinate figure.

2. The *spatofus*, or sparry cockle, is found in some places of a deep green colour; whence authors have called it the mother of emeralds. Its specific character is, that it always breaks in a cubic or rhomboidal form. In some parts of Sweden it is found of a pale green, white, or black colour, and of a brown colour in Westmoreland in England. It frequently occurs in the scaly lime-stones, and its colour changes from a deep green to white, in proportion as it contains more or less iron.

3. Fibrous cockle resembles threads of glass. These are either parallel, or like rays from a centre, in which last case it is called *starred cockle*. Its colours are black, green, white, blackish green, and light green; all which are to be met with in Sweden. In Westmanland it is found along with a steel-grained lead ore; and here the whole is called *gran-ris-malm*, or pine-ore, from its resemblance to the branches of that tree. Cronstedt observes, that the structure of this substance has caused it to be sometimes confounded with the asbestus, and that to this species belong most of the substances called *imperfect asbesti*. The striated cockle, compared with the asbestus, is of a shining and angular surface, though this sometimes requires the aid of a magnifying glass to discover it; always somewhat transparent; and is pretty easily vitrified before the blow-pipe, without being consumed as the pure asbestus seem to be.

4. Crystallized cockle is found of black, deep-green, light-green, and reddish-brown in Sweden, and some other European countries. Near Basil in Switzerland is found, though very rarely, a stone called *tauffstein*, belonging to this variety. It is of a reddish-brown colour, and consists of two hexagonal crystals of cockle grown together in the form of a cross, which is worn by the Roman Catholics as an amulet, and called by them *lapis crucifer*, or the cross-stone. This form, however, is not peculiar to the cockle, for both Werner and Bergman mention crystals of mountain-crystal joined together in the same manner.

This variety was lately found by M. Fichtel on the Carpathian mountains, crystallized in prisms, and embodied in limestone. It effervesces slightly with acids, and contains 61.6 of siliceous earth, 21.6 of calcareous earth, 6.6 of argil, 5 of magnesia, 1.6 of iron, and three of water. The reddish-brown prismatic shirl from Vesuvius contains 48 of siliceous earth, 40 of argil, five of calx, one of magnesia, and five of iron. Other kinds, however, have afforded 50 per cent. of siliceous earth, 30 of argillaceous, one or two of magnesia, and 18 or 20 of iron. The white sort probably contain less iron, but all become reddish by calcination. Cronstedt informs us that he has heard of lead being melted out of a kind of cockle from Rodbeck's Eng at Umea in Lapland; and he also thinks it very probable, that some of the cockles found in the English tin mines may contain tin. Some crystals of cockle are more fusible than any sort of stone whatever; these are always glassy and semitransparent.

mitransparent. The precise figure of the cockle, tho' always prismatical, is uncertain: that from Yxho, at Nya Kopperberg, is quadrangular; the French kind has nine sides or planes, and the tauffstein is hexagonal.

COCKNEY, a very ancient nickname for a citizen of London. Ray says, an interpretation of it is, A young person coaxed or conquered, made a wanton, or nestle cock, delicately bred and brought up, so as when arrived at man's estate to be unable to bear the least hardship. Another, A person ignorant of the terms of country economy, such as a young citizen, who having been ridiculed for calling the neighing of a horse laughing, and told that it was called neighing, next morning, on hearing the cock crow, to show instruction was not thrown away upon him, exclaimed to his former instructor, How that cock neighs! whence the citizens of London have ever since been called cock-neighs, or cockneys. Whatever may be the origin of this term, we at least learn from the following verses, attributed to Hugh Bagot earl of Norfolk, that it was in use in the time of king Henry II.

Was I in my castle at Bungay,
Fast by the river Waveney,
I would not care for the king of cockney.
(i. e. the king of London.)

The king of the cockney occurs among the regulations for the sports and shows formerly held in the Middle Temple, on Childermas-day, where he had his officers, a marshal, constable, butler, &c.—See Dugdale's *Origines Juridicales*, p. 247.

COCKROACH. See **BLATTA**. In Captain Cook's last voyage, the ships, while at Huahene, were infested with incredible numbers of these creatures, whom it was found impossible by any means to destroy. Every kind of food, when exposed only for a few minutes, was covered with these noxious insects, and pierced so full of holes, that it resembled an honey-comb. They were particularly destructive to birds which had been stuffed for curiosities, and were so fond of ink, that they ate out the writing on labels. Books, however, were secured from their ravages by the closeness of the binding, which prevented them from getting in between the leaves. They were of two kinds, the *Blatta Orientalis*, and *Germanica*.

COCKSWAIN, or **COCKSON**, an officer on board a man of war, who hath the care of the boat, or sloop, and all things belonging to it. He is to be always ready with his boat's gang or crew, and to man the boat on all occasions. He sits in the stern of the boat, and steers; and hath a whistle to call and encourage his men.

COCLIS, (Pub. Horat.) a celebrated Roman, who alone opposed the whole army of Porfenna at the head of a bridge, while his companions behind him were cutting off the communication with the other shore. When the bridge was destroyed, Cocles, tho' wounded by the darts of the enemy, leapt into the Tiber, and swam across it with his arms. A brazen statue was raised to him in the temple of Vulcan, by the consul Publicola, for his eminent services.

COCOA, in botany. See **Cocos**.

COCONATO, a town of Piedmont in Italy, famous for being the birth-place of Columbus, who first discovered America: E. Long. 8. o. N. Lat. 44. 50.

COCOS, in botany: A genus belonging to the natural order of *Palma*. The calyx of the male is tripar-

tite; the corolla tripetalous, with six stamina. The calyx of the female quinquepartite; the corolla tripetalous; the stigma three, and the plum coriaceous. There is only one species known, which is cultivated in both the Indies, and is of the greatest use to the inhabitants. It is supposed to be a native of the Maldive and some desert islands in the East Indies; and from thence to have been transported to all the warm parts of America: for it is not found in any of the inland parts, nor any where far distant from settlements. The tree frequently rises 60 feet high. The body of the trunk, which generally leans to one side, occasioned, as is supposed, by the great weight of nuts it sustains when young, is the exact shape of an apothecary's large iron pestle, being of an equal thickness at top and at bottom, but somewhat smaller in the middle; its colour is of a pale brown throughout, and the bark smooth. The leaves or branches are often 14 or 15 feet long, about 28 in number, winged, of a yellow colour, straight and tapering. The pinnæ or partial leaves are green, often three feet long next the trunk, but diminishing in length toward the extremity of the branches. The branches are fastened at top by brown stringy threads that grow out of them, of the size of ordinary pack-thread, and are interwoven like a web. The nuts hang at the top of the trunk, in clusters of a dozen in each. Each nut, next the stem, has three holes closely stopped; one of them being wider, and more easily penetrated than the rest. When the kernel begins to grow, it incrusts the inside of the nut in a bluish, jelly-like substance; as this grows harder, the inclosed liquid, distilled into the nut from the roots, becomes somewhat acid; and the kernel, as the nut ripens, becomes still more solid; and at length lines the whole inside of the nut for above a quarter of an inch thick, being as white as snow, and of the flavour of an almond. The quantity of liquor in a full grown nut is frequently a pint and upwards. The husky tegument of the nut consists of strong, tough, stringy filaments, which, when removed from the fruit, resemble coarse oakum, and may perhaps be conveniently enough used as such. The shells of these nuts, being tipped with silver, are frequently used for drinking bowls. The bark of the tree may be wrought into cordage, and the leaves into baskets, brooms, hammocks in form of nets, mats, sacks, and other useful utensils. The liquor contained in the shell is a most cooling wholesome beverage in those sultry climates, and the white kernel a most agreeable food. The Maldive cocoa-nut is esteemed, by the inhabitants of these islands, as a powerful antidote against the bites of serpents and other poisons. The cocoa-nut tree is propagated by planting the nuts; which, in six weeks or two months time, will come up, provided they are fresh and thoroughly ripe; but this is what few of them are when brought into this country; for they always gather them before they are ripe, that they may keep during their passage. The best way, therefore, would be to gather such nuts as are thoroughly ripe in their native country, and plant them in a tub of dry sand, in order to keep them from the vermin during their passage. Here they will frequently sprout, which will be an advantage, as they may then be immediately planted in pots of earth, and plunged in the bark-stove.

COCTION,

Coccyon
||
Coccyus.

COCTION, a general term for all alterations made in bodies by the application of fire or heat.

COCYTUS, one of the rivers of hell, according to the theology of the poets. It has its name *αἰτωτῦ* *αἰτωτῦ*, from groaning and lamenting. Hence Milton,

Cocytus nam'd of lamentation loud,
Heard on the rueful stream.

It was a branch of the river Styx; and flowed, according to Horace, with a dull and languid stream.

COD, in ichthyology. See GADUS and FISHERY.

COD is also a term used, in some parts of the kingdom, for a pod. See PON.

Cod-Cape, a promontory on the coast of New England, near the entrance of Boston harbour. W. Long. 69. 50. N. Lat. 42. 0.

CODDY-MODDY, the English name of a species of LARUS.

CODE (*codex*), a collection of the laws and constitutions of the Roman emperors, made by order of Justinian. The word comes from the Latin *codex*, "a paper book;" so called à *codicibus*, or *caudicibus arborum*, "the trunks of trees;" the bark whereof being stripped off, served the ancients to write their books on.

The code is accounted the second volume of the civil law, and contains twelve books; the matter of which is nearly the same with that of the digests, especially the first eight books: but the style is neither so pure, nor the method so accurate, as that of the digests; and it determines matters of daily use, whereas the digests discuss the more abstruse and subtle questions of the law, giving the various opinions of the ancient lawyers. Although Justinian's code is distinguished by the appellation of *code*, by way of eminence, yet there were codes before his time; such were, 1. The Gregorian code, and Hermogenean code; collections of the Roman laws, made by two famous lawyers, Gregorius and Hermogenes, which included the constitutions of the emperors from Adrian to Dioclesian and Maximinus. 2. The Theodosian code, comprised in 16 books, formed out of the constitutions of the emperors from Constantine the Great to Theodosius the Younger: this was observed almost over all the west, till it was abrogated by the Justinian code. There are also several later codes, particularly the ancient Gothic, and those of the French kings; as the code of Euridic, code-Lewis, code-Henry, code-Marchande, code des Eaux, &c.; and the present king of Prussia has lately published a code, which comprises the laws of his kingdom in a very small volume.

CODEX, in antiquity, denotes a book or tablet on which the ancients wrote. See CODEX.

CODEX also denoted a kind of punishment by means of a clog or block of wood, to which slaves, who had offended were tied fast, and obliged to drag it along with them; and sometimes they sat on it closely bound.

CODIA, among botanists, signifies the head of any plant, but more particularly a poppy head; whence its syrup is called *diacodium*.

CODIA, in botany: A genus of the digynia order, belonging to the octandria class of plants. The calyx is tetraphyllous, with small oblong horizontal leaves; the corolla consists of four very small linear petals; the stamina are eight filaments twice as long as the calyx; the antheræ are roundish.

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CODICIL, is a writing, by way of supplement to a will, when any thing is omitted that the testator would have added, or wants to be explained, altered, or recalled.

CODLIN, an apple useful in the kitchen, being the most proper for baking.

CODLING, an appellation given to the cod-fish when young. See GADUS.

CODON (*Κωδων*), in antiquity, a cymbal, or rather little brass bell, resembling the head of a poppy. They were fastened to the trappings and bridles of horses.

CODON, in botany: A genus of the monogynia order, belonging to the decandria class of plants. The calyx is decempartite, with the segments alternately long and short; the corolla campanulated, with the limb decempartite and equal; the nectarium decemlobular, of ten scales inserted into the heels of the stamina; the seed-case bilocular; the seeds hairy, roundish, in a dry coloured pulp.

CODRINGTON (Christopher), a brave English officer, and not less distinguished for his learning and benevolence; was born at Barbadoes in the year 1668, and educated at Oxford; after which he betook himself to the army; and, by his merit and courage, soon recommending himself to the favour of king William, was made a captain in the first regiment of foot-guards. He was at the siege of Namur in 1695; and, upon the conclusion of the peace of Ryswick, was made captain-general and governor in chief of the Leeward and Caribbee islands. However, in 1701, several articles were exhibited against him to the house of commons in England; to which he published a distinct and particular answer, and was honourably acquitted of all imputations. In 1703, he showed great bravery at the attack of Gaudaloupe: but at last he resigned his government, and lived a studious retired life; for a few years before his death, he chiefly applied himself to church-history and metaphysics. He died at Barbadoes, on the 7th of April 1710, and was buried there the day following; but his body was afterwards brought over to England, and interred, on the 19th of June 1716, in the chapel of All-Souls College, Oxford. By his last will, he bequeathed his plantations in Barbadoes, and part of the island of Barbuda, to the society for propagating the gospel in foreign parts; and left a noble legacy to All-Souls College, of which he had been a fellow. This legacy consisted of his library, which was valued at 6000 *l.*; and 10,000 *l.* to be laid out, 6000 in building a library, and 4000 in furnishing it with books. He wrote some of the poems in the *Muse Anglica*, printed at London in 1741.

CODRUS, the 17th and last king of Athens, son of Melanthus. When the Heraclidæ made war against Athens, the oracle said that the victory would be granted to that nation whose king was killed in battle. The Heraclidæ upon this gave strict orders to spare the life of Codrus; but the patriotic king disguised himself and attacked one of the enemy, by whom he was killed. The Athenians obtained the victory, and Codrus was deservedly called the father of his country. He reigned 21 years, about 2153 years before the Christian era. To pay more honour to his memory, the Athenians made a resolution that no man after Codrus should reign in Athens under the name of king.

COECUM,

Codicil
||
Codrus.

Cœcum

Coelus.

COECUM, or **BLIND-GUT**. See **ANATOMY**, n^o 93. Dr Musgrave gives us an account, in the Philosophical Transactions, of the cœcum of a dog being cut out without any prejudice to the animal. Mr Giles gives us another of the cœcum of a lady being distended, so as to form a tumor that held almost three chopins of a thin, greyish, almost liquid substance, of which she died. And Mr Knowler a third, of a boy's cœcum being vastly extended and stuffed with cherry-stones, which likewise proved mortal.

COEFFICIENTS, in algebra, are such numbers or known quantities as are put before letters or quantities, whether known or unknown, and into which they are supposed to be multiplied. Thus, in $3x$, ax , or bx ; 3 , a and b , are the coefficients of x : and in $6a$, $9b$; 6 , and 9 , are the coefficients of a and b . See **ALGEBRA**.

COELESTIAL, or **CELESTIAL**, in general, denotes any thing belonging to the heavens: thus we say, *celestial observations, the celestial globe, &c.*

COELIAC ARTERY, in anatomy, that artery which issues from the aorta, just below the diaphragm. See **ANATOMY**, n^o 123.

COELIAC Vein, in anatomy, that running through the intestinum rectum, along with the cœliac artery.

COELIMONTANA PORTA (Pliny), one of the gates of Rome, situated at the foot of mount Cœlius; and hence its name: thought to be the ancient *Asinaria* by some; but this others doubt. By this gate Alaric with his Goths is said to have entered and plundered Rome.

COELIOBRIGA (anc. geog.), a town of the Braeari in the Hither Spain, to the south of Bracara Augusta, the north of the Durus, and not far from the Atlantic; a municipium (Coin). Now thought to be *Barcelos*, a town of Entre Minho y Duero. W. Long. 9. 15. Lat. 41. 20.

COELIUS MONS, one of the seven hills of Rome; so called from *Cœles*, a Tuscan captain, who came to the assistance of Romulus against the Sabines, (Dionysius Halicarnassens). Called also *Querculanus*, or *Quercetulanus*, from the oaks growing on it; and *Augustus*, by Tiberius (Tacitus, Suetonius). To the east it had the city walls, on the south the Coeliolus, to the west the Palatine, and on the north the Esquilæ.

COELIOLUS, a part of mount Cœlius to the south, called *Minor Cœlius* (Martial); having the city walls on the east, the Aventine to the south, on the west and north the valley through which the rivulet of the Appia runs.

COELOMA, among physicians, a hollow ulcer, seated in the tunica cornea of the eye.

COELOS PORTUS (anc. geog.), a town of the Chersonesus of Thrace, to the south of Sestos; where the Athenians erected a trophy, after a sea victory over the Lacedæmonians (Diodorus Siculus).

COELOSYRIA, in the larger sense of the word, was the name of the whole country lying southward of Seleucia, and extending as far as Egypt and Arabia: but this word is principally applied to the valley lying between Libanus and Antilibanus. This word occurs only in the apocryphal writings of the Old Testament.

COELUS (Heaven), in Pagan mythology, the son of Æther and Dies or Air and Day. According to

Hesiod, he married Terra or the Earth: on whom he begat Aurea or the Mountains, the Ocean, &c. But having at length imprisoned the Cyclops, who were also his children, his wife, being offended, incited her son Saturn to revenge the injury done to his brothers; and, by her assistance, he bound and castrated Cœlus; when the blood that flowed from the wound produced the three furies, the giants, and the wood-nymphs; and the genital parts being thrown into the sea, impregnated the waters, and formed the goddess Venus. This deity was called by the Greeks *Uranus*.

COEMETERY. See **CEMETERY**.

COEMPTIONALES, among the Romans, an appellation given to old slaves, which were sold in a lot with others, because they could not be sold alone.

COENOBITE, a religious who lives in a convent, or in community, under a certain rule; in opposition to anachoret, or hermit, who lives in solitude. The word comes from the Greek *κοινος*, *communis*; and *βίος*, *vita*, "life". Cassian makes this difference between a *convent* and a *monastery*, that the latter may be applied to the residence of a single religious or recluse; whereas the *convent* implies *canobites*, or numbers of religious living in common. Fleury speaks of three kinds of monks in Egypt; *anachorets*, who live in solitude; *canobites*, who continue to live in community; and *farabaites*, who are a kind of monks-errant, that stroll from place to place. He refers the institution of cœnobites to the times of the apostles, and makes it a kind of imitation of the ordinary lives of the faithful at Jerusalem. Though St Pachomius is ordinarily owned the institutor of the cœnobite life; as being the first who gave a rule to any community.

COENOBIVM, *κοινωβιον*, the state of living in a society, or community, where all things are common. Pythagoras is thought to be the author or first institutor of this kind of life; his disciples, though some hundreds in number, being obliged to give up all their private estates, in order to be annexed to the joint stock of the whole. The Essenians among the Jews and Platonists are said to have lived in the same manner. Many of the Christians also have thought this the most perfect kind of society, as being that in which Christ and his apostles chose to live.

COESFELDT, a town of Germany, in Westphalia, and in the territories of the bishop of Munster, where he often resides. It is near the river Burkel, E. Long. 64. 2. N. Lat. 51. 58.

COEVORDEN, one of the strongest towns in the United Provinces, in Overijssel, fortified by the famous Cohorn. It was taken by the bishop of Munster, 1673; and the Dutch retook it the same year. It is surrounded by a morass. E. Long. 6. 41. N. Lat. 52. 40.

COFFEA, the **COFFEE-TREE**: A genus of the monogynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 47th order, *Stellate*. The corolla is funnel-shaped; the stamina above the tube; the berry inferior, dispersing; the seeds arillated, or having a proper exterior covering dropping off of its own accord. There is but one species, supposed to be a native of Arabia Felix. It seldom rises more than 16 or 18 feet in height; the main stem grows upright, and is covered with a light brown bark; the branches are produced

Coemetry

Coffea.

Coffea.

horizontally and opposite, crossing each other at every joint; so that every side of the tree is fully garnished with them, and they form a sort of pyramid. The leaves also stand opposite; and when fully grown are about four or five inches long, and two broad in the middle, decreasing toward each end; the borders are waved, and the surface is of a lucid green. The flowers are produced in clusters at the root of the leaves, fitting close to the branches; they are tubulous, and spread open at the top, where they are divided into five parts; they are of a pure white, and have a very grateful odour, but are of short duration. The fruit, which is the only useful part, resembles a cherry. It grows in clusters, and is ranged along the branches under the axillæ of the leaves, of the same green as the laurel, but something longer. When it comes to be of a deep red, it is gathered for the mill, in order to be manufactured into those *coffee-beans* now so generally known. The mill is composed of two wooden rollers furnished with iron plates 18 inches long, and 10 or 12 in diameter. These moveable rollers are made to approach a third which is fixed, and which they call the *chops*. Above the rollers is a hopper, in which they put the coffee, from whence it falls between the rollers and the chops, where it is stripped of its first skin, and divided into two parts, as may be seen by the form of it after it has undergone this operation; being flat on the one side and round on the other. From this machine it falls into a brass sieve, where the skin drops between the wires, while the fruit slides over them into baskets placed ready to receive it: it is then thrown into a vessel full of water, where it soaks for one night, and is afterwards thoroughly washed. When the whole is finished, and well dried, it is put into another machine called the *peeling-mill*. This is a wooden grinder, turned vertically upon its trendle by a mule or horse. In passing over the coffee it takes off the parchment, which is nothing but a thin skin that detaches itself from the berry in proportion as it grows dry. The parchment being removed, it is taken out of this mill to be put into another, which is called the *winnowing-mill*. This machine is provided with four pieces of tin fixed upon an axle, which is turned by a slave with considerable force; and the wind that is made by the motion of these plates clears the coffee of all the pellicles that are mixed with it. It is afterwards put upon a table, where the broken berries, and any filth that may remain among them, are separated by negroes, after which the coffee is fit for sale.

The coffee-tree is cultivated in Arabia, Persia, the East Indies, the Isle of Bourbon, and several parts of America. It is also raised in botanic gardens in several parts of Europe. Prince Eugene's garden at Vienna produced more coffee than was sufficient for his own consumption. It delights particularly in hills and mountains, where its root is almost always dry, and its head frequently watered with gentle showers. It prefers a western aspect, and ploughed ground without any appearance of grass. The plants should be placed at eight feet distance from each other, and in holes twelve or fifteen inches deep. If left to themselves, they would rise to the height of 16 or 18 feet, as already observed; but they are generally stunted to five, for the conveniency of gathering their fruit

Coffea.

with the greater ease. Thus dwarfed, they extend their branches so, that they cover the whole spot round about them. They begin to yield fruit the third year, but are not in full bearing till the fifth. With the same infirmities that most other trees are subject to, these are likewise in danger of being destroyed by a worm or by the scorching rays of the sun. The hills where the coffee-trees are found have generally a gravelly or chalky bottom. In the last, it languishes for some time and then dies: in the former, its roots, which seldom fail of striking between stones, obtain nourishment, and keep the tree alive and fruitful for 30 years. This is nearly the period for plants of the coffee-tree. The proprietor, at the end of this period, not only finds himself without trees, but has his land reduced, that it is not fit for any kind of culture; and unless he is so situated, that he can break up a spot of virgin land, to make himself amends for that which is totally exhausted by the coffee-trees, his loss is irreparable.

The coffee produced in Arabia is found so greatly to excel that raised in the American plantations or elsewhere, that the cultivation of the tree is now but seldom practised in any of the British colonies. Large plantations of this kind were formerly made in some of them; and it was proposed to the parliament to give a proper encouragement for cultivating this commodity there, so as to enable the planters to undersell the importers from Arabia. Accordingly, there was an abatement of the duty payable on all coffee imported from our colonies in America, which at that time was supposed to be sufficient encouragement for this kind of commerce; but the inferiority of the American coffee to the Arabian hath almost ruined the project. Mr Miller proposes some improvements in the method of cultivation. According to him, the trees are planted in too moist a soil, and the berries are gathered too soon. They ought, he says, to be permitted to remain on the trees till their skins are shrivelled, and they fall from the trees when shaken. This will indeed greatly diminish their weight, but the value of the commodity will thereby be increased to more than double of that which is gathered sooner. In Arabia, they always shake the berries off the trees, spreading cloths to receive them, and only take such as readily fall at each time. Another cause may be the method of drying the berries. They are, he observes, very apt to imbibe moisture, or the flavour of anything placed near them. A bottle of rum placed in a closet, in which a canister of coffee-berries closely stopped was standing on a shelf at a considerable distance, in a few days so impregnated the berries as to render them very disagreeable: the same hath also happened by a bottle of spirit of wine standing in the same closet with coffee and tea, both which were in a few days spoiled by it. Some years ago, a coffee-ship from India had a few bags of pepper put on board, the flavour of which was imbibed by the coffee, and the whole cargo spoiled. For these reasons, Mr Miller directs that coffee-berries should never be brought over in ships freighted with rum, nor laid to dry in the houses where sugars are boiled or rum distilled. When they are fully ripe, they should be shaken off when the trees are perfectly dry, and spread upon cloths in the sun to dry, carrying them every evening

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under cover, to prevent the dews or rain from falling on them. When perfectly dry, they should have their outer skins beaten off, and then be carefully packed up in cloths or bags three or four times double.

The coffee-tree, as we have already observed, is sometimes cultivated in European gardens; but for this it requires the assistance of a stove. It makes a fine appearance at all seasons of the year (being an evergreen), but especially when in flower, and when the berries are red, which is generally in the winter, so that they continue a long time in that state. It is propagated from the berries; but they must be planted immediately when gathered from the tree, for they lose their vegetative quality in a very short time: when sent abroad by the post, they have constantly failed in those that have been a fortnight on their journey; so that where these trees are desired, the young plants must be sent, if it be at any distance from the place where they grow. The fresh berries may be planted in small pots, and plunged into a hot-bed of tanners bark. If the bed be of a proper temperature, the young plants will appear in a month or five weeks time; and in six weeks more, will be ready for transplanting into several pots. During summer, they must be frequently watered; but not in too great plenty, otherwise the roots will be apt to rot. The first sign of the plants being disordered is their leaves sweating out a clammy juice; after which they are over-run with insects, that cannot be destroyed till the plants have recovered their health; so that on the first appearance of these insects, the trees should be removed into fresh earth, and all possible care taken to recover them. The disorders incident to them, generally proceed either from their having been put into large pots, or from the earth about them being too stiff or over-watered. The most proper soil for them is that of a kitchen-garden, which is naturally loose, and not subject to bind, especially if it has constantly been well wrought and dunged.

COFFEE also denotes a kind of drink, prepared from those berries; very familiar in Europe for these 100 years, and among the Turks for 170.

Its original is not well known. Some ascribe it to the prior of a monastery; who being informed by a goat-herd, that his cattle sometimes browsing on the tree would wake and caper all night, became curious to prove its virtue: accordingly, he first tried it on his monks, to prevent their sleeping at matins. Others, from Sehehabeddin, refer the invention of coffee to the Persians: from whom it was learned in the 15th century by Gemaleddin, mufti of Aden, a city near the mouth of the red sea; and who having tried its virtues himself, and found that it dissipated the fumes which oppressed the head, inspired joy, opened the bowels, and prevented sleep, without being incommoded by it, recommended it first to his dervises, with whom he used to spend the night in prayer. Their example brought coffee into vogue at Aden; the professors of the law for study, artificers to work, travellers to walk in the night, in fine every body at Aden, drank coffee. Hence it passed to Mecca; where first the devotees, then the rest of the people, took it. From Arabia Felix it passed to Cairo. In 1511, Kahie Beg prohibited it, from a persuasion that it inebriated, and inclined to things forbidden. But

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Sultan Causou immediately after took off the prohibition; and coffee advanced from Egypt to Syria and Constantinople. The dervises declaimed against it from the Alcoran, which declares, that coal is not of the number of things created by God for food. Accordingly, the mufti ordered the coffee-houses to be shut; but his successor declaring coffee not to be coal, they were again opened. During the war in Candia, the assemblies of news-mongers making too free with state affairs, the grand visir Cuproli suppressed the coffee-houses at Constantinople: which suppression, though still on foot, does not prevent the public use of the liquor there. Thevenot, the traveller, was the first who brought it into France; and a Greek servant, named *Pasqua*, brought into England by Mr Dan. Edwards, a Turkey merchant, in 1652, to make his coffee, first set up the profession of *coffee-man*, and introduced the drink into this island.

The word *coffee* is originally Arabic: the Turks pronounce it *cabeuh*, and the Arabians *cabuab*; which some authors maintain to be a general name for any thing that takes away the appetite, others for any thing that promote appetite, and others again for any thing that gives strength and vigour.—The Mahometans, it is observed, distinguish three kinds of *cabuab*. The first is wine, or any liquor that inebriates: the second is made of the pods that contain the coffee-berry; this they call the *Sultan's coffee*, from their having first introduced it on account of its heating less than the berry, as well as its keeping the bowels open: the third is that made with the berry itself, which alone is used in Europe, the pods being found improper for transportation. Some Europeans who imported the pods called them the *flower of the coffee-tree*. The deep brown colour of the liquor occasioned its being called *syrup of the Indian mulberry*, under which specious name it first gained ground in Europe.

The preparation of coffee consists in roasting, or giving it a just degree of torrefaction on an earthen or metalline plate, till it have acquired a brownish hue equally deep on all sides. It is then ground in a mill, as much as serves the present occasion. A proper quantity of water is next boiled, and the ground coffee put into it. After it has just boiled, it is taken from the fire, and the decoction having stood a while to settle and fine, they pour or decant it into dishes. The ordinary method of roasting coffee amongst us is in a tin cylindrical box full of holes, through the middle whereof runs a spit: under this is a semicircular hearth, whereon is a large charcoal-fire: by help of a jack the spit turns swift, and so roasts the berry; being now and then taken up to be shaken. When the oil rises, and it is grown of a dark brown colour, it is emptied into two receivers made with large hoops, whose bottoms are iron plates: there the coffee is shaken, and left till almost cold; and if it look bright and oily, it is a sign it is well done.

Very different accounts have been given of the medicinal qualities of this berry. To determine its real effects on the human body, Dr Percival has made several experiments, the result of which he gives in the following words: "From these observations we may infer, that coffee is slightly astringent, and antiseptic; Vol. II. that it moderates alimentary fermentation, and is ^{Effays,} powerfully sedative. Its action on the nervous system ^{P. 127.}

Coffee,
Coffer.

probably depends on the oil it contains; which receives its flavour, and is rendered mildly empyreumatic, by the process of roasting. Neumann obtained by distillation from one pound of coffee, five ounces five drachms and a half of water, six ounces and half a drachm of thick fetid oil, and four ounces and two drachms of a caput mortuum. And it is well known, that rye, torrefied with a few almonds, which furnish the necessary proportion of oil, is now frequently employed as a substitute for these berries.

“ The medicinal qualities of coffee seem to be derived from the grateful sensation which it produces in the stomach, and from the sedative powers it exerts on the *vis vite*. Hence it assists digestion, and relieves the headach; and is taken in large quantities, with peculiar propriety, by the Turks and Arabians; because it counteracts the narcotic effects of opium, to the use of which those nations are much addicted.

“ In delicate habits, it often occasions watchfulness, tremors, and many of those complaints which are denominated nervous. It has been even suspected of producing palsies; and from my own observation, I should apprehend, not entirely without foundation. Slaré affirms, that he became paralytic by the too liberal use of coffee, and that his disorder was removed by abstinence from that liquor.

“ The following curious and important observation is extracted from a letter with which I was honoured by Sir John Pringle, in April 1773: “ On reading your section concerning coffee, one quality occurred to me which I had observed of that liquor, confirming what you have said of its sedative virtues. It is the best abater of the paroxysms of the periodic asthma that I have seen. The coffee ought to be of the best Mocco, newly burnt, and made very strong immediately after grinding it. I have commonly ordered an ounce for one dish; which is to be repeated fresh after the interval of a quarter or half an hour; and which I direct to be taken without milk or sugar. The medicine in general is mentioned by Musgrave, in his treatise *De arthritide anomala*: but I first heard of it from a physician in this place, who having once practised it in Litchfield, had been informed by the old people of that place, that Sir John Floyer, during the latter year of his life, kept free from, or at least lived easy under, his asthma, from the use of very strong coffee. This discovery, it seems, he made after the publication of his book upon that disease.” Since the receipt of that letter, I have frequently directed coffee in the asthma with great success.”

COFFER, in architecture, a square depression or sinking in each interval between the modillions of the Corinthian cornice; ordinarily filled up with a rose; sometimes with a pomegranate, or other enrichment.

COFFER, in fortification, denotes a hollow lodgement, athwart a dry moat, from 6 to 7 feet deep, and from 16 to 18 broad; the upper part made of pieces of timber raised two feet above the level of the moat; which little elevation has hurdles laden with earth for its covering, and serves as a parapet with embrasures: the coffer is nearly the same with the caponiere, excepting that this last is sometimes made beyond the counterscarp on the glacis; and the coffer always in the moat taking up its whole breadth, which the caponiere does not. It differs from the

traverse and gallery, in that these latter are made by the besiegers, and the coffer by the besieged. The besieged generally make use of coffers to repulse the besiegers when they endeavour to pass the ditch. To save themselves from the fire of these coffers, the besiegers throw up the earth on that side towards the coffer.

COFFERER of the KING'S HOUSEHOLD, a principal officer in the court, next under the comptroller. He was likewise a white-staff officer, and always a member of the privy council. He had a special charge and oversight of the other officers of the household. He paid the wages of the king's servants below stairs, and for provisions as directed by the board of green cloth. This office is now suppressed, and the business of it is transacted by the lord steward, and paymaster of the household. He had L. 100 a-year wages, and L. 400 a-year board-wages.

COFFIN, the chest in which dead bodies are put into the ground.

The sepulchral honours paid to the manes of departed friends in ancient times, demand attention, and are extremely curious. Their being put into a coffin has been particularly considered as a mark of the highest distinction. With us the poorest people have their coffins. If the relations cannot afford them, the parish is at the expence. On the contrary, in the east they are not at all made use of in our times; Turks and Christians, as Thevenot assures us, agree in this. The ancient Jews seem to have buried their dead in the same manner: neither was the body of our Lord, it should seem, put into a coffin; nor that of Elisha, 2 Kings xiii. 21. whose bones were touched by the corpse that was let down a little after into his sepulchre. However, that they were anciently made use of in Egypt, all agree; and antique coffins of stone, and sycamore-wood, are still to be seen in that country; not to mention those said to be made of a kind of pasteboard; formed by folding or glueing cloth together a great many times, curiously plastered, and then painted with hieroglyphics. Its being an ancient Egyptian custom, and not practised in the neighbouring countries, were, doubtless, the cause that the sacred historian expressly observes of Joseph, that he was not only embalmed, but put into a coffin too*; Gen. l. both being managements peculiar to the Egyptians.

Bishop Patrick, in his commentary on this passage, takes notice of these Egyptian coffins of sycamore wood, and of pasteboard; but he doth not mention the contrary usage in the neighbouring countries, which was requisite, one might suppose, in order fully to illustrate the place: but even this perhaps would not have conveyed the whole idea of the sacred author. Maillet apprehends that all were not inclosed in coffins who were laid in the Egyptian repositories of the dead; but that it was an honour appropriated to persons of figure: for after having given an account of several riches found in those chambers of death, he adds †, “ But it must not be imagined that the bodies deposited in these gloomy apartments were all inclosed in chests, and placed in niches. The greatest part were simply embalmed and swathed after that manner which every one hath some notion of; after which they laid them one by the side of another without any ceremony. Some were even laid in

Cofferer,
Coffin.

* Gen. l.

† Ict. v. p. 281.

Coffin
||
Cognate.

in these tombs without any embalming at all; or such a slight one, that there remains nothing of them in the linen in which they were wrapped, but the bones, and those half rotten. It is probable, that each considerable family had one of these burial-places to themselves; that the niches were designed for the bodies of the heads of the families; and that those of their domestics or slaves had no other care taken of them than the laying them on the ground, after having been embalmed, or even without that; which, without doubt, was also all that was done even to the heads of families of less distinction." After this he gives an account of a way of burial, practised anciently in that country, which had been but lately discovered; and which consisted in placing the bodies, after they were swathed, upon a layer of charcoal, and covering them with a mat, under a depth of sand of seven or eight feet.

That *coffins* then were not universally used in Egypt, is undoubted from these accounts; and probably they were only persons of distinction who were buried in them. It is also reasonable to believe, that in times so remote as that of Joseph, they might be much less common than afterwards; and consequently, that Joseph's being put in a coffin in Egypt might be mentioned with a design to express the great honours which the Egyptians did him at his death, as well as in life, being interred after the most sumptuous manner of the Egyptians, *embalmed*, and *put into a coffin*. Agreeably to this, the Septuagint version, which was made for Egyptians, seems to represent coffins as a mark of grandeur. Job xxi. 32.

It is no objection to this account, that the widow of Nain's son is represented as carried forth to be buried in a *σολ*, or "on a bier;" for the present inhabitants of the Levant, who are well known to lay their dead bodies in the earth uninclosed, carry them frequently out to burial in a kind of coffin. So Dr Ruffel, in particular, describes the bier used for the Turks at Aleppo, as a kind of coffin much in the form of ours, only that the lid rises with a ledge in the middle. Christians, indeed, as he tells us, are carried to the grave on an open bier: but as the most common kind of bier resembles our coffins, that used by the people of Nain might very possibly be of the same kind; in which case the word *σολ* was very proper.

COGGLE, or **Cog**, a small fishing-boat upon the coasts of Yorkshire: and cogs (cogones) are a kind of little ships or vessels used in the rivers Ouse and Humber; (Stat. 23. H. VIII. c. 18.) *Preparatis cogonibus, galleis, & aliis navibus, &c.* (Mat. Paris. ann. 1066.) And hence the cogmen, boatmen, and seamen, who after shipwreck or losses by sea travelled and wandered about to defraud the people by begging and stealing, until they were restrained by proper laws.

COGITATION, a term used by some for the act of thinking.

COGNAC, a town of France in Angoumois, with a castle, where Francis I. was born. It is seated on the river Charante, in a very pleasant country, abounding in wine, and remarkable for excellent brandy. W. Long. 0. 10. N. Lat. 45. 42.

COGNATE, in Scots law, any male relation thro' the mother.

COGNATION, in the civil law, a term for that line of consanguinity which is between males and females, both descended from the same father; as agnation is for the line of parentage between males only descended from the same stock.

COGNI, an ancient and strong town of Caramania in Turkey in Asia, and the residence of a beglerbeg. It is seated in a pleasant country, abounding in corn, fruits, pulse, and cattle. Here are sheep whose tails weigh 30 pounds. E. Long. 32. 56. N. Lat. 37. 56.

COGNITIONIS CAUSA, in Scots law. When a creditor charges the heir of his debtor to enter, in order to constitute the debt against him, and the heir renounces the succession, the creditor can obtain no decret of constitution of that debt against the heir; but only a decret subjecting the *hereditas jacens*, or the estate which belonged to the debtor, to his diligence: and this is called a decret *cognitionis causa*.

COGNIZANCE, or **CONNUSANCE**, in law, has divers significations. Sometimes it is an acknowledgement of a fine, or confession of something done; sometimes the hearing of a matter judicially, as to take cognizance of a cause; and sometimes a particular jurisdiction, as cognizance of pleas is an authority to call a cause or plea out of another court, which no person can do but the king, except he can show a charter for it. This cognizance is a privilege granted to a city or a town to hold plea of all contracts, &c. within the liberty; and if any one is impleaded for such matters in the courts at Westminster, the mayor, &c. of such franchise may demand cognizance of the plea, and that it may be determined before them.

COGNIZANCE is also used for a badge on a waterman's or serving-man's sleeve, which is commonly the giver's crest, whereby he is decerned to belong to this or that nobleman or gentleman.

COGS. See **COGGLE**.

COHABITATION, denotes the state of a man and a woman who live together without being legally married. By the common law of Scotland, cohabitation for year and day, or a complete twelvemonth, is deemed equivalent to matrimony.

CO-HEIR, one who succeeds to a share of an inheritance, to be divided among several.

COHESION, one of the four species of attraction, denoting that force by which the parts of bodies adhere or stick together.

This power was first considered by Sir Isaac Newton as one of the properties essential to all matter, and the cause of all that variety we observe in the texture of different terrestrial bodies. He did not, however, absolutely determine that the power of cohesion was an immaterial one; but thought it might possibly arise, as well as that of gravitation, from the action of matter. His account of the original constitution of matter is as follows: It seems probable, that God in the beginning formed *matter* in solid, massy, impenetrable, moveable particles; of such sizes, figures, and other properties, and in such proportion to space, as most conduced to the end for which he formed them: and that these primitive particles being solid, are incomparably harder than any porous bodies composed of them; even so very hard as never to wear or break in pieces; no ordinary power being able to divide what God himself made one at the first creation. While

Cognition
||
Cohesion.1
Considered
by Sir Isaac
Newton as
an essential
property of
matter.2
His account
of the original
constitution of
matter.

the

Cohesion. the particles continue entire, they may compose bodies of one and the same nature and texture in all ages; but should they wear away, or break in pieces, the nature of all things depending on them would be changed. Water and earth composed of old worn particles and fragments of particles, would not now be of the same texture with water and earth composed of entire particles in the beginning. And therefore, that nature may be lasting, the changes of corporeal things are to be placed in the various separations and new associations and motions of these permanent particles; compound bodies being apt to break, not in the midst of solid particles, but where these particles are laid together, and touch in a few points." It seems farther, "That these particles have not only a *vis inertiae*, accompanied with such passive laws of motion as naturally result from that force; but also that they are moved by certain active principles, such as that of gravity, and that which causeth fermentation and the cohesion of bodies. These principles are to be considered not as occult qualities, supposed to result from the specific forms of things, but as general laws of nature by which the things themselves are formed; their truth appearing to us by phenomena, though their cause is not yet discovered."

reflections of the rays of light; the rays being repelled by bodies in both these cases without the immediate contact of the reflecting or inflecting body. The same thing seems also to follow from the emission of light; a ray, as soon as shaken off from a body by the vibrating motion of the parts of the body, and got beyond the reach of attraction, being driven away with exceeding great velocity: for that force which is sufficient to turn it back in reflection may be sufficient to emit it. From the same repelling power it seems to be that flies walk upon the water without wetting their feet; that the object-glasses of long telescopes lie upon one another without touching; and that dry powders are difficultly made to touch one another so as to stick together, without melting them or wetting them with water, which, by exhaling, may bring them together.

Cohesion.

3
Attraction
the general
law of na-
ture.

The general law of nature, by which all the different bodies in the universe are composed, according to Sir Isaac Newton, is that of attraction: *i. e.* "Every particle of matter has an attractive force, or a tendency to every other particle; which power is strongest in the point of contact, and suddenly decreases, insomuch that it acts no more at the least sensible distance; and at a greater distance is converted into a repellent force, whereby the parts fly from each other. On this principle of attraction may we account for the cohesion of bodies, otherwise inexplicable.

"The particles of all hard homogeneous bodies which touch one another, cohere with a great force: to account for which, some philosophers have recourse to a kind of hooked atoms, which in effect is nothing else but to beg the question. Others imagine, that the particle of bodies are connected by rest, *i. e.* in effect by nothing at all; and others, by conspiring motions, *i. e.* by a relative rest among themselves. For myself, it rather appears to me, that the particles of bodies cohere by an attractive force, whereby they tend mutually to each other."

4
Formation
of particles
of different
sizes.

"The smallest particles may cohere by the strongest attractions, and compose bigger particles of weaker virtue; and many of these may cohere, and compose bigger particles, whose virtue is still less; and so on for divers successions, until the progression end in the biggest particles, on which the operations in chemistry, and the colours of natural bodies, depend; and which, by cohering, compose bodies of a sensible magnitude.

7
No con-
clusion to
be drawn
from this
account.

From this account of the formation and constitution of bodies, we can conclude nothing, except that they are composed of an infinite number of little particles, kept together by a force or power; but of what nature that power is, whether material or immaterial, we must remain ignorant till farther experiments are made. Some of the Newtonian philosophers, however, have positively determined these powers to be immaterial. In consequence of this supposition, they have so refined upon attractions and repulsions, that their systems seem not far from downright scepticism, or denying the existence of matter altogether. A system of this kind we find adopted by Dr Priestley *, from Messrs Boscovich and Michell, in order to solve some difficulties concerning the Newtonian doctrine of light. "The easiest method (says he) of solving all difficulties, is to adopt the hypothesis of Mr Boscovich, who supposes that matter is not impenetrable, as has been perhaps universally taken for granted; but that it consists of physical points only, endued with powers of attraction and repulsion in the same manner as solid matter is generally supposed to be: provided therefore that any body move with a sufficient degree of velocity, or have a sufficient *momentum* to overcome any powers of repulsion that it may meet with, it will find no difficulty in making its way through any body whatever; for nothing else will penetrate one another but powers, such as we know do in fact exist in the same place, and counterbalance or over-rule one another. The most obvious difficulty, and indeed almost the only one that attends this hypothesis, as it supposes the mutual penetrability of matter, arises from the idea of the nature of matter, and the difficulty we meet with in attempting to force two bodies into the same place. But it is demonstrable that the first obstruction arises from no actual contact of matter, but from mere powers of repulsion. This difficulty

* *Hist. of
Vision*, vol. 1
p. 392.

8
Mr Mi-
chell's hy-
pothesis a-
dopted by
Dr Priest-
ley.

5
Distinction
of bodies
into hard,
soft, humid,
&c.

If the body is compact, and bends or yields inward to pressure without any sliding of its parts, it is hard and elastic; returning to its figure with a force arising from the mutual attraction of its parts. If the parts slide from one another, the body is malleable or soft. If they slip easily, and are of a fit size to be agitated by heat, and the heat is great enough to keep them in agitation, the body is fluid; and if it be apt to stick to things, it is humid; and the drops of every fluid affect a round figure by the mutual attractions of their parts, as the globe of the earth and sea affects a round figure from the mutual attraction and gravity of its parts.

6
Existence
of repulsive
power pro-
ved.

"Since metals dissolved in acids attract but a small quantity of the acid, their attractive force reaches but to a small distance. Now, as in algebra, where affirmative quantities cease, their negative ones begin; so in mechanics, where attraction ceases, there a repulsive virtue must succeed. That there really is such a virtue seems to follow from the reflections and in-

9
Bodies op-
pose each
other not
from ac-
tual con-
tact.

culity

cohesion. culy we can overcome; and having got within one sphere of repulsion, we fancy that we are now impeded by the solid matter itself. But the very same is the opinion of the generality of mankind with respect to the first obstruction. Why, therefore, may not the next be only another sphere of repulsion, which may only require a greater force than we can apply to overcome it, without disordering the arrangement of the constituent particles; but which may be overcome by a body moving with the amazing velocity of light.

“ This scheme of the *immateriality of matter*, as it may be called, or rather the *mutual penetration of matter*, first occurred to Mr Michell on reading *Baxter's* *the immateriality of the Soul*. He found that this author's idea of matter was, that it consisted as it were of bricks cemented together with immaterial mortar. These bricks, if he would be consistent with his own reasoning, were again composed of less bricks, cemented likewise by an immaterial mortar; and so on *ad infinitum*. This putting Mr Michell upon the consideration of the several appearances of nature, he began to perceive that the bricks were so covered with this immaterial mortar, that if they had any existence at all, it could not possibly be perceived; every effect being produced, in nine instances of ten certainly, and probably in the tenth also, by this immaterial, spiritual, and penetrable mortar. Instead therefore of placing the world upon the giant, the giant upon the tortoise, and the tortoise upon he could not tell what, he placed the world at once upon itself.”

Other philosophers have supposed the powers both of gravitation and cohesion to be material; and to be only different actions of the ethereal fluid, or elementary fire. In support of this it hath been urged, that before we have recourse to a spiritual and immaterial power as the cause of any natural phenomenon, we ought to be well assured that there is no material substance with which we are acquainted, that is capable of producing such effects. In the present case, we are so far from having such assurance, that the contrary is manifest to our senses. One instance of this is in the experiment with the *Magdeburg hemispheres*, as they are called. These are two hollow hemispheres of brass, exactly fitted to one another, so as to form one globe when joined together, without admitting any air at the joining. In this state, if the air within them is exhausted by means of a pump, they will cohere with such force, if they are five or six inches diameter, as to require a weight of some hundreds of pounds to separate them. The pressure of the atmosphere, we see, is in this case capable of producing a very strong cohesion; and if there is in nature any fluid more penetrating, as well as more powerful in its effects, than the air we breathe, it is possible that what is called the *attraction of cohesion* may somehow or other be an effect of the action of that fluid. Such a fluid as this is the element of fire. Its activity is such as to penetrate all bodies whatever; and in the state in which it is commonly called *fire*, it acts according to the quantity of solid matter contained in the body. In this state, it is capable of dissolving the strongest cohesions observed in nature: but whatever is capable of dissolving any cohesion, must necessarily be endued with greater power than that by which the

cohesion is caused. Fire, therefore, being able to dissolve cohesions, must also be capable of causing them, provided its power is exerted for that purpose. Nor will it seem at all strange that this fluid should act in two such opposite ways, when we consider the different appearances which it assumes. These are three, *vis.* fire or heat, in which it consumes, destroys, and dissolves: light, in which it seems deprived of all destructive or dissolvent power, and to be the most mild, quiet, and placid being in nature. The third state of this element is, when it becomes what is called the *electric fluid*; and then it attracts, repels, and moves bodies, in a vast variety of ways, without either burning or rendering them visible by its light. In this state it is not less powerful than in either of the other two; for a violent shock of electricity will displace and tear in pieces the most heavy and solid bodies. The seeming capricious nature of this fluid, however, probably renders it less suspected as the cause of cohesion, than it otherwise would be, were the attractions regular and permanent, which we observe it to occasion. But here we must observe, that the fluid has an existence in all bodies before the experiments are tried which make its effects visible to us, and was acting in them according to its settled and established laws. While acting in this manner it was perfectly invisible; and all we can do is, to produce some little infringement of these regular laws according to which it commonly acts. In some cases, however, the electrical attractions produced by art are found to be pretty permanent and strong. Thus, Mr Symmer, in some experiments with silk stockings, found their attraction so strong, that it required upwards of 15 pounds weight to separate them from each other; and this attraction would continue for more than an hour. In plates of glass, too, be observed a remarkable cohesion when electrified. In the *Philosophical Transactions* for 1777, we find this hypothesis taken notice of, and in some measure adopted, by Mr Henly. “ Some gentlemen (says he) have supposed that the electric matter is the cause of the cohesion of the particles of bodies. If the electric matter be, as I suspect, a real elementary fire inherent in all bodies, that opinion may probably be well founded; and perhaps the soldering of metals, and the cementation of iron, by fire, may be considered as strong proofs of the truth of their hypothesis.”

On this last hypothesis we must observe, that if the electric, or any other fluid, is supposed to be the cause of the attraction of cohesion universally, the particles of that fluid must be destitute of all cohesion between themselves; otherwise we should be at as great a loss to account for the cohesion of these particles, as for that of terrestrial matter. Philosophers, indeed, do not suppose any cohesion between the particles of the electric fluid themselves; it is generally believed that the particles of this fluid are repulsive of one another, though attracted by all other matter. If this is a fact, we cannot suppose the electric fluid to be the cause of cohesion. The probability or improbability of the hypothesis just mentioned, must greatly depend on its being ascertained whether the particles of the electric fluid do really repel one another, and attract all other kinds of matter, or not; but for this we must refer to the article *ELECTRICITY*.

COHOBATION, in chemistry, an operation by which

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Baxter's
union.

II
cohesion
supposed
being to
elementary
c.

Cohorn
Coin.

which the same liquor is frequently distilled from the same body, either with an intention to dissolve this body, or to produce some change upon it. This is one of those operations which the ancient chemists practised with great patience and zeal, and which are now neglected. To make this operation easier, and to prevent the trouble of frequently changing the vessels, a particular kind of alembic, called a *pelican*, was invented. This vessel was made in the form of a cucurbit with an alembic-head, but had two spouts communicating with the body. As the vapour rose up into the head, it was gradually condensed, and ran down the spouts into the body of the pelican, from whence it was again distilled; and so on. This vessel is represented Plate CXXXIV. fig. 6.

COHORN (N.) the greatest engineer Holland has produced. Among his other works, which are esteemed master-pieces of skill, he fortified Bergen-op-zoom; which, to the surprise of all Europe, was taken by the French in 1747. He wrote a treatise on fortification; and died in 1704.

COHORT, in Roman antiquity, the name of part of the Roman legion, comprehending about 600 men. There were ten cohorts in a legion, the first of which exceeded all the rest both in dignity and number of men. When the army was ranged in order of battle, the first cohort took up the right of the first line; the rest followed in their natural order: so that the third was in the centre of the first line of the legion, and the fifth on the left; the second between the first and third; and the fourth between the third and fifth: the five remaining cohorts formed a second line in their natural order.

COIF, the badge of a serjeant at law, who is called serjeant of the coif, from the lawn coif they wear under their caps, when they are created serjeants.

The chief use of the coif was to cover the clerical tonsure. See TONSURE.

COILING, on shipboard, implies a sort of serpentine winding of a cable or other rope, that it may occupy a small space in the ship. Each of the windings of this sort is called a *fake*; and one range of fakes upon the same line is called a *tier*. There are generally from five to seven fakes in a tier; and three or four tiers in the whole length of a cable. This, however, depends on the extent of the fakes. The smaller ropes employed about the sails are coiled upon cleats at sea, to prevent their being entangled amongst one another in traversing, contracting, or extending the sails.

COILON, in the ancient Grecian theatres, the same with the cavea of the Romans.

COIMBRA, a handsome, large, and celebrated town of Portugal, capital of the province of Beira, with a bishop's see, and a famous university. The cathedral and the fountains are very magnificent. It is seated in a very pleasant country abounding in vineyards, olive-trees, and fruits. It stands on a mountain, by the side of the river Mondego. W. Long. 8. 57. N. Lat. 40. 10.

COIN, a piece of metal converted into money by the impressing of certain marks or figures thereon.

COIN differs from MONEY as the species from the genus. Money is any matter, whether metal, wood, leather, glass, horn, paper, fruits, shells, or kernels,

N^o 84.

which have currency as a medium in COMMERCE. Coin is a particular species, always made of metal, and struck according to a certain process called COINING.

Coin.

The precise epocha of the invention of money is too ancient for our annals; and, if we might argue from the necessity and obviousness of the thing, must be nearly coeval with the world.

Whether coins be of equal antiquity, may admit of some doubt; especially as most of the ancient writers are so frequent and express in their mention of leather-moneys, paper-moneys, wooden-moneys, &c. Some, however, notwithstanding this, are of opinion, that the first moneys were of metal: the reasons they give, are the firmness, neatness, cleanliness, durability, and universality of metals; which, however, do rather conclude they ought to have been so, than that they actually were so.

In effect, the very commodities themselves were the first moneys, *i. e.* were current for one another by way of exchange; and it was the difficulty of cutting or dividing certain commodities, and the impossibility of doing it without great loss, that first put men on the expedient of a general medium. See EXCHANGE.

Indeed, thus much may be said in behalf of coins, that, on this view, it was natural for men to have their first recourse to metals; as being almost the only things whose goodness, and as it were integrity, is not diminished by partition; besides the advantages above expressed, and the conveniences of melting and returning them into a mass of any size or weight.

It was probably, then, this property of metals which first accustomed people, who trafficked together, to account them in lieu of quantities of other merchandizes in their exchanges, and at length to substitute them wholly in their stead; and thus arose money: as it was their other property to preserve any mark or impression a long time, which confirmed them in the right; and thus was the first rise of coins.

In the first ages, each person cut his metal into pieces of different sizes and forms, according to the quantity to be given for any merchandize, or according to the demand of the seller, or the quantity stipulated between them. To this end they went to market laden with metal in proportion to the purchase to be made, and furnished with instruments for portioning it, and scales for dealing it out, according as occasion required. By degrees, it was found more commodious to have pieces ready weighed; and as there were different weights required according to the value of the different wares, all those of the same weight began to be distinguished with the same mark or figure: thus were coins carried one step further. At length the growing commerce of money beginning to be disturbed with frauds, both in the weights and the matter, the public authority interposed; and hence the first stamps or impressions of money; to which succeeded the names of the monies; and at length the effigy of the prince, the date, legend, and other precautions to prevent the alterations of the species; and thus were coins completed.

Modern Coins. In England the current species of gold are the guinea, half-guinea, Jacobus, laureat, angel, and rose-noble: the four last of which are now seldom to be met with; having been most of them

con-

converted into guineas, chiefly during the reign of Charles II. and James II. The silver coins are the crown, half-crown, shilling, and sixpence. Copper coins are the half-penny and farthing.

In Scotland, by the articles of the Union, it is appointed that all the coins be reduced to the English, and the same accounts observed throughout. Till then the Scots had their pounds, shillings, and pence, as in England; but their pound was but 20 pence English, and the others in proportion: accordingly, their merk was $13\frac{1}{2}$ s. Scots, current in England at $13\frac{1}{2}$ d. their noble in proportion. Besides these they had their turner-pence and half-pence; their penny $\frac{1}{2}$ of that of England: besides base money of achifons, babees, and placks. The bodle $\frac{1}{3}$ of the penny, $\frac{1}{4}$ of the achifon, $\frac{1}{5}$ of the babee, and $\frac{1}{6}$ of the plack.

In Ireland, the coins are as in England, viz. shillings, pence, &c. with this difference, that their shilling is but equal to $11\frac{1}{10}$ d. Sterling: whence their pound is only 18 s. $5\frac{1}{4}$ d.

But, for a view of all the coins presently current in the four quarters of the globe, with their values and proportions, see the table subjoined to the article MONEY.

In many places shells are current for coins; particularly a small white kind dug out of the ground in the Maldives, and some parts of America, called in the Indies *cowries*, or *coris*, on the coast of Africa *bonges*, and in America *porcelaines*; of which it takes a vast number to be equivalent in value to a penny. Of zim-bis, another kind of shell current, particularly in the kingdoms of Angola and Congo, two thousand make what the negroes call a *macoute*; which is no real money; for of this there is none in this part of Africa but a manner of reckoning: thus, two Flemish knives they esteem a *macoute*; a copper-bafon two pounds weight, and 12 inches diameter, they reckon three *macoutes*; a *fufee* 10, &c.

In some places fruits are current for coins. Of these there are three sorts used, two in America, particularly among the Mexicans, which are the cacao and maize; the other in the East Indies, viz. almonds brought thither from Lar, and growing in the deserts of Arabia. Of cacao 15 are esteemed equivalent to a Spanish rial, or seven pence sterling. Maize has ceased to be a common money since the discovery of America by the Europeans. Almonds are chiefly used where the *cowries* are not current. As the year proves more or less favourable to this fruit, the value of the money is higher or lower. In a common year 40 almonds are set against a *pescha*, or half-penny sterling; which brings each almond to $\frac{1}{20}$ of a farthing.

Ancient Coins are those chiefly which have been current among the Jews, Greeks, and Romans. Their values and proportions are as follows.

J E W I S H.		l.	s.	d.	ster.
Gerah	—	—	—	—	0 0 $1\frac{1}{160}$
10	Becah	—	—	—	0 0 $1\frac{1}{160}$
20	—	—	—	—	0 0 $2\frac{1}{80}$
1200	120	50	Maneh	}	5 14 0 $\frac{1}{4}$
			Mina hebraica		
6000	6000	3000	60	Talent	342 3 9
Solidus aureus, or sextula, worth	—	—	—	—	0 12 0 $\frac{1}{2}$
Siclus aureus, worth	—	—	—	—	1 16 6
A talent of gold, worth	—	—	—	—	5475 0 0

G R E C I A N.

Lepton	—				—				s.	d.	grs.	ster.
7	Chalcus	—	—	—	—	—	—	—	—	—	—	0 0 $3\frac{1}{160}$
14	2	Dichalcus	—	—	—	—	—	—	—	—	—	0 0 $3\frac{1}{80}$
28	4	—	—	—	—	—	—	—	—	—	—	0 0 $1\frac{1}{40}$
56	8	—	—	—	—	—	—	—	—	—	—	0 0 $2\frac{1}{20}$
112	16	8	4	2	Diobolus	—	—	—	—	—	—	0 2 $2\frac{1}{10}$
224	32	16	8	4	2	Tetrobolus	—	—	—	—	—	0 5 $0\frac{2}{5}$
336	48	24	12	6	3	1 $\frac{1}{2}$	Drachma	—	—	—	—	0 7 3
662	96	48	24	12	6	3	2	Didrachmon	—	—	—	1 3 2
1324	192	96	48	24	12	6	4	2	Tetradstater	—	—	2 7 0
1660	384	192	96	48	24	12	7 $\frac{1}{2}$	5	12 $\frac{1}{2}$	1 $\frac{1}{4}$	Pentrad.	3 2 3

Note: Of these the drachma, didrachm, &c. were of silver, the rest for the most part of brass. The other parts, as tridrachm, triobolus, &c. were sometimes coined.

Note also: The drachma is here, with the generality of authors, supposed equal to the denarius; though there is reason to believe that the drachma was somewhat the weightier. See DRACHMA and DENARIUS.

l. s. d. Sterl.

The Grecian gold coin was the stater aureus, weighing two attic drachms, or half of the stater argenteus; and exchanging usually for 25 attic drachms of silver; in our money

According to our proportion of gold to silver } 1 0 9

There were likewise the stater cycizenus, exchanging for 28 attic drachms, or

Stater philippicus, and stater alexandrinus, of the same value.

Stater daricus, according to Josephus, worth 50 attic drachms, } 1 12 3 $\frac{1}{2}$

or Stater cræsius, of the same value.

R O M A N.

R O M A N.		s.	d.	grs.	Sterl.	
Teruncius	—	—	—	—	0 0 $0\frac{77\frac{1}{2}}{1000}$	
2	Semilibella	—	—	—	0 0 $1\frac{1}{1000}$	
4	2	Libella	}	—	0 0 $3\frac{1}{1000}$	
		As				
10	5	2 $\frac{1}{2}$	Sestertius	—	0 1 $3\frac{1}{4}$	
20	10	5	2	Quinarius	} 0 3 $3\frac{1}{2}$	
				Victoriatius		
40	20	10	4	2	Denarius	0 7 3

Note: Of these the denarius, victoriatius, sestertius, and sometimes the as, were of silver, the rest of brass. See As, &c.

There were sometimes also coined of brass the triens, sextans, uncia, sextula, and dupondius.

The Roman gold coin was the aureus, which weighed generally double the denarius; the value of which, according to the first proportion of coinage, mentioned by Pliny, was

According to the proportion that obtains now amongst us, worth } 1 0 9

R

Ac

Coin,
Coinage.

According to the decuple proportion, mentioned by Livy and Julius Pollux, worth } *l. s. d.*
o 12 11

According to the proportion mentioned by Tacitus, and which afterwards obtained, whereby the aureus exchanged for 25 denarii, its value } o 16 1½

COIN, in architecture, a kind of dye cut diagonal-wise, after the manner of a flight of a stair-case, serving at bottom to support columns in a level, and at top to correct the inclination of an entablature supporting a vault.

COIN is also used for a solid angle composed of two surfaces inclined towards each other, whether that angle be exterior, as the coin of a wall, a tree, &c. or interior, as the coin of a chamber or chimney. See QUOIN.

COINAGE, or COINING, the art of making money, as performed either by the hammer or mill.

Formerly the fabric of coins was different from what it is at present. They cut a large plate of metal into several little squares, the corners of which were cut off with sheers. After having shaped these pieces, so as to render them perfectly conformable, in point of weight, to the standard piece, they took each piece in hand again, to make it exactly round by a gentle hammering. This was called a *planchet*, and was fit for immediate coining. Then engravers prepared, as they still do, a couple of steel masses in form of dyes, cut and terminated by a flat surface, rounded off at the edges. They engraved or stamped on it the hollow of a head, a cross, a scutcheon, or any other figure, according to the custom of the times, with a short legend. As one of these dyes was to remain dormant, and the other moveable, the former ended in a square prism, that it might be introduced into the square hole of the block, which, being fixed very fast, kept the dye as steady as any vice could have done. The planchet of metal was horizontally laid upon this inferior mass, to receive the stamp of it on one side, and that of the upper dye, wherewith it was covered, on the other. This moveable dye, having its round engraved surface resting upon the planchet, had at its opposite extremity a flat square, and larger surface, upon which they gave several heavy blows, with a hammer of an enormous size, till the double stamp was sufficiently, in relievo, impressed on each side of the planchet. This being finished, was immediately succeeded by another, and they thus became a standard coin, which had the degree of fineness of the weight and mark determined by the judgment of the inspectors, to make it good current money. The strong tempering which was and is still given to the two dyes, rendering them capable of bearing those repeated blows. Coining has been considerably improved and rendered expeditious, by several ingenious machines, and by a wise application of the surest physical experiments to the methods of fining, dyeing, and stamping the different metals.

The three finest instruments the mint-man uses, are the laminating engine; the machine for making the impressions on the edges of coins; and the mill.

After they have taken the laminæ, or plates of me-

tal, out of the mould into which they are cast, they do not beat them on the anvil, as was formerly done, but they make them pass and repass between the several rollers of the laminating engine, which being gradually brought closer and closer to each other, presently give the lamina its uniform and exact thickness. Instead of dividing the lamina into small squares, they at once cut clean out of it as many planchets as it can contain, by means of a sharp steel trepan, of a roundish figure, hollow within, and of a proportionable diameter, to shape and cut off the piece at one and the same time. After these planchets have been prepared and weighed with standard pieces, filed or scraped to get off the superfluous part of the metal, and then boiled and made clean, they arrive, at last, at the machine (fig. 1.), which marks them upon the edge; and finally, the mill (fig. 2.), which, squeezing each of them singly between the two dyes, brought near each other with one blow, forces the two surfaces or fields of the piece to fill exactly all the vacancies of the two figures engraved hollow. The engine which serves to laminate lead, gives a sufficient notion of that which serves to flatten gold and silver laminæ between rollers of a lesser size.

The principal pieces of the machine (fig. 1.), to stamp coins on the edge, are two steel laminæ, about a line thick. One half of the legend, or of the ring, is engraved on the thickness of one of the laminæ, and the other half on the thickness of the other; and these two laminæ are straight, although the planchet marked with them be circular.

When they stamp a planchet, they first put it between the laminæ in such a manner, as that these being each of them laid flat upon a copper-plate, which is fastened upon a very thick wooden table, and the planchet being likewise laid flat upon the same plate, the edge of the planchet may touch the two laminæ on each side, and in their thick part.

One of these laminæ is immovable, and fastened with several screws; the other slides by means of a dented wheel, which takes into the teeth that are on the surface of the lamina. This sliding lamina makes the planchet turn in such a manner, that it remains stamped on the edge, when it has made one turn. Only crown and half-crown pieces can bear the impression of letters on the thickness of their edges.

The coining engine or mill is so handy (fig. 2.), that a single man may stamp twenty thousand planchets in one day: gold, silver, and copper planchets, are all of them coined with a mill, to which the coining squares (fig. 3.), commonly called dyes, are fastened; that of the face under, in a square box garnished with male and female screws, to fix and keep it steady; and the other above, in a little box garnished with the same screws, to fasten the coining square. The planchet is laid flat on the square of the effigy, which is dormant; and they immediately pull the bar of the mill by its cords, which causes the screw set within it to turn. This enters into the female screw, which is in the body of the mill, and turns with so much strength, that by pushing the upper square upon that of the effigy, the planchet, violently pressed between both squares, receives the impression of both at one pull, and in the twinkling of an eye.

Coin

Pl
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The planchet thus stamp'd and coined, goes through a final examination of the mint wardens, from whose hands it goes into the world.

In the *COINING of Medals*, the process is the same, in effect, with that of money; the principal difference consisting in this, that money having but a small relief, receives its impression at a single stroke of the engine; whereas for medals, the height of their relief makes it necessary that the stroke be repeated several times: to this end the piece is taken out from between the dyes, heated, and returned again; which process, in medallions and large medals, is repeated fifteen or twenty times before the full impression be given: care must be taken, every time the planchet is removed, to take off the superfluous metal stretched beyond the circumference with a file. Medallions, and medals of a high relief, are usually first cast in sand, by reason of the difficulty of stamping them in the press, where they are put only to perfect them; in regard the sand does not leave them clear, smooth, and accurate enough. Therefore we may see that medals receive their form and impression by degrees, whereas money receives them all at once.

British COINAGE, both by the beauty of the engraving, and by the invention of the impressions on the edges, that admirable expedient for preventing the alteration of the species, is carried to the utmost perfection.

It was only in the reign of king William III. that the hammer-money ceased to be current in England, where till then it was struck in that manner, as in other nations. Before the hammer species was called in, the English money was in a wretched condition, having been filed and clipped by natives as well as foreigners, inasmuch that it was scarce left of half the value: the retrieving this distressed state of the English money is looked upon as one of the glories of king William's reign.

The British coinage is now wholly performed in the Tower of London, where there is a corporation for it, under the title of the *mint*. Formerly there were here, as there are still in other countries, the rights of feinerage and brassage: but since the eighteenth year of king Charles II. there is nothing taken either for the king or for the expences of coining; so that weight is returned for weight, to any person who carries their gold and silver to the Tower.

The species coined in Great Britain are esteemed contraband goods, and not to be exported. All foreign species are allowed to be sent out of the realm, as well as gold and silver in bars, ingots, dust, &c.

Barbary COINAGE, particularly that of Fez and Tunis, is under no proper regulations, as every goldsmith, Jew, or even private person, undertakes it at pleasure; which practice renders their money exceeding bad, and their commerce very unsafe.

Muscovite COINAGE. In Muscovy there is no other coin struck but silver, and that only in the cities of Muscovy, Novogrod, Twere, and Pleskow, to which may be added Peterburgh. The coinage of each of these cities is let out to farm, and makes part of the royal revenue.

Persian COINAGE. All the money made in Persia is struck with a hammer, as is that of the rest of Asia; and the same may be understood of America, and the

coasts of Africa, and even Muscovy: the king's duty, in Persia, is seven and a half *per cent.* for all the moneys coined, which are lately reduced to silver and copper, there being no gold coin there except a kind of medals, at the accession of a new sopher.

Spanish COINAGE is esteemed one of the least perfect in Europe. It is settled at Seville and Segovia, the only cities where gold and silver are struck.

COIRE, or, as the Germans call it, *CHUR*, a large and handsome town of Switzerland, and capital of the country of the Grisons, with a bishop's see whose prelate has the right of coining money. It is divided into two parts; the least of which is of the Roman Catholic religion, and the greatest of the Protestant. It is governed by its own laws, and seated in a plain, abounding in vineyards and game, on the river Plesure, half a mile from the Rhine. E. Long. 9. 27. N. Lat. 46. 50.

COITION, the intercourse between male and female in the act of generation.

It is observed that frogs are forty days in the act of coition. Bartholine, &c. relate, that butterflies make 130 vibrations of the wings in one act of coition.

COIX, JOB'S-TEARS: A genus of the triandria order, belonging to the monœcia class of plants; and in the natural method ranking under the 4th order, *Gramina*. The male flowers grow in spikes remote from one another; the calyx is a biflorous, beardless glume. The calyx of the female is a biflorous glume; the corolla a beardless glume; the style bipartite; the seed covered with the calyx ossified. Of this there is but one species, a native of the Archipelago islands, and frequently cultivated in Spain and Portugal, and also in the West Indies. It is an annual plant, rising from a fibrous root, with two or three jointed stalks, to the height of two feet, with single, long, narrow leaves at each joint, resembling those of the reed; at the base of the leaves come out the spikes of flowers standing on short foot-stalks; the seeds greatly resemble those of groundwell; whence the plant has by some writers been called *lithospermum*. This plant may be propagated in this country by seeds brought from Portugal, and sown on a hot-bed; after which the young plants are to be removed into a warm border, and planted at the distance of two feet at least from each other. They will require no other care than to be kept free from weeds. In Spain and Portugal the poor people grind the seeds of this plant, in times of scarcity, and make a coarse kind of bread of them. The seeds are inclosed in small capsules about the bigness of an English pea, and of different colours. These are strung upon silk, and used instead of bracelets by some of the poorer sort in the West Indies, but especially by the negroes.

COKE, or COOKE (Sir Edward), lord chief justice of the king's bench in the reign of James I. was descended from an ancient family in Norfolk, and born at Milham in 1549. When he was a student in the Inner-Temple, the first occasion of his distinguishing himself was the stating the case of a cook belonging to the Temple so exactly, that all the house, who were puzzled with it, admired him and his pleading, and the whole bench took notice of him. After his marriage with a lady of a great fortune, preferments flowed in upon him. The cities of Norwich and Coventry chose him for their recorder; the county of Norfolk, for

Coke
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Colberg.

one of their knights in parliament; and the house of commons, for their speaker, in the 35th year of queen Elizabeth. The queen appointed him solicitor-general in 1592, and attorney-general the next year. In 1603, he was knighted by king James I.; and in November the same year, upon the trial of Sir Walter Raleigh, &c. at Winchester, he treated that gentleman with a feurrility of language hardly to be paralleled. June 27. he was appointed lord chief justice of the common pleas; and in 1613, lord chief justice of the king's bench, and sworn one of the privy council. In 1615, he was very vigorous in the discovery and prosecution of the persons employed in poisoning Sir Thomas Overbury in the Tower in 1612. His contest not long after with the lord chancellor Egerton, with some other cases, hastened the ruin of his interest at court: so that he was sequestered from the council-table and the office of lord chief justice. In 1621, he vigorously maintained in the house of commons, that no proclamation is of any force against the parliament. The same year, being looked upon as one of the great incendiaries in the house of commons, he was removed from the council of state with disgrace; the king saying, that "he was the fittest instrument for a tyrant that ever was in England:" he was also committed to the Tower, and his papers were seized. Upon the calling of a new parliament in 1625, the court-party, to prevent his being elected a member, got him appointed sheriff of Buckinghamshire; to avoid the office, if possible, he drew up exceptions against the oath of a sheriff, but was obliged to undertake the office. In 1628, he spoke vigorously upon grievances; and made a speech in which he affirmed, that "the duke of Buckingham was the cause of all our miseries." While he lay upon his death-bed, his papers and last will were seized by an order of council. He died in 1634, and published many works: the most remarkable are his Institutes of the laws of England; the first part of which is only a translation and comment of Sir Thomas Littleton, one of the chief justices of the common pleas in the reign of Edward IV.

COKENHAUSEN, a strong town of Livonia in Sweden, on the river Divina. E. Long. 24. 26. N. Lat. 56. 40.

COL, a name given by some to one of the western islands of Scotland; it abounds in corn, pasture, salmon, eels, and cod. W. Long. 7. 35. N. Lat. 57.

COLAPIS, COLOPS (anc. geog.), a river of Liburnia, which after a winding north-east course, falls into the Savus, at the Infula Segetica. Now the *Culpe*, the boundary of the Alps, running through Croatia into the Save. Colapiani, the people living on it (Pliny).

COLARBASIANS, or COLORBASIANS, a sect of Christians in the second century; so called from their leader Colarbasus, a disciple of Valentinus; who, with Marcus, another disciple of the same master, maintained the whole plenitude, and perfection, of truth and religion, to be contained in the Greek alphabet: and that it was upon this account that Jesus Christ was called the *alpha* and *omega*. This sect was a branch of the Valentinians. See also MARCOSIANS.

COLBERG, a strong, handsome sea-port town of Germany, in Pomerania, belonging to the king of Prussia. It is remarkable for its salt works; and is

seated at the mouth of the river Perfant, on the Baltic sea, 60 miles north-east of Stetin, and 30 north-east of Camin. E. Long. 15. 57. N. Lat. 54. 18.

COLBERT (JOHN BAPTIST), marquis of Segnelai, one of the greatest statesmen that France ever had, was born at Paris in 1619; and descended from a family that lived at Rheims in Champaigne, no way considerable for its splendor and antiquity. His grandfather is said to have been a wine-merchant, and his father at first followed the same occupation; but afterwards traded in cloth, and at last in silk. Our Colbert was instructed in the arts of merchandize; and afterwards became clerk to a notary. In 1648, his relation John Baptist Colbert, lord of S. Pouange, preferred him to the service of Michael Le Tellier, secretary of state, whose sister he had married; and here he discovered such diligence, and exactness in executing all the commissions that were entrusted to his care, that he quickly grew distinguished. One day his master sent him to cardinal Mazarine, who was then at Sedan, with a letter written by the queen mother; and ordered him to bring it back, after that minister had seen it. Colbert carried the letter, and would not return without it, though the cardinal treated him roughly, used several arts to deceive him, and obliged him to wait for it several days. Some time after, the cardinal returning to court, and wanting one to write his agenda or memoranda, desired Le Tellier to furnish him with a fit person for that employment: and Colbert being presented to him, the cardinal had some remembrance of him, and desired to know where he had seen him. Colbert was afraid of putting him in mind of Sedan, lest the remembrance of his importunacy, in demanding the queen's letter, should renew the cardinal's anger. But his eminency was so far from hating him for his faithfulness to his late master, that he received him on condition, that he should serve him with the like zeal and fidelity.

Colbert applied himself wholly to the advancement of his master's interests, and gave him so many marks of his diligence and skill, that afterwards he made him his intendant. He accommodated himself so dexterously to the inclinations of that minister, by retrenching his superfluous expences, that he was entrusted with the management of that gainful trade of selling benefices and governments. It was by Colbert's counsel, that the cardinal obliged the governors of frontier places to maintain their garrisons with the contributions they exacted; with which advice his eminency was extremely pleased. He was sent to Rome, to negotiate the reconciliation of cardinal de Rets, for which the Pope had showed some concern; and to persuade his holiness to consent to the disincamerating of Casto, according to the treaty concluded with his predecessor Urban VIII. Upon the whole, Mazarine had so high an opinion of Colbert's abilities, and withal such a regard for his faithful services, that at his death, which happened in 1661, he earnestly recommended him to Louis XIV. as the properest person to regulate the finances, which at that time stood in much need of reformation. Louis accepted the recommendation, and made Colbert intendant of the finances. He applied himself to their regulation, and succeeded: though it procured him many enemies, and some affronts. France is also obliged

Colbert

Colbert. obliged to this minister for establishing at that time her trade with the East and West Indies: a great design, and from which she has reaped innumerable advantages.

In 1664, he became superintendant of the buildings; and for that time applied himself so earnestly to the enlarging and adorning of the royal edifices, that they are at present so many master-pieces of architecture: witness the palace of the Thuilleries, the Louvre, St Germain, Fontainebleau, and Chombord. As for Versailles, it may be said that he raised it from the ground. It was formerly a dog-kennel, where Louis XIII. kept his hunting furniture: it is now a palace fit for the greatest monarch. But royal palaces were not Colbert's only care: he formed several designs for increasing the beauty and convenience of the capital city, and he did it with great magnificence and grandeur. The public was obliged to this same minister for the establishment of the academy for painting and sculpture in 1664. The king's painters and sculptors, with other skilful professors of those arts, being prosecuted at law by the master-painters at Paris, joined together; and began to form a society, under the name of the Royal Academy for Sculpture and Painting. Their design was to keep public exercises, for the sake of improving those fine arts, and advancing them to the highest degree of perfection. They put themselves under the protection of Mazarine, and chose chancellor Seguier their vice-protector; and after Mazarine's death chose Seguier their protector, and Colbert their vice-protector. It was at his solicitation that they were finally established by a patent, containing new privileges, in 1664. Colbert, being made protector after the death of Seguier, thought fit that an historian should be appointed, whose business it should be to collect all curious and useful observations that should be made at their conferences. This was accordingly done; and his majesty was pleased to settle on him a salary of 300 livres. To Colbert also the lovers of naval knowledge are obliged for the erection of the Academy of Sciences: for the making of which the more useful, he caused to be erected, in 1667, the royal observatory at Paris, which was first inhabited by Cassini. But these are not the only obligations France has to that minister: she owes to him all the advantages she receives by the union of the two seas; a prodigious work, begun in 1666 and finished in 1680. Colbert was also very intent upon matters of a more private nature, such as regarded the order, decency, and well-being of society. He undertook to reform the courts of justice, and to put a stop to the usurpation of noble titles; which it seems was then very common in France. In the former of those attempts he failed, in the latter he succeeded.

In 1669, he was made secretary of state, and entrusted with the management of affairs relating to the sea: and his performances in this province were answerable to the confidence his majesty reposed in him. He suppressed several offices, which were chargeable, but useless: and in the mean time, perceiving the king's zeal for the extirpation of heresy, he shut up the chamber instituted by the edicts of Paris and Roan. He proposed severally new regulations concerning criminal courts; and was extremely severe with the parliament of Thoulouse for obstructing the measures he

took to carry the same into execution. His main design in reforming the tedious methods of proceeding at law, was to give the people more leisure to apply themselves to trading: for the advancement of which he procured an edict, to erect a general insurance-office at Paris, for merchants, &c. In 1672, he was made minister of state: for how busied soever he was in the regulation of public affairs, yet he never neglected his own or his family's interest and grandeur, or missed any opportunity of advancing either. He had been married many years, had sons and daughters grown up; all of which, as occasion served, he took care to marry to great persons. For though he had no reason to doubt of his master's favour, yet he wisely secured his fortune by powerful alliances. However, business was certainly Colbert's natural turn; and he not only loved it, but was very impatient to be interrupted in it, as the following anecdote may serve to show. A lady of great quality was one day urging him, when he was in the height of his power, to do her some piece of service; and perceiving him inattentive and inflexible, threw herself at his feet, in the presence of above 100 persons, crying, "I beg your greatness, in the name of God, to grant me this favour." Upon which Colbert, kneeling down over against her, replied, in the same mournful tone, "I conjure you, madam, in the name of God, not to disturb me."

This great minister died the 6th of September 1683, in his 65th year; leaving behind him six sons and three daughters. He was of a middle stature, rather lean than fat. His mien was low and dejected, his air gloomy, and his aspect stern. He slept little, and was very sober. Though naturally sour and morose, he knew how to act the lover, and had mistresses. He was of a slow conception, but spoke judiciously of every thing after he had once comprehended it. He understood business perfectly well, and he pursued it with unwearied application. Thus he filled the most important places with high reputation and credit; and his influence diffused itself through every part of the government. He restored the finances, the navy, the commerce: and he erected those various works of art, which have ever since been monuments of his taste and magnificence. He was a lover of learning, though he never applied to it himself; and therefore conferred donations and pensions upon scholars in other countries, while he established and protected academies in his own. He invited into France painters, statuaries, mathematicians, and artists of all kinds, who were any way eminent: thus giving new life to the sciences, and making them flourish, as they did, exceedingly. Upon the whole, he was a wise, active, generous-spirited minister; ever attentive to the interests of his master, the happiness of the people, the progress of arts and manufactures, and in short to every thing that could advance the credit and interest of his country. He was a pattern for all ministers of state; and every nation may wish themselves blessed with a Colbert.

COLCHESTER, the capital of the county of Essex in England. It is by some thought to be the place mentioned by Antoninus under the name of *Colonia*, different from *Colonia Camaloduni*, and by the Saxons called *Caer Colin*. It is a beautiful, populous, and pleasant town, extended on the brow of a hill from east

Colbert;
Colchester.

Colchi,
Colchicum.

east to west, and adorned with 10 churches. It had formerly strong walls and a castle, but now there are scarce any remains of either. This place is said to have given birth to Pl. Julia Helena, mother to Constantine the Great, and daughter to king Coelus, so much celebrated for her piety and zeal in propagating the Christian religion. Here, and in the neighbouring towns, is a great manufacture of bays and saffron. It is also famous for its oysters; in pickling and barrelling which, the inhabitants excel. The rendering navigable the river Coln, on which the town stands, has greatly promoted its trade and manufactures. The town had formerly an abbey whose abbot was mitred and sat in parliament. In the time of the civil wars it was besieged by the parliament's troops and reduced by famine. It was formerly a corporation, but lately lost its charter for some misdemeanor; however, it still sends two members to parliament. E. Long. 1. 2. N. Lat. 51. 55.

COLCHI (Arrian, Ptolemy), a town of the Hither India; thought to be *Cochin*, on the coast of Malabar; now a factory and strong fort of the Dutch. E. Long. 75. 0. N. Lat. 10. 0.

COLCHICUM, MEADOW-SAFFRON: A genus of the trigynia order, belonging to the hexandria class of plants; and in the natural method ranking under the ninth order, *Spathaceae*. The corolla is sexpartite, with its tube radicated, or having its root in the ground; there are three capsules, connected and inflated. There are three species, all of them bulbous-rooted, low, perennials, possessing the singular property of their leaves appearing at one time, and their flowers at another; the former rising long and narrow from the root in the spring, and decaying in June; the flowers, which are monopetalous, long, tubular, erect, and six-parted, rise naked from the root in autumn, not more than four or five inches high. Their colours afford a beautiful variety; being purple, variegated purple, white, red, rose-coloured, yellow, &c. with single and double flowers. They are all hardy plants, inasmuch that they will flower though the roots happen to lie out of the ground; but by this they are much weakened. They are propagated by offsets from the roots, of which they are very prolific. These are to be taken up and divided at the decay of the leaf in summer, planting the whole again before the middle of August. They are to be placed at nine inches distance from one another, and three inches deep in the ground.

The root of this plant is poisonous. When young and full of sap, its taste is very acrid; but when old, mealy and faint. Two drachms of it killed a large dog in 13 hours, operating violently by stool, vomit, and urine. One grain of it swallowed by a healthy man, produced heats in the stomach, and soon after flushing heats in different parts of the body, with frequent shiverings, followed by colicky pains; after which an itching in the loins and urinary passages was perceived; then came on a continual inclination to make water, a tenesmus, pain in the head, quick pulse, thirst, and other disagreeable symptoms. Notwithstanding these effects, however, an infusion of the roots in vinegar, formed into a syrup with honey or sugar, proves a safe and powerful pectoral and diuretic, and is often of

service in dropsies, &c. The virtues of colchicum seem much to resemble those of squills. The hermodactyl of the shops is said to be the root of the variegatum, a species of this genus.

COLCHIS, a country of Asia, at the south of Asiatic Sarmatia, east of the Euxine Sea, north of Armenia, and west of Iberia. It is famous for the expedition of the Argonauts, and as the birth-place of Medea. It was fruitful in poisonous herbs, and produced excellent flax. The inhabitants were originally Egyptians, who settled there when Sesostris king of Egypt extended his conquests in the north.

COLCOTHAR, the substance remaining after the distillation or calcination of martial vitriol by a violent fire. See CHEMISTRY, n^o 621.

COLD, in a relative sense, signifies the sensation which accompanies a transition of the fine vessels of the human body from an expanded to a more contracted state. In an absolute sense, it signifies the cause of this transition; or, in general, the cause of the contraction of every substance, whether solid or fluid, in nature.

The arguments concerning the substance of cold in the abstract, are discussed under the article CHEMISTRY, to which we must at present refer the reader. In that article it is observed, that cold naturally tends to make bodies electric which are not so naturally, and to increase the electric properties of those which are: and in confirmation of the hypothesis there advanced, it may be observed, that all bodies do not transmit cold equally well; but that the best conductors of electricity, viz. metals, are likewise the best conductors of cold. We may also add, that when the cold has been carried to such an extremity as to render any body an electric, it then ceases to conduct the cold as well as formerly. This is exemplified in the practice of the Laplanders and Siberians, where the cold in winter is extremely severe. In order to exclude it from their habitations the more effectually, they cut pieces of ice, which in the winter time must always be electric in these countries, and put them into their windows; which they find to be much more effectual in keeping out the cold than any other substance.

Cold, as well as heat, may be produced artificially, though we have no method of making cold increase itself as heat will do. The reason of this easily appears from what is said on the subject of cold under the article CHEMISTRY: for if this consists in a partial cessation of motion in the elementary fluid, it is plain, that though we may partly put an end to this motion in a very small part of it; yet that of the surrounding atmosphere extending for an immense way farther than we can extend our influence, will quickly counteract our operations, and reduce the bodies to the same temperature they were of before. Though there are therefore some liquids which by mixture will produce considerable degrees of cold; yet by being left to the action of the surrounding warm atmosphere, the heat is quickly communicated from it to them, and the effect of the mixture ceases. The case is very different with heat; for this fluid, of itself naturally very much inclined to motion, no sooner finds an opportunity of exerting its action, than vast quantities of what was formerly at rest rush from all quarters to the place where

Colchis
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Cold.

¹ Definition.

² Cold tends to make bodies electric.

³ Bodies rendered electric by cold, conduct it less readily than formerly.

⁴ Why cold cannot increase itself like heat.

Cold.

where the action has commenced, and continue it until the equilibrium is restored, as is particularly explained under the article CHEMISTRY.

5
Degrees of cold produced by various saline mixtures.

The power of producing cold belongs particularly to bodies of the saline class. In a paper of the Philosophical Transactions, N^o 274, Mr Geoffroy gives an account of some remarkable experiments with regard to the production of cold. Four ounces of sal ammoniac dissolved in a pint of water, made his thermometer descend two inches and three quarters in less than fifteen minutes. An ounce of the same salt put into four or five ounces of distilled water, made the thermometer descend two inches and a quarter. Half an ounce of sal ammoniac mixed with three ounces of spirit of nitre, made the thermometer descend two inches and five lines; but on using spirit of vitriol instead of nitre, it sunk two inches and six lines. In this last experiment it was remarked, that the vapours raised from the mixture had a considerable degree of heat, though the liquid itself was so extremely cold. Four ounces of saltpetre mixed with a pint of water, sunk the thermometer one inch three lines; but a like quantity of sea-salt sunk it only two lines. Acids always produced heat, even common salt with its own spirit. Volatile alkaline salts produced cold in proportion to their purity, but fixed alkalies heat.

The greatest degree of cold produced by the mixture of salts and aqueous fluids was that shown by M. Homberg; who gives the following receipt for making the experiment: "Take a pound of corrosive sublimate, and as much sal ammoniac; powder them separately, and mix the powders very exactly; put the mixture into a vial, pouring upon it a pint and a half of distilled vinegar, shaking all well together." This composition grows so cold, that a man can scarce hold it in his hands in summer; and it happened, as M. Homberg was making the experiment, that the subject froze. The same thing once happened to M. Geoffroy in making an experiment with sal ammoniac and water, but it never was in his power to make it succeed a second time.

6
Of mixtures with ice and snow.

If, instead of making these experiments, however, with fluid water, we take it in its congealed state of ice, or rather snow, degrees of cold will be produced vastly superior to any we have yet mentioned. A mixture of snow and common salt sinks Fahrenheit's thermometer to 0; potashes and powdered ice sink it eight degrees farther; two affusions of spirit of salt on pounded ice sunk it below $14\frac{1}{2}^{\circ}$ below 0; but by repeated affusions of spirit of nitre Mr Fahrenheit sunk it to 40° below 0. This is the ultimate degree of cold which the mercurial thermometer will measure: because the mercury itself begins then to congeal; and therefore we must afterwards have recourse to spirit of wine, naphtha, or some other fluid which will not congeal. The greatest degree of cold hitherto producible by artificial means has been 80° below 0; which was done at Hudson's Bay by means of snow and vitriolic acid, the thermometer standing naturally at 20° below 0. Greater degrees of cold than this have indeed been supposed. Mr Martin, in his Treatise on Heat, relates, that at Kirenga in Siberia, the mercurial thermometer sunk to 118° below 0; and Professor Brown at Peterfburg, when he made the first experiment of congealing quicksilver, fixed the point of congelation at 350°

Cold.

below 0; but Dr Black, as soon as the experiment was made known in this country, observed, that in all probability the point of congelation was far above this. His reasons for supposing this to be the case were, that the mercury descended regularly only to a certain point, after which it would descend suddenly and by starts 100 degrees at a time. This, he conjectured, might proceed from the irregular contraction of the metal after it was congealed; and he observed, that there was one thermometer employed in the experiment which was not frozen, and which did not descend so low by a great many degrees. Experience has since verified his conjecture; and it is now generally known, that 40° below 0 is the freezing point of quicksilver.

Since the discovery of the possibility of producing cold by artificial means, various experiments have been made on the efficacy of saline substances in this way; all of which, when properly applied, are found to have a considerable degree of power. Dr Boerhaave found, that both sal ammoniac and nitre, when well dried in a crucible, and reduced to fine powder, will produce a greater degree of cold than if they had not been treated in this manner. His experiments were repeated by Mr Walker apothecary to the Redcliffe Infirmary in Oxford with the same result: but he found, that his thermometer sunk 32° by means of a solution of sal ammoniac; when Boerhaave's, with the same, fell only 28° . Nitre sunk it 19° . On mixing the two salts together, he found that the power of producing cold was considerably increased. By equal parts of these salts, he cooled some water to 22° , the thermometer standing at 47° in the open air. Adding to this some powder of the same kind, and immersing two small phials in the mixture, one containing boiled and the other unboiled water, he soon found them both frozen, the unboiled water freezing first.

7
Mr Walker's experiments.

Having observed that Glauber's salt, when it retains the water of crystallization, produces cold during its solution, he tried its power when mixed with the other salts, and thus sunk the thermometer from 65° to 19° ; and thus he was able to freeze water when the thermometer stood as high as 70° . And, lastly, by first cooling the salts in water in one mixture, and then making another of the cooled thermometers, he was able to sink the thermometer 64° . Thus he froze a mixture of spirit of wine and water in the proportion of seven of the latter to one of the former; and by adding a quantity of cooled materials to the mixture in which this was frozen, the thermometer sunk to -4 , or 69° . Spirit of nitre diluted with water reduced the thermometer to -3 ; and, by the addition of sal ammoniac, to -15 . Nitrous ammoniac reduced it from 50° to 15 ; but the cold was not augmented by the addition of sal ammoniac or nitre.

The most remarkable experiment, however, was His method of freezing Quicksilver. The most remarkable experiment, however, was His method of freezing Quicksilver. The effect of which was found to be similar to that of the same spirit poured on ice or snow; and the addition of sal ammoniac rendered the cold still more intense. The proportions of these ingredients recommended by Mr Walker are concentrated nitrous acid two parts by weight, water one part; of this mixture cooled to the temperature of the atmosphere 18 ounces, of Glauber's salt a pound and an half avoirdupois, and of sal ammoniac 12 ounces. On adding the Glauber's salt to

Cold.

the nitrous acid, the thermometer fell from 50° to -1° , or 52° degrees; and on the addition of the sal ammoniac, to -9° . Thus Mr Walker was able to freeze quicksilver without either ice or snow, when the thermometer stood at 45° . For the experiment four pans were procured of different sizes, so that one might be put within the other. The largest of these pans was placed in a vessel still larger, in which the materials for the second frigorific mixture were thinly spread in order to be cooled; the second pan, containing the liquor, *viz.* the vitriolic acid properly diluted, was placed in the largest pan; the third pan, containing the salts for the third mixture, was immersed in the liquor of the second pan; and the liquor for the third mixture was put into wide-mouthed phials, which were immersed in the second pan likewise, and floated round the third pan; the fourth pan, which was the smallest of all, containing its cooling materials, was placed in the midst of the salts of the third pan. The materials for the first and second mixtures consisted of diluted vitriolic acid and Glauber's salt; the third and fourth of diluted nitrous acid, Glauber's salt, and sal ammoniac, in the proportions above mentioned. The pans being adjusted in the manner already mentioned, the materials of the first and largest pan were mixed: this reduced the thermometer to 10° , and cooled the liquor in the second pan to 20° ; and the salts for the second mixture, which were placed underneath in the large vessel, nearly as much. The second mixture was then made with the materials thus cooled, and the thermometer was reduced to 3° . The ingredients of the third mixture, by immersion in this, were cooled to 10° ; and, when mixed, reduced the thermometer to -15° . The materials for the fourth mixture were cooled by immersion in this third mixture to about -12° . On mixture they sunk the mercury very rapidly, and seemingly below -40° , though the froth occasioned by the ebullition of the materials prevented any accurate observation. The reason why this last mixture reduced the thermometer more than the third, though both were of the same materials, and the latter of a lower temperature, was supposed to have been partly because the fourth pan had not another immersed in it to give it heat, and partly because the materials were reduced to a finer powder.

The experiments were repeated with many variations; but only one mixture appeared to Dr Beddoes, by whom the account was communicated to the Royal Society, to be applicable to any useful purpose. This is oil of vitriol diluted with about an equal quantity of water; which, by dissolving Glauber's salt, produces about 46° of cold, and by the addition of sal ammoniac becomes more intense by a few degrees. At one time, when Mr Walker was trying a mixture of two parts of oil of vitriol and one of water, he perceived, that at the temperature of 35° the mixture coagulated as if frozen, and the thermometer became stationary; but on adding more Glauber's salt, it fell again in a short time: but less cold was produced than when this circumstance did not occur, and when the acid was weaker. The same appearance of coagulation took place with other proportions of acid and water, and with other temperatures.

It is observable, that this effect of Glauber's salt in producing cold took place only when it was possessed

of its water of crystallization; and thus the mineral alkali also augmented the cold of some of the mixtures: but when the water of crystallization was dissipated, neither of them had any effect of this kind. "This circumstance (says Dr Beddoes) leads us in some measure to the theory of the phenomenon. Water undoubtedly exists in a solid state in crystals; it must therefore, as in other cases, absorb a determinate quantity of fire before it can return to its liquid state. On this depends the difference between Glauber's salt and mineral alkali in its different states of crystallization and efflorescence. The same circumstance, too, enables us to understand the great effect of Glauber's salt; which, as far as I understand, has the greatest quantity of water of crystallization." On this the reviewers remark, that "if in summer the water brought from a deep well is at 52° , in this cheap and easy way it might be reduced to 12° ; and wine placed in it would be chilled."

These excessive degrees of cold occur naturally in many parts of the globe in the winter-time. It is true, we are very much unacquainted with them in this country: yet in the winter of 1780, Mr Wilson of Glasgow observed, that a thermometer laid on the snow sunk to 25° below 0; but this was only for a short time; and in general our atmosphere does not admit of very great degrees of cold for any length of time. Mr Derham, however, in the year 1708, observed in England, that the mercury stood within one-tenth of an inch of its station when plunged into a mixture of snow and salt. In 1732, the thermometer at Peterburg stood at 28° below 0; and in 1737, when the French academicians wintered at the north polar circle, or near it, the thermometer sunk to 33° below 0; and in the Asiatic and American continents, still greater degrees of cold are very common.

The effects of these extreme degrees of cold are very surprising. Trees are burst, rocks rent, and rivers and lakes frozen, several feet deep: metallic substances blister the skin like red-hot iron: the air, when drawn in by respiration, hurts the lungs, and excites a cough: even the effects of fire in a great measure seem to cease; and it is observed, that though metals are kept for a considerable time before a strong fire, they will still freeze water when thrown upon them. When the French mathematicians wintered at Tornea in Lapland, the external air, when suddenly admitted into their rooms, converted the moisture of the air into whirls of snow; their breaths seemed to be rent when they breathed it, and the contact of it was intolerable to their bodies; and the spirit of wine, which had not been highly rectified, burst some of their thermometers by the congelation of the aqueous part.

Extreme cold very often proves fatal to animals in those countries where the winters are very severe; and thus 7000 Swedes perished at once in attempting to pass the mountains which divide Norway from Sweden. It is not necessary, indeed, that the cold, in order to prove fatal to the human life, should be so very intense as has been just mentioned. There is only requisite a degree somewhat below 32° of Fahrenheit, accompanied with snow or hail, from which shelter cannot be obtained. The snow which falls upon the clothes, or the uncovered parts of the body, then melts, and by a continual evaporation carries off the animal heat to

Cold.

9
Observations on the experiment.

Cold
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Colding-
ham.

such a degree, that a sufficient quantity is not left for the support of life. In such cases, the person first feels himself extremely chill and uneasy; he begins to turn listless, unwilling to walk or use exercise to keep himself warm; and at last turns drowsy, sits down to refresh himself with sleep, but wakes no more. An instance of this was seen not many years ago at Terra del Fuego; where Dr Solander, with some others, having taken an excursion up the country, the cold was so intense, that one of their number died. The Doctor himself, though he had warned his companions of the danger of sleeping in that situation, yet could not be prevented from making that dangerous experiment himself; and though he was awaked with all possible expedition, his body was so much shrunk in bulk, that his shoes fell off his feet, and it was with the utmost difficulty that he was recovered.

In those parts of the world where vast masses of ice are produced, the accumulation of it, by absorbing the heat of the atmosphere, occasions an absolute sterility in the adjacent countries, as is particularly the case with the island of Iceland; where the vast collections of ice floating out from the Northern Ocean, and stopped on that coast, are sometimes several years in thawing. Indeed, where great quantities of ice are collected, it would seem to have a power like fire, both augmenting its own cold and that of the adjacent bodies. An instance of this is related under the article EVAPORATION, in Mr Wedgewood's experiment, where the true cause of this phenomenon is also pointed out.

COLD, in medicine. See MEDICINE-Index.

COLD, in farriery. See there, § iii.

COLDENIA, in botany: A genus of the tetragynia order, belonging to the tetrandria class of plants; and in the natural method ranked among those the order of which is doubtful. The calyx is tetraphyllous; the corolla funnel-shaped; the styles four; the seeds two and bilocular. There is but one species, a native of India. It is an annual plant, whose branches trail on the ground, extending about six inches from the root. They are adorned with small blue flowers growing in clusters, which come out from the wings of the leaves. They are propagated by seeds sown on a hot-bed; when the plants come up, they may be removed each into a separate pot, and plunged into a hot-bed of tanner's bark, where they are to remain constantly.

COLDINGHAM, supposed to be the *Colonia* of Ptolemy, and called by Bede the city Coldana and of Colud (*Coludum*), situated on the borders of Scotland, about two miles from Eymouth, was a place famous many ages ago for its convent. This was the oldest nunnery in Scotland, for here the virgin-wife Etheldreda took the veil in 670; but by the ancient name *Coludum* it should seem that it had before been inhabited by the religious called *Culdees*. In 870 it was destroyed by the Danes, but its name rendered immortal by the heroism of its nuns; who, to preserve themselves inviolate from those invaders, cut off their lips and noses; and thus rendering themselves objects of horror, were, with their abbess Ebba, burnt in the monastery by the disappointed savages. After this it lay deserted till the year 1098, when king Edgar founded on its site a priory of benedictines in honour of St Cuthbert, and bestowed it on the monks of Durham.

Mr Pennant's description of the black, joyless,

heathy moor, where it was situated, might be sufficient to guard the fair inhabitants of the nunnery were it still subsisting. That description, however, is now altogether inapplicable: The whole tract, five miles over, has been since improved, and converted into corn fields; the cheerless village of Old Cambus is no more; a decent inn with good accommodations has been established at a convenient distance; and the passage of the steep glen called the *Pease*, which terminates the moor on the road towards Edinburgh, and was formerly the terror of travellers, is now rendered safe and easy by means of a bridge extending from one side of the chain to the other.

COLDINGUEN, a town of Denmark, in North Jutland, and diocese of Ripen. It is remarkable for its bridge, over which pass all the oxen and other cattle that go from Jutland into Germany, which brings in a considerable revenue to the king. It is seated on an eminence, in a pleasant country abounding with game. E. Long. 9. 25. N. Lat. 55. 35.

COLD FINCH, a species of MOTACILLA.

COLD-SHIRE IRON, that which is brittle when cold.

COLE (William), the most famous botanist of his time, was born at Adderbury in Oxfordshire, about the year 1626, and studied at Merton college in Oxford. He at length removed to Putney, near London; and published "The Art of Simpling; and Adam in Eden, or Nature's Paradise." Upon the restoration of king Charles II. he was made secretary to Dr Duppa, bishop of Winchester; but died two years after, aged 37.

COLE-FISH, a species of GADUS.

COLE-Seed, the seed of the *napus sativa*, or long-rooted, narrow-leaved rapa, called in English *navew*, and reckoned by Linnæus among the brassicas, or cabbage-kind. See BRASSICA.

This plant is cultivated to great advantage in many parts of England, on account of the rape oil expressed from its seeds. The practice of sowing it was first introduced by those Germans and Dutchmen who drained the fens of Lincolnshire; and hence the notion hath generally prevailed, that it will thrive only in a marshy soil; but this is now found to be a mistake. In preparing the land which is to receive it, care must be taken to plow it in May, and again about midsummer, making the ground as fine and even as possible. It is to be sown the very day of the last plowing, about a gallon on an acre. In the months of January, February, and March, it affords very good food for cattle, and will sprout again when cut; after which it is excellent nourishment for sheep. After all, if it is not too closely fed, it will bear seed against next July. The same caution, however, is requisite with this food as with clover, till cattle are accustomed to it, otherwise it is apt to swell them. When this plant is cultivated solely with a view to the seed, it must be sown on deep strong land without dung, and must be suffered to stand till one-half of the seeds at least are turned brown; which, according to the seasons, will be sometimes sooner sometimes later. In this state it is to be cut in the same manner and with the same care as wheat; and every handful as it is cut is to be regularly ranged on sheets, that it may dry leisurely in the sun, which will commonly be in a fortnight; after which it is to be carefully threshed out, and carried

Coldinguen
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Cole.

Coleoptera

Colet.

ried to the mill for expressing the oil. The produce of cole-seed is generally from five to eight quarters on an acre; and is commonly sold at 20s. *per* quarter.

COLEOPTERA, or BEEBLE, the name of Linnaeus's first order of insects. See ZOOLOGY.

COLEWORT. See BRASSICA.

COLERAIN, a large town of Ireland, in the county of Londonderry and province of Ulster; seated on the river Bann, four miles south of the ocean, in W. Long. 7. 2. N. Lat. 55. 10. It was formerly a place of great consideration, being the chief town of a county erected by Sir John Perrot, during his government of Ireland; whereas it is now only the head of one of the baronies in the county of Londonderry; but it is still a corporation, and sends two members to parliament. It is of a tolerable size, and very elegantly built. The port is very indifferent, occasioned by the extreme rapidity of the river, which repels the tide, and makes the coming up to the town difficult; so that it has but little trade, and might perhaps have less, if it was not for the valuable salmon fishery, which amounts to some thousand pounds a-year. If the navigation of the Bann could be opened, which is totally obstructed by a ridge of rocks, it would quickly change the face of things; for then, by the help of this river, and the Newry canal, there would be a direct communication across the kingdom, and, with the assistance of the Black-water river, which likewise falls into Lough Neagh, almost all the counties of the province of Ulster might have a correspondence with each other by water-carriage, to their reciprocal and very great emolument.

COLES (Elisha), author of the well known Latin and English dictionary, was born in Northamptonshire about the year 1640; and was entered of Magdalene College Oxford, which he left without taking a degree; and taught Latin to young people, and English to foreigners, in London, about the year 1663. He afterwards became an usher in Merchant-taylor's school; but for some great fault, nowhere expressly mentioned, he was forced to withdraw to Ireland, whence he never returned. He was, however, a good critic in the English and Latin tongues; and wrote several useful books of instruction in his profession.

COLET (John), dean of St Paul's, the son of Henry Colet knight, was born in London in the year 1466. His education began in St Anthony's school in that city, from whence, in 1483, he was sent to Oxford, and probably to Magdalene college. After seven years study of logic and philosophy, he took his degrees in arts. About the year 1493, Mr Colet went to Paris, and thence to Italy, probably with a design to improve himself in the Greek and Latin languages, which at this time were imperfectly taught in our universities. On his return to England in 1497, he took orders; and returned to Oxford, where he read lectures *gratis*, on the epistles of St Paul. At this time he possessed the rectory of Dennington in Suffolk, to which he had been instituted at the age of 19. He was also prebendary of York, and canon of St Martin's le Grand in London. In 1502 he became prebendary of Sarum; prebendary of St Paul's in 1505; and immediately after dean of that cathedral, having previously taken the degree of doctor of divinity. He was no sooner raised to this dignity, than he introduced the practice

of preaching and expounding the scriptures; and soon after established a perpetual divinity lecture in St Paul's church, three days in every week; an institution which gradually made way for the reformation. About the year 1508, dean Colet formed his plan for the foundation of St Paul's school, which he completed in 1512, and endowed with estates to the amount of L. 122 and upwards. The celebrated grammarian, William Lilye, was his first master, and the company of mercers were appointed trustees. The dean's notions of religion were so much more rational than those of his cotemporary priests, that they deemed him little better than a heretic; and on that account he was so frequently molested, that he at last determined to spend the rest of his days in peaceful retirement. With this intention he built a house near the palace at Richmond; but, being seized with the sweating sickness, he died in 1519, in the 53d year of his age. He was buried on the south side of the choir of St Paul's; and a stone was laid over his grave, with no other inscription than his name. Besides the preferments above mentioned, he was rector of the guild of Jesus at St Paul's, and chaplain to king Henry VIII. Dean Colet, though a papist, was an enemy to the gross superstitions of the church of Rome. He disapproved auricular confession, the celibacy of the priests, and such other ridiculous tenets and ceremonies as have ever been condemned by men of sound understanding in every age and country. He wrote, 1. *Rudimenta grammatices*. 2. The construction of the eight parts of speech. 3. Daily devotions. 4. *Epistola ad Erasmus*. 5. Several sermons; and other works which still remain in manuscript.

COLIBERTS (*Coliberti*), in law, were tenants in soccage, and particularly such villeins as were manumitted or made freemen. But they had not an absolute freedom; for though they were better than servants, yet they had superior lords to whom they paid certain duties, and in that respect might be called servants, though they were of middle condition between freemen and servants.

COLIC, a severe pain in the lower venter, so called because the colon was formerly supposed to be the part affected. See MEDICINE-Index.

COLIC, in farriery. See there, § xiii.

COLIGNI (Gaspard de), admiral of France, was born in 1516. He signalized himself in his youth, in the reigns of Francis I. and Henry II. and was made colonel of infantry and admiral of France in 1552. Henry II. employed him in the most important affairs; but after the death of that prince, he embraced the reformed religion, and became the chief of the Protestant party: he strongly opposed the house of Guise, and rendered this opposition so powerful, that it was thought he would have overturned the French government. On the peace made after the battles of Jarnac and Montcontour, Charles IX. deluded Coligni into security by his deceitful favours; and though he recovered one attempt on his life, when he attended the nuptials of the prince of Navarre, yet he was included in the dreadful massacre of the Protestants on St Bartholomew's-day 1572, and his body treated with wanton brutality by a misguided Popish populace.

COLIMA, a sea-port town of Mexico in North America, and capital of a fertile valley of the same name.

Coliberts

Colima.

Colioure name. It is seated at the mouth of a river in W. Long. 109. 6. N. Lat. 18. 30.

COLIOURE, a small, but ancient and strong town of France, in Rouffillon, seated at the foot of the Pyrenean mountains, with a small harbour. E. Long. 3. 10. N. Lat. 43. 24.

COLIR, an officer in China, who may properly be called an inspector, having an eye over what passes in every court or tribunal of the empire. In order to render him impartial, he is kept independent, by having his post for life. The power of the colirs is such, that they make even the princes of the blood tremble.

COLISEUM, or COLISÆUM, in the ancient architecture, an oval amphitheatre, built at Rome by Vespasian, in the place where stood the basin of Nero's gilded house. The word is formed from *colosseum*, on account of the colossus of Nero that stood near it; or, according to Nardini, from the Italian *coliseo*. In this were placed statues, representing all the provinces of the empire; in the middle whereof stood that of Rome, holding a golden apple in her hand. The same term, *coliseum*, is also given to another amphitheatre of the emperor Severus. In these *colisea* were represented games, and combats of men and wild beasts; but there are now little remaining of either of them, time and war having reduced them to ruins.

COLITES, in natural history, a name given by some writers to a kind of pebble, found in the shape of the human penis and testes, and that either separately or both together.

COLLAERT (Adrian), an eminent engraver who flourished about 1550, was born at Antwerp. After having learned in his own country the first principles of engraving, he went to Italy, where he resided some time to perfect himself in drawing. He worked entirely with the graver, in a firm neat style, but rather stiff and dry. The vast number of plates executed by his hand sufficiently evince the facility with which he engraved; and though exceedingly neat, yet they are seldom highly finished.

COLLAERT (Hans or John), son to the foregoing, was also an excellent artist. He drew and engraved exactly in the style of his father; and was in every respect equal to him in merit. He must have been very old when he died; for his prints are dated from 1555 to 1622. He assisted his father in all his great works, and engraved besides a prodigious number of plates of various subjects. One of his best prints is *Moses striking the rock*, a large print, lengthwise, from Lambert Lombard. A great number of small figures are introduced into this print; and they are admirably well executed: the heads are fine, and the drawing very correct.

COLLAR, in Roman antiquity, a sort of chain put generally round the neck of slaves that had run away, after they were taken, with an inscription round it, intimating their being deserters, and requiring their being restored to their proper owners, &c.

COLLAR, in a more modern sense, an ornament consisting of a chain of gold, enamelled, frequently set with ciphers or other devices, with the badge of the order hanging at the bottom, wore by the knights of several military orders over their shoulders, on the mantle, and its figure drawn round their armories.

Thus, the collar of the order of the garter consists

of S. S. with roses enamelled red, within a garter enamelled blue, and the George at the bottom.

Lord Mayor's COLLAR is more usually called chain. See CHAIN.

Knights of the COLLAR, a military order in the republic of Venice, called also the order of St Mark, or the medal. It is the doge and the senate that confer this order; the knights bear no particular habit, only the collar, which the doge puts around their neck, with a medal, wherein is represented the winged lion of the republic.

COLLAR of a Draught-horse, a part of harness made of leather and canvas, and stuffed with straw or wool, to be put about the horse's neck.

COLLARAGE, a tax or fine laid for the collars of wine-drawing horses.

COLLATERAL, any thing, place, country, &c. situated by the side of another.

COLLATERAL, in genealogy, those relations which proceed from the same stock, but not in the same line of ascendants or descendants, but being, as it were, aside of each other. Thus, uncles, aunts, nephews, nieces, and cousins, are collateral, or in the same collateral line: those in a higher degree, and nearer the common root, represent a kind of paternity with regard to those more remote. See CONSANGUINITY.

COLLATERAL Succession. When a defunct, for want of heirs descended of himself, is succeeded in his estate by a brother or sister, or their descendants, the estate is said to have gone to *collateral heirs*.

COLLATIA (anc. geog.), a town of the Sabines; thought to be distant between four or five miles out of Rome to the east; situated on an eminence (Virgil). Of this place was Tarquinius Collatinus, married to Lucretia, ravished by Sextus Tarquinius (Livy); situated on this or on the left side of the Anio (Pliny). Extant in Cicero's time, but in Strabo's day only a village; now no trace remains of it.—Another supposed *Collatia* of Apulia, near mount Garganus; because Pliny mentions the *Collatini* in Apulia, and Frontinus the *Ager Collatinus*.

COLLATINA PORTA, a gate of Rome, at the Collis Hortulorum, afterwards called *Pinciana*, from the Pincii, a noble family. Its name *Collatina* is from *Collatia*, to the right of which was the Via Collatina, which led to that town.

COLLINA, a gate of Rome at the Collis Quirinalis, not far from the temple of Venus Erycina (Ovid); called also *Salaria*, because the Sabines carried their salt through it (Tacitus). Now *Salara*.

COLLATION, in the canon law, the giving or bestowing of a benefice on a clergyman by a bishop, who has it in his own gift or patronage. It differs from institution in this, that institution is performed by the bishop, upon the presentation of another; and collation is his own act of presentation: and it differs from a common presentation, as it is the giving of the church to the person, and presentation is the giving or offering of the person to the church. But collation supplies the place of presentation and institution; and amounts to the same as institution where the bishop is both patron and ordinary. Anciently the right of presentation to all churches was in the bishop; and now if the patron neglects to present to a church, then this right returns to the bishop by collation: if the bishop neglects to collate within six months

Collation
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Collect.

after the elapse of the patron, then the archbishop hath a right to do it; and if the archbishop neglects, then it devolves to the king; the one as superior, to supply the defects of bishops, the other as supreme, to supply all defects of government.

COLLATION, in common law, the comparison or presentation of a copy to its original, to see whether or not it be conformable; or the report or act of the officer who made the comparison. A collated act is equivalent to its original, provided all the parties concerned were present at the collation.

COLLATION, in Scots law, that right which an heir has of throwing the whole heritable and moveable estates of the deceased into one mass, and sharing it equally with the others in the same degree of kindred, when he thinks such share will be more than the value of the heritage to which he had an exclusive title.

COLLATION is also used among the Romanists for the meal or repast made on a fast-day, in lieu of a supper. Only fruits are allowed in a collation: F. Lobineau observes, that anciently there was not allowed even bread in the collations in Lent, nor any thing beside a few comfits and dried herbs and fruits; which custom, he adds, obtained till the year 1513. Cardinal Humbert observes further, that in the middle of the 11th century there were no collations at all allowed in the Latin church in the time of Lent; and that the custom of collations was borrowed from the Greeks, who themselves did not take it up till about the 11th century.

COLLATION is also popularly used for a repast between meals, particularly between dinner and supper. The word collation, in this sense, Du-Cange derives from *collocutio*, "conference;" and maintains, that originally collation was only a conference, or conversation on subjects of piety, held on fast days in monasteries; but that, by degrees, the custom was introduced of bringing in a few refreshments; and that by the excesses to which those sober repasts were at length carried, the name of the abuse was retained, but that of the thing lost.

COLLATION of Seals, denotes one seal set on the same label, on the reverse of another.

COLLEAGUE, a partner or associate in the same office or magistrature. See **ADJUNCT**.

COLLECT, **COLLECTION**, a voluntary gathering of money, for some pious or charitable purpose. Some say, the name *collect*, or *collection*, was used, by reason those gatherings were anciently made on the days of *collects*, and in *collects*, i. e. in assemblies of Christians; but, more probably, *quia colligebatur pecunia*.

COLLECT is sometimes also used for a tax, or imposition, raised by a prince for any pious design. Thus, histories say, that in 1166, the king of England, coming into Normandy, appointed a collect for the relief of the holy land, at the desire and after the example of the king of France. See **CROISADE**.

COLLECT, in the liturgy of the church of England, and the mass of the Romanists, denotes a prayer accommodated to any particular day, occasion, or the like. See **LITURGY**, and **MASS**.

In the general, all the prayers in each office are called *collects*; either because the priest speaks in the name of the whole assembly, whose sentiments and desires he sums up by the word *oremus*, "let us pray," as is observed by pope Innocent III. or, because those

prayers are offered when the people are assembled together, which is the opinion of Pamelius on Tertullian.

The congregation itself is in some ancient authors called *collecta*. The popes Gelasius and Gregory are said to have been the first who established *collects*. Despence, a doctor of the faculty of Paris, has an express treatise on *collects*, their origin, antiquity, authors, &c.

COLLECTIVE, among grammarians, a term applied to a noun expressing a multitude, though itself be only singular; as an army, company, troop, &c. called *collective nouns*.

COLLECTOR, in general, denotes a person who gets or brings together things formerly dispersed and separated. Hence,

COLLECTOR, in matters of civil polity, is a person appointed by the commissioners of any duty, the inhabitants of a parish, &c. to raise or gather any kind of tax.

COLLECTOR, among botanists, one who gets together as many plants as he can, without studying botany in a scientific manner.

COLLEGATORY, in the civil law, a person who has a legacy left him in common with one or more other persons.

COLLEGE, an assemblage of several bodies or societies, or of several persons into one society.

College, among the Romans, seized indifferently for those employed in the offices of religion, of government, the liberal and even mechanical arts and trades; so that, with them, the word signified what we call a corporation or company.

In the Roman empire, there were not only the *college of augurs*, and the *college of capitolini*, i. e. of those who had the superintendance of the capitoline games; but also colleges of artificers, *collegia artificum*; college of carpenters, *fabricorum*, or *fabrorum tignariorum*; of potters, *figulorum*; of founders, *arariorum*; the college of locksmiths, *fabrorum ferrariorum*; of engineers of the army, *tignariorum*; of butchers, *laniorum*; of dendrophori, *dendrophororum*; of centonaries, *centonariorum*; of makers of military casques, *sagariorum*; of tent-makers, *tabernaculariorum*; of bakers, *pisforum*; of musicians, *tibicinum*, &c. Plutarch observes, that it was Numa who first divided the people into colleges; which he did to the end that each consulting the interests of their college, whereby they were divided from the citizens of the other colleges, they might not enter into any general conspiracy against the public repose.

Each of these colleges had distinct meeting-places or halls; and likewise, in imitation of the state, a treasury and common chest, a register, and one to represent them upon public occasions, and acts of government. These colleges had the privilege of manumitting slaves, of being legates, and making by-laws for their own body, provided they did not clash with those of the government.

There are various colleges on foot among the moderns, founded on the model of those of the ancients. Such are the three colleges of the empire, *viz.*

COLLEGE of Electors, or their Deputies, assembled in the diet of Ratisbon.

COLLEGE of Princes; the body of princes, or their deputies, at the diet of Ratisbon.

COLLEGE of Cities, is, in like manner, the body of deputies which the imperial cities send to the diet.

COLLEGE of Cardinals, or the **Sacred COLLEGE**; a body

Collective
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College.

lege. body composed of the three orders of cardinals. See CARDINALS.

COLLEGE is also used for a public place endowed with certain revenues, where the several parts of learning are taught.

An assemblage of several of these colleges constitute an university. The erection of colleges is part of the royal prerogative, and not to be done without the king's licence.

The establishment of colleges or universities is a remarkable period in literary history. The schools in cathedrals and monasteries confined themselves chiefly to the teaching of grammar. There were only one or two masters employed in that office. But, in colleges, professors are appointed to teach all the different parts of science. The first obscure mention of academical degrees in the university of Paris (from which the other universities in Europe have borrowed most of their customs and institutions), occurs A. D. 1215.

COLLEGE of Civilians, commonly called *Doctors Commons*; a college founded by Dr Harvey, dean of the arches, for the professors of the civil law residing in London; where usually, likewise, resides the judge of the arches court of Canterbury, judge of the admiralty, of the prerogative court, &c. with other civilians; who all live, as to diet and lodging, in a collegiate manner, communing together; whence the appellation of *Doctors Commons*. Their house being consumed in the great fire, they all resided at Exeter-house in the Strand till 1672; when their former house was rebuilt, at their own expence, in a very splendid manner. To this college belong 34 proctors, who make themselves parties for their clients, manage their causes, &c.

COLLEGE of Physicians, a corporation of physicians in London, who, by several charters and acts of parliament of Henry VIII. and his successors, have certain privileges, whereby no man, though a graduate in physic of any university, may, without licence under the said college seal, practise physic in or within seven miles of London; with power to administer oaths, fine and imprison offenders in that and several other particulars; to search the apothecaries shops, &c. in and about London, to see if their drugs, &c. be wholesome, and their compositions according to the form prescribed by the said college in their dispensatory. By the said charter they are also freed from all troublesome offices, as to serve on juries, be constable, keep watch, provide arms, &c.

The society had anciently a college in Knight-riders-street, the gift of Dr Linacre physician to king Henry VIII. Since that time they have had a house built them by the famous Dr Harvey in 1652, at the end of Amen-corner, which he endowed with his whole inheritance in his lifetime; but this being burnt in the great fire in 1666, a new one was erected, at the expence of the fellows, in Warwick-lane, with a noble library, given partly by the marquis of Dorchester, and partly by Sir Theodore Mayerne.

Of this college there are at present a president, four censors, eight electors, a register, and a treasurer, chosen annually in October; the censors have, by charter, power to survey, govern, and arrest, all physicians, or others practising physic, in or within seven miles of London; and to fine, amerce, and imprison them, at

discretion. The number of fellows was anciently thirty, till king Charles II. increased their number to forty; and king James II. giving them a new charter, allowed the number of fellows to be enlarged so as not to exceed fourscore; reserving to himself and successors the power of placing and displacing any of them for the future.

The college is not very rigorous in asserting their privileges; there being a great number of physicians, some of very good abilities, who practise in London, &c. without their licence, and are connived at by the college: yet, by law, if any person not expressly allowed to practise, take on him the cure of any disease, and the patient die under his hand, it is deemed felony in the practitioner. In 1696, the college made a subscription, to the number of forty-two of their members, to set on foot a dispensatory for the relief of the sick poor: since that they have erected two other dispensatories.

Edinburgh COLLEGE of Physicians was erected on the 29th November 1681. The design of this institution was, to prevent the abuses daily committed by foreign and illiterate impostors, quacks, &c. For this reason, his majesty, at the time above mentioned, granted letters patent to erect into a body corporate and politic, certain physicians in Edinburgh and their successors, by the title of "the President and Royal College of Physicians at Edinburgh," with power to choose annually a council of seven, one whereof to be president: these are to elect a treasurer, clerk, and other officers; to have a common seal; to sue and be sued; to make laws for promoting the art of physic, and regulating the practice thereof, within the city of Edinburgh, town of Leith, and districts of the Canongate, Westport, Pleasance, and Potter-row; through all which the jurisdiction of the college extends. Throughout this jurisdiction, no person is allowed to practise physic, without a warrant from the college, under the penalty of L. 5 Sterling the first month, to be doubled monthly afterwards while the offence is continued; one-half the money arising from such fines to go to the poor, the other to the use of the college. They are also empowered to punish all licentiates in physic within the above mentioned bounds, for faults committed against the institutions of the college; and to fine them of sums not exceeding 40s. On such occasions, however, they must have one of the bailies of the city to sit in judgment along with them, otherwise their sentence will not be valid. They are also empowered to search and inspect all medicines within their jurisdiction, and throw out into the street all such as are bad or unwholesome. That they may the better attend their patients, they are exempted from watching, warding, and serving on juries. They are, however, restrained from erecting schools for teaching the art of physic, or conferring degrees on any person qualified for the office of a physician; but are obliged to license all such as have taken their degrees in any other university, and to admit as honorary members all the professors of physic in the rest of the universities of Scotland. These privileges and immunities are not, however, to interfere with the rights and privileges of the apothecary-surgeons, in their practice of curing wounds, contusions, fractures, and other external operations.

Edinburgh COLLEGE of Surgeons. This is but a very late

College.

late institution, by which the surgeons of Edinburgh are incorporated into a *Royal College*, and authorised to carry into execution a scheme for making provision for their widows and children, &c. They have also the privilege of examining, and licensing, if found qualified, all practitioners in surgery within a certain bounds.

COLLEGE of Justice, the supreme civil court of Scotland; otherwise called *Court of Session*, or, *of Council and Session*. See LAW, Part III. N^o civii. 4.

Sion COLLEGE, or the college of the London clergy; which has been a religious house time out of mind, sometimes under the denomination of a priory, sometimes under that of a spital or hospital: at its dissolution under 31st Henry VIII. it was called *Ellyn's Spital*, from the name of its founder, a mercer, in 1329. At present it is a composition of both, viz. a college for the clergy of London, who were incorporated in 1630, in pursuance to the will of Dr White, under the name of the *President and Fellows of Sion College*; and an hospital for ten poor men and as many women. The officers of the corporation are the president, two deans, and four assistants; who are annually chosen from among the rectors and vicars of London; and are subject to the visitation of the bishop. They have a good library, built and stocked by Mr Simpson, and furnished by several other benefactors, chiefly for the clergy of the city, without excluding other students on certain terms; and a hall, with chambers for students, generally occupied by the ministers of the neighbouring parishes.

Gresham COLLEGE, or *COLLEGE of Philosophy*; a college founded by Sir Thomas Gresham, and endowed with the revenue of the Royal Exchange: one moiety of this endowment the founder bequeathed to the mayor and aldermen of London and their successors, in trust, that they should find four able persons to read, within the college, divinity, geometry, astronomy, and music; who are chosen by a committee of the common council, consisting of the lord mayor and three aldermen and eight commoners, and allowed each, besides lodging, L. 50 per annum. The other moiety he left to the company of mercers, to find three more able persons, chosen by a committee of that company, consisting of the master and three wardens, during their office, and eight of the court of assistants, to read law, physic, and rhetoric, on the same terms; with this limitation, that the several lecturers should read in term-time, every day in the week except Sundays; in the morning in Latin, in the afternoon the same in English: but that in music to be read only in English. By 8th George III. cap. 32. the building appropriated to this college was taken down, and the excise-office erected in its room. Each of the professors is allowed L. 50 per annum, in lieu of the apartments, &c. relinquished by them in the college, and is permitted to marry, notwithstanding the restriction of Sir Thomas Gresham's will. The lectures are now read in a room over the Royal Exchange; and the city and mercers company are required to provide a proper place for this purpose.

In this college formerly met the Royal Society, that noble academy, instituted by king Charles II. and celebrated throughout the world for their improvements in natural knowledge. See their history and policy under SOCIETY.

COLLEGE de Propaganda Fide, was founded at Rome

in 1622 by Gregory XV. and enriched with ample revenues. It consists of thirteen cardinals, two priests, and a secretary; and was designed for the propagation and maintenance of the Romish religion in all parts of the world. The funds of this college have been very considerably augmented by Urban VIII. and many private donations. Missionaries are supplied by this institution, together with a variety of books suited to their several appointments. Seminaries for their instruction are supported by it, and a number of charitable establishments connected with and conducive to the main object of its institution.

Another college of the same denomination was established by Urban VIII. in 1627, in consequence of the liberality of John Baptist Viles, a Spanish nobleman. This is set apart for the instruction of those who are designed for the foreign missions. It was at first committed to the care of three canons of the patriarchal churches; but ever since the year 1641 it is under the same government with the former institution.

COLLEGE of Heralds, commonly called the *Heralds Office*; a corporation founded by charter of king Richard III. who granted them several privileges, as to be free from subsidies, tolls, offices, &c. They had a second charter from king Henry VI.; and a house built near Doctors-commons, by the earl of Derby, in the reign of king Henry VII. was given them by the duke of Norfolk, in the reign of queen Mary, which house is now rebuilt.

This college is subordinate to the earl-marshal of England. They are assistants to him in his court of chivalry, usually held in the common-hall of the college, where they sit in their rich coats of his majesty's arms. See HERALD.

COLLEGE of Heralds in Scotland, consists of Lyon king at arms, six heralds, and six pursuivants, and a number of messengers. See LYON.

COLLEGIANS, COLLEGIANI, COLLEGIANTS, a religious sect formed among the Arminians and Anabaptists in Holland, about the beginning of the seventeenth century; so called because of their colleges, or meetings, twice every week; where every one, females excepted, has the same liberty of expounding the scripture, praying, &c. They are said to be all either Arians or Socinians: they never communicate in the college, but meet twice a-year from all parts of Holland at Rhinsbergh, whence they are also called *Rhinsbergbers*, a village two miles from Leyden, where they communicate together; admitting every one that presents himself, professing his faith in the divinity of the holy scriptures, and resolution to live suitably to their precepts and doctrines, without regard to his sect or opinion. They have no particular ministers, but each officiates as he is disposed. They never baptize without dipping.

COLLEGIATE, or COLLEGIAL, churches, are those which have no bishop's see, yet have the ancient retinue of the bishop, the *canons and prebends*. Such are Westminster, Rippon, Windsor, &c. governed by deans and chapters.

Of these collegiate churches there are two kinds; some of royal, and others of ecclesiastical foundation; each of them, in matters of divine service, regulated in the same manner as the cathedrals. There are even some collegiate churches that have the episcopal rights.

College
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Collegiat

rights. Some of these churches were anciently abbeys, which in time were secularized. The church of St Peter's, Westminster, was anciently a cathedral; but the revenues of the monastery being by act of parliament 1 Elizabeth vested in the dean and chapter, it commenced a collegiate church. In several causes the styling it *cathedral*, instead of *collegiate church* of Westminster, has occasioned error in the pleadings.

COLLET, among jewellers, denotes the horizontal face or plane at the bottom of brilliants. See BRILLIANT.

COLLET, in glass-making, is that part of glass vessels which sticks to the iron instrument wherewith the metal was taken out of the melting-pot: these are afterwards used for making green glass.

COLLETICS, in pharmacy, denote much the same with AGGLUTINANTS or VULNERARIES.

COLLIER (Jeremy), a learned English nonjuring divine, born in 1650, and educated in Caius college Cambridge. He had first the small rectory of Amp-ton, near St Edmund's Bury in Suffolk; which in six years he resigned, to come to London, in 1685, where he was made lecturer of Gray's Inn: but the change of government that followed, soon rendered the public exercise of his function impracticable. He was committed to Newgate for writing against the revolution; and again, for carrying on a correspondence which that change of events made treasonable; but was released both times, without trial, by the intervention of friends. It is observable that he carried his scruples so far, as to prefer confinement to the tacit acknowledgment of the jurisdiction of the court by accepting his liberty upon bail. Suitable to these principles, he next acted a very extraordinary part with two other clergymen of his own way of thinking, at the execution of Sir John Friend and Sir William Perkins for the assassination plot; by giving them solemn absolution, and by imposition of hands: absconding for which, he continued under an outlawry to the day of his death in 1726. These proceedings having put a stop to his activity, he employed his retired hours rather more usefully in literary works. In 1698, he attempted to reform our theatrical entertainments, by publishing his *Short view of the immorality and profaneness of the English stage*; which engaged him in a controversy with the wits of the time: but as Mr Collier defended his censures not only with wit, but with learning and reason, it is allowed that the decorum observed, for the most part, by succeeding dramatic writers, has been owing to his animadversions. He next undertook a translation of Moreri's great Historical and Geographical Dictionary; a work of extraordinary labour, and which appeared in 4 vols. folio. After this he published "An Ecclesiastical History of Great Britain, chiefly of England," in 2 vols. folio; which is allowed to be written with great judgment, and even with impartiality. He was besides engaged in several controversies, which his conduct and writings gave rise to, not material to mention. In queen Anne's reign, Mr Collier was tempted, by offers of considerable preferment, to a submission; but as he was a nonjuror upon principle, he could not be brought to listen to any terms.

COLLIER, or COALLIER. See COALLIER.

COLLIERY, COALERY, or COALLIERY. See Colliery
COLLINS.

COLLINS (Anthony), a polemical writer, born at Heston near Hounslow in the county of Middlesex in 1676, was the son of Henry Collins, a gentleman of about L. 1500 a-year. He was first bred at Eton college, and then went to king's-college Cambridge, where he had for his tutor Mr Francis Hare, afterwards bishop of Chichester. He was afterwards a student of the Temple; but not relishing the law, soon abandoned that study. He was an ingenious man, and author of several curious books. His first remarkable piece was published in 1707, "An Essay concerning the use of reason in propositions, the evidence whereof depends on human testimony." In 1702, he entered into the controversy between Mr Clark and Dr Dodwell, concerning the immortality of the soul. In 1713, he published his discourse on free-thinking; which made a prodigious noise. In 1715, he retired into the county of Essex, and acted as a justice of peace and deputy lieutenant for the same county, as he had done before for that of Middlesex and liberty of Westminster. The same year, he published a "Philosophical Essay concerning human liberty." In 1718, he was chosen treasurer of the county of Essex; and this office he discharged with great honour. In 1724, he published his "Historical and critical Essay on the 39 articles." Soon after, he published his "Discourse of the grounds and reasons of the Christian religion;" to which is prefixed, "An Apology for free debate and liberty of writing;" which piece was immediately attacked by a great number of writings. In 1726, appeared his "Scheme of literary prophecy considered, in a view of the controversy occasioned by a late book entitled, A discourse of the grounds, &c." In this discourse, he mentions a MS. dissertation of his to show the Sibylline oracles to be a forgery made in the times of the primitive Christians, who, for that reason, were called *Sibyllists* by the Pagans; but it never appeared in print. His scheme of literary prophecy was replied to by several writers; and particularly by Dr John Rogers in his "Necessity of divine revelation asserted." In answer to which, our author wrote "A letter to the Reverend Dr Rogers, on occasion, &c." His health began to decline some years before his death, and he was very much afflicted with the stone, which at last put an end to his life at his house in Harley square in 1729. He was interred in Oxford chapel, where a monument was erected to him, with an epitaph in Latin. His curious library was open to all men of letters, to whom he readily communicated all the assistance in his power; he even furnished his antagonists with books to confute himself, and directed them how to give their arguments all the force of which they were capable. He was remarkably averse to all indecency and obscenity of discourse; and was, independent of his scepticism, a sincerely good man.

COLLINS (John), an eminent accountant and mathematician, born in 1624, and bred a bookseller at Oxford. Besides several treatises on practical subjects, he communicated some curious papers to the Royal Society, of which he was a member, which are to be found in the early numbers of the Philosophical Transactions:

Collins,
Collinson.

actions: and was the chief promoter of many other scientific publications in his time. He died in 1683; and about 25 years after, all his papers coming into the hands of the learned William Jones, Esq; F. R. S. it appeared that Mr Collins held a constant correspondence for many years with all the eminent mathematicians; and that many of the late discoveries in physical knowledge, if not actually made by him, were yet brought forth by his endeavours.

COLLINS (William), an admirable poet, was born at Chichester, about the year 1724. He received his classical education at Winchester; after which he studied at New college, in Oxford, was admitted a commoner of King's college in the same university, and was at length elected a demy of Magdalene college. While at Oxford, he applied himself to the study of poetry, and published his *Oriental Eclogues*; after which he came to London. He was naturally possessed of an ear for all the varieties of harmony and modulation; his heart was susceptible of the finest feelings of tenderness and humanity, and was particularly carried away by that high enthusiasm which gives to imagination its strongest colouring; and he was at once capable of soothing the ear with the melody of his numbers, of influencing the passions by the force of the pathos, and of gratifying the fancy by the luxury of description. With these powers, he attempted lyric poetry; and in 1746, published his *Odes, descriptive and allegorical*: but the sale of this work being not at all answerable to its merit, he burnt the remaining copies in indignation. Being a man of a liberal spirit and a small fortune, his pecuniary resources were unhappily soon exhausted; and his life became a miserable example of necessity, indolence, and dissipation. He projected books which he was well able to execute; and became in idea an historian, a critic, and a dramatic poet; but wanted the means and encouragement to carry these ideas into execution. Day succeeded day, for the support of which he had made no provision; and he was obliged to subsist, either by the repeated contributions of a friend, or the generosity of a casual acquaintance. His spirits became oppressed, and he sunk into a sullen despondence. While in this gloomy state of mind, his uncle colonel Martin died, and left him a considerable fortune. But this came too late for enjoyment; he had been so long harassed by anxiety and distress, that he fell into a nervous disorder, which at length reduced the finest understanding to the most deplorable childishness. In the first stages of this disorder, he endeavoured to relieve himself by travelling, and passed into France; but the growing malady obliged him to return; and having continued, with short intervals, in this pitiable state till the year 1756, he died in the arms of his sister. The ingenious Mr Longhorne has published his poetical works, with memoirs of the author, in one volume duodecimo.

COLLINSON (Peter), an eminent naturalist and antiquarian, descended of an ancient family, was born on the paternal estate called *Hugal Hall*, or *Height of Hugal*, near Windermere lake, in the parish of Staveley, about ten miles from Kendal in Westmoreland. Whilst a youth he discovered his attachment to natural history. He began early to make a collection of dried specimens of plants, and had access to the best gardens at

that time in the neighbourhood of London. He became early acquainted with the most eminent naturalists of his time; the Drs Derham, Woodward, Dale, Lloyd, and Sloane, were amongst his friends. Among the great variety of articles which form that superb collection, now (by the wise disposition of Sir Hans and the munificence of parliament) the British Museum, small was the number of those with whose history Mr Collinson was not well acquainted; he being one of those few who visited Sir Hans at all times familiarly; their inclinations and pursuits in respect to natural history being the same, a firm friendship had early been established between them. Peter Collinson was elected a fellow of the Royal Society on the 12th of December 1728; and perhaps was one of the most diligent and useful members, not only in supplying them with many curious observations himself, but in promoting and preserving a most extensive correspondence with learned and ingenious foreigners, in all countries and on every useful subject. Besides his attention to natural history, he minuted every striking hint that occurred either in reading or conversation; and from this source he derived much information, as there were very few men of learning and ingenuity who were not of his acquaintance at home; and most foreigners of eminence in natural history, or in arts and sciences, were recommended to his notice and friendship. His diligence and œconomy of time was such, that though he never appeared to be in a hurry, he maintained an extensive correspondence with great punctuality; acquainting the learned and ingenious in distant parts of the globe with the discoveries and improvements in natural history in this country, and receiving the like information from the most eminent persons in almost every other. His correspondence with the ingenious Cadwallader Colden, Esq; of New York, and the justly celebrated Dr Franklin of Philadelphia, furnish instances of the benefit resulting from his attention to all improvements. The latter of these gentlemen communicated his first essays on electricity to Mr Collinson, in a series of letters, which were then published, and have been reprinted in a late edition of the Doctor's ingenious discoveries and improvements. Perhaps, in some future period, the account procured of the management of sheep in Spain, published in the *Gentleman's Magazine* for May and June 1764, may not be considered among the least of the benefits accruing from his extensive and inquisitive correspondence. His conversation, cheerful and usefully entertaining, rendered his acquaintance much desired by those who had a relish for natural history, or were studious in cultivating rural improvements; and secured him the intimate friendship of some of the most eminent personages in this kingdom, as distinguished by their taste in planting and horticulture, as by their rank and dignity. He was the first who introduced the great variety of seeds and shrubs which are now the principal ornaments of every garden; and it was owing to his indefatigable industry, that so many persons of the first distinction are now enabled to behold groves transplanted from the western continent flourishing as luxuriantly in their several domains as if they were already become indigenous to Britain. He had some correspondents in almost every nation in Europe, some in Asia, and even at Pekin; who all transmitted to him

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Collyriae.

him the most valuable seeds they could collect, in return for the treasures of America. The great Linnæus, during his residence in England, contracted an intimate friendship with Mr Collinson, which was reciprocally increased by a multitude of good offices, and continued to the last. Besides his attachment to natural history, he was very conversant in the antiquities of our own country, having been elected a member of the Society of Antiquaries April 7. 1737; and he supplied them often with many curious articles of intelligence and observations, respecting both our own and other countries. He died in 1768, leaving behind him many materials for the improvement of natural history.

COLLINSONIA, in botany: A genus of the monogynia order belonging to the decandria class of plants; and in the natural method ranking under the 40th order, *Personate*. The corolla is unequal, with its under lip multiseid, and the segments capillary. There is only one perfect seed. There is but one species, a native of North America, but possessed of no remarkable properties.

COLLIQUAMENTUM, in natural history, an extreme transparent fluid in an egg, observable after two or three days incubation, containing the first rudiments of the chick. It is included in one of its own proper membranes; distinct from the albumen. Harvey calls it the *oculus*.

COLLIQUATION, in chemistry, is applied to animal, vegetable, and mineral substances, tending towards fusion. See **FUSION**.

COLLIQUATION, in physic, a term applied to the blood, when it loses its crasis or balsamic texture; and to the solid parts, when they waste away, by means of the animal fluids flowing off through the several glands, and particularly those of the skin, faster than they ought: which occasions fluxes of many kinds, but mostly profuse, greasy, and clammy sweats.

COLLIQUATIVE FEVER, in physic, a fever attended with a diarrhoea, or with profuse sweats.

COLLISION, the striking of one hard body against another; or the friction or percussion of bodies moving violently with different directions, and dashing against each other.

COLLUM, the same with **NECK**.

COLLUSION, in law, a secret understanding between two parties, who plead or proceed fraudulently against each, to the prejudice of a third person.

COLLUTHIANS, a religious sect, who rose about the beginning of the fourth century; on occasion of the indulgence shown to Arius by Alexander patriarch of Alexandria. Several people being scandalized at so much condescension; and, among the rest, Colluthus, a priest of the same city; he hence took a pretence for holding separate assemblies, and by degrees proceeded to the ordination of priests, as if he had been a bishop; pretending a necessity for this authority, in order to oppose Arius. To his schism he added heresy; teaching, that God did not create the wicked; that he was not author of the evils that befall men, &c. He was condemned by a council held at Alexandria by Osius, in the year 330.

COLLYBUS (Κολυβος), in antiquity, the same with what is now called *the rate of exchange*.

COLLYRÆ, or **COLLYRIDES**, in antiquity, a cer-

tain ornament of hair, worn by the women on their necks. It was made up in the form of the small roundish cakes called *κολλυραι*, *collyrae*.

COLLYRIDIAN, in church history, a sect, towards the close of the 4th century, denominated from a little cake, called by the Greeks *κολλυριδια*, *collyridia*, which they offered to the Virgin Mary.

This sect, it seems, consisted chiefly of Arabian women, who, out of an extravagance of devotion to the Virgin, met on a certain day in the year, to celebrate a solemn feast, and to render divine honours to Mary as to a goddess; eating the cake which they offered in her name. St Epiphanius, who relates the history of this superstitious ceremony, ridicules it. They sprung up in opposition to the **ANTRIDICO-MARIANITES**.

COLLYRIUM, in pharmacy, a topical remedy for a disorder of the eyes; designed to cool and repel hot sharp humours.

COLMAR, a considerable town of France, in Upper Alsace, of which it is the capital. It has great privileges, and the Protestants have liberty of conscience. It is seated near the river Ill, in E. Long. 7. 16. N. Lat. 48. 5.

COLMARS, a town of France in Provence, and the diocese of Sens. It is seated near the Alps, in E. Long. 6. 25. N. Lat. 44. 17.

COLMOGOROD, a town of the empire of Russia, with an archbishop's see, seated in an island formed by the river Divina, in E. Long. 23. 30. N. Lat. 36. 32.

COLNBROOK, a town of Buckinghamshire in England, seated on the river Coln, which separates this county from Middlesex. It is a great thoroughfare on the western road, and has several good inns. W. Long. 0. 19. N. Lat. 51. 30.

COLNE, a town of Lancashire in England, seated on a small hill near the confines of the county. W. Long. 2. 2. N. Lat. 53. 45.

COLOCHINA, an ancient town of the Morea in Turkey in Europe. E. Long. 23. 2. N. Lat. 36. 32.

COLOCYNTHIS, in botany, a species of **CUCUMIS**.

COLOCZA, a town of Hungary, seated on the Danube, and capital of the county of Bath, with an archbishop's see. It was taken by the Turks in 1686, but afterwards retaken by the Imperialists. E. Long. 19. 42. N. Lat. 46. 33.

COLOGNA, a town of Italy in Padua, and in the territory of Venice. E. Long. 11. 43. N. Lat. 45. 39.

COLOGNE (the archbishopric or diocese of) is one of the states that compose the electoral circle of the Rhine, in Germany. It is bounded on the north by the duchy of Cleves and Gueldres, on the west by that of Juliers, on the south by the archbishopric of Cleves, and on the east by the duchy of Berg, from which it is almost wholly separated by the Rhine. This country is very fruitful in corn and wine, which the inhabitants dispose of by embarking it on the Rhine, it extending about seventy miles along that river. It is divided into the Higher and Lower Diocese; the Higher Diocese contains that part which lies above Cologne, wherein is Bonne, the capital town of this electorate, and where the elector resides; besides which there are Leichnich, Aternach, Bruyl, Zulich, and Kerpen. The Lower Diocese is on the other side of Cologne, and contains the towns of Zonz, Neuys,

Collyridians
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Cologne.

Cologne.

Neuys, Heizarwart, Kempen, Rhyenberg, and Alpen. The city of Cologne and county of Meurs, though within the diocese of Cologne, do not belong to it; for Cologne is a free city, and Meurs belongs to the house of Nassau-Orange; but by way of recompence, the elector has considerable possessions in Westphalia, which they call the *Domain*. It contains the duchy of Westphalia and the county of Rechlincufen. This prelate is one of the electors of the empire, and holds alternately with that of Treves the second or third rank in the electoral college. He is arch-chancellor of the empire in Italy; which dignity was very important when the emperors were masters of Italy, but now it is next to nothing. When the emperors were crowned at Aix la Chapelle, the archbishop of Cologne performed the ceremony, which caused him to pretend to the same right elsewhere; but he was opposed by the archbishop of Mentz. This occasioned an order, that they should each of them have that honour in their own diocese, but if it was done elsewhere, they should perform it alternately. The archbishop of Cologne is elected by the chapter in that city, which is the most illustrious in all Germany. They are all princes or counts, except eight doctors, who have no occasion to prove their nobility.

COLOGNE, an ancient and celebrated town of Germany, in the diocese of that name, with an archbishop's see, and a famous university, seated on the river Rhine, in E. Long. 6. 38. N. Lat. 50. 50. In the times of the Romans, this city was called *Colonia Agrippina*, and *Uborum*, because it was built by Agrippina the wife of Claudius I. and mother of Nero; and because the Ubii inhabited this country on the Lower Rhine. In 755, it was an archbishopric, and in 1260 entered into the Hanseatic league. The university was established in 1388 by Pope Urban VI. The city is fortified with strong walls, flanked with 83 large towers, and surrounded with three ditches; but these fortifications, being executed after the ancient manner, could make but a poor defence at present. It lies in the shape of a half-moon, and is said to have 20 gates, 19 parishes, 37 monasteries, and 365 churches and chapels; but the streets in general are dirty and badly paved, the windows of the houses composed of small bits of round glass, and the inhabitants are but few for so large a place. It is inhabited mostly by Papists; but there are also many protestants, who repair to the neighbouring town of Mulheim, in the duchy of Berg, for public worship. Its trade, which is considerable, especially in Rhenish wine, is chiefly in the hands of Protestants, and carried on by the Rhine. The ships with which they trade to the Netherlands are of a particular form, and considerable burden. The clergy here are very numerous, and have large revenues. That of the archbishop is L. 130,000. Baron Polnitz says, that though Cologne is one of the greatest cities, it is one of the most melancholy in all Europe; there being nothing to be seen but priests, friars, and students, many of whom beg alms with a song; and nothing to be heard but the ringing of bells; that there are very few families of quality; that the vulgar are very clownish; and that the noblemen of the chapter stay no longer in town than their duty obliges them. Mr Wright, in his travels, says, that the women go veiled; and that the best gin is that

Cologne.

distilled from the juniper berries which grow in this neighbourhood. This city is perhaps the most remarkable of any in the world for the great number of precious relics it contains; of which the Popish clergy, no doubt, make their advantage. In the church of St Urfula, they pretend to show her tomb; and the bones of the 11,000 pretended virgin martyrs, though that story is entirely owing to a mistaken inscription. The heads of some of these imaginary martyrs are kept in cases of silver, others are covered with stuffs of gold, and some have caps of cloth of gold and velvet. Brevat says, he saw between 4 and 5000 skulls, decked with garlands, and coronets, ranged on shelves. The canonessees of St Urfula, who must be all countesses, have a handsome income. In their church they pretend to show three of the thorns of our Saviour's crown, and one of the vessels which contained the water that he converted into wine at the marriage of Cana. In the church of St Gereon are 900 heads of Moorish Cavaliers, said to have been in the army of Constantine before it was converted, and to have been beheaded for refusing to sacrifice to idols. Every one of the heads has a cap of scarlet, adorned with pearls. In the magnificent cathedral of St Peter, the three wise men who came from the east to visit our Saviour, are said to be interred. They lie in a large purple shrine spangled with gold, set upon a pedestal of brass, in the middle of a square mausoleum, faced within and without with marble and jasper. It is opened every morning at nine o'clock, if two of the canons of the cathedral are present, when these kings or wise men are seen lying at full length, with their heads bedecked with a crown of gold garnished with precious stones. Their names, which are *Gasper*, *Melchior*, and *Balthasar*, are in purple characters on a little grate, which is adorned with an infinite number of large rich pearls and precious stones, particularly an oriental topaz as big as a pigeon's egg, and valued at above 30,000 crowns. Over against them are six large branches of silver, with wax candles, which burn night and day. The bones of these men, we are told, were brought to Constantinople by Helena mother to Constantine, from thence to Milan by Eustorpius bishop of that see, and afterwards hither by archbishop Rainold. In the Jesuits college are the portraits of the first 13 generals of that order, with Ignatius Loyola at their head; and in the church, which is the finest in Cologne, are many rich statues, with an amazing quantity of fine silver plate; and the utensils for mass are all of gold enriched with precious stones. In the Cordeliers church, is the tomb of the famous Duns Scotus, surnamed *Doct̄or Subtilis*, with this epitaph, "Scotia me genuit, Anglia me suscepit, Gallia me docuit, Colonia me tenet." Cologne is a free imperial city, and as such has a seat and voice at the diets of the empire, and circle of the Lower Rhine. In those of the empire, it has the first place on the Rhenish bench. Towards the defence of the empire, its assessment is 825 florins; and towards the maintenance of the chamber-court, 405 rix-dollars, 72½ kruitzers each term. Its militia consists of four companies of foot, who keep guard at the gates. It is governed by its own senate, in respect to civil matters and causes; but the criminal jurisdiction belongs to the elector and his chapter; and so jealous are the inhabitants

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bitants of him, that they will not permit him to stay in the city above three days at a time, nor to come into it with a large retinue. For this reason the elector resides commonly at Bonn.

COLOGNE-Earth, a kind of very light bastard ochre, of a deep brown colour.

COLOMBO, a handsome, pleasant, and strong town of Asia, seated on the eastern side of the island of Ceylon in the East Indies. It was built by the Portuguese in 1638; and in 1658 they were driven from it by the natives, assisted by the Dutch, who are now in possession of it. It is about three quarters of a mile long, and as much in breadth. The natives live in the old town, without the walls of the new: the streets of this last are wide and spacious; and the buildings are in the modern taste, particularly the governor's house, which is a handsome structure. E. Long. 80. 25. N. Lat. 7. 0.

COLOMEY, or **COLOMIA**, a town of Poland in Red Russia, seated on the river Pruth, in E. Long. 25. 9. N. Lat. 48. 45.

COLOMNA (Fabio), a very learned botanist, born at Naples about the year 1567. He became skilled in the languages, in music, designing, painting, and the mathematics; and died about the middle of the 17th century. He wrote, 1. *Φυτοβασανων*, seu Plantarum aliquot (ac piscium) historia. 2. *Minus cognitarum rariorumque stirpium* *εξαρσις*; itemque de aquatilibus, aliisque nonnullis animalibus, libellus; and other works.

COLON, in anatomy, the first and most considerable of the large intestines. See **ANATOMY**, under n^o 93.

COLON, in grammar, a point, or character formed thus [:], serving to mark a pause, and to divide the members of a period. See **POINTING**; see also **PERIOD**, **COMMA**, and **SEMICOLON**. Grammarians generally assign the use of a colon to be, to mark the middle of a period; or to conclude a sense less perfect than the dot or period:—but, a sense less perfect than the period, is an expression extremely vague and indeterminate. See **PERIOD**.

Others say, a colon is to be used when the sense is perfect, but the sentence not concluded: but neither is this over clear and express.

A late author, in an ingenious discourse, *De ratione interpungendi*, marks the office of the colon, and wherein it differs from the semicolon, &c. more precisely. A colon, on his principles, serves to distinguish those conjunct members of a sentence, which are capable of being divided into other members; whereof one, at least, is conjunct. Thus, in the sentence, *As we cannot discern the shadow moving along the dial-plate, the advances we make in knowledge are only perceived by the distance gone over*; the two members being both simple, are only separated by a comma. In this, *As we perceive the shadow to have moved, but did not perceive it moving; so our advances in understanding, in that that they consist of such minute steps, are only perceivable by the distance*;—the sentence being divided into two equal parts, and those conjunct ones, since they include others; we separate the former by a semicolon, and the latter by commas. But in this, *As we perceive the shadow to have moved along the dial, but did not perceive*

it moving; and it appears the grass has grown, though no body ever saw it grow: so the advances we make in knowledge, as they consist of such minute steps, are only perceivable by the distance—the advancement in knowledge is compared to the motion of a shadow, and the growth of grass; which comparison divides the sentence into two principal parts: but since what is said of the movement of the shadow, and likewise of the growth of grass, contains two simple members, they are to be separated by a semicolon; consequently a higher pointing is required to separate them from the other part of the sentence, which they are opposed to: and this is a colon. See **PUNCTUATION**.

COLONEL, in military matters, the commander in chief of a regiment, whether horse, foot, or dragoons.

Skinner derives the word from colony; being of opinion, the chiefs of colonies, called *coloniales*, might give the name to chiefs of forces. In the French and Spanish armies, colonel is confined to the infantry and dragoons: the commanding officer of a regiment of horse they usually call *mestre de camp*. Formerly, instead of colonel, the French used the word coronel; and this old spelling comes nearer to our common way of pronouncing the word *colonel*.

A colonel may lay any officer of his regiment in arrest, but must acquaint the general with it; he is not allowed a guard, only a centry from the quarter-guard.

COLONEL-Lieutenant, he who commands a regiment of guards, whereof the king, prince, or other person of the first eminence, is colonel. These colonel-lieutenants have always a colonel's commission, and are usually general-officers.

Lieutenant-COLONEL, the second officer in a regiment, who is at the head of the captains, and commands in the absence of the colonel.

COLONIA, (anc. geog.) a town of the Trinobantes, a little above Camelodunum. Now Colchester in Essex, according to Cambden, who supposes it to take its name from the river Colne, and not that it was a colony. Though others think Antonine's distances agree with Sudbury.

COLONIA Equetris, an ancient and noble colony on the Lacus Lemanus. It appears to be the work of Julius Cæsar, who settled there *Equites Limitanei*: and to this Lucan is thought to refer. By the Itinerary it is supposed to have stood between Laufane and Geneva, 12 miles from the last place by Peutinger's map; which directs to Nyon, placed in Cavo Lemano, according to Lucan's expression, that is, a bay or cove of the lake. Its ancient name was *Noviodunum*, (*Notitia Galliae*): hence its modern name.

COLONIA Metallina, or *Metallinensis*, a town of Lusitania, situated on the right or west side of the Anas, or Guadiana: but now on the left or east side, from the river's shifting its bed or channel, and called Medelin, a town in Estremadura. W. Long. 6 12, Lat. 38° 45'.

COLONIA Morinorum, a town of Belgica, thought to be Tarvenna, the capital of the Morini. Now Terrouen, a town of Artois. E. Long. 2° 15', Lat. 50° 37'.

COLONIA Norica, or *Norba Casarea*, a town of Lusitania, to the south of Trajan's bridge on the Ta-

Colonia
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Colony.

gus. Now *Alcantara*, in Estremadura. W. Long. 7° 10', N. Lat. 39° 10'.

COLONIA TRAJANA, (Antonine, Peutinger); a town of Belgica, surnamed also *Ulpia*, (Antonine); and *Tricesima*, from being the station of the thirtieth legion, (Ammian). Now Kellen, a village of the duchy of Cleves, a mile from the Rhine.

COLONIA VALENTIA, (Ptolemy, Livy); a town of the Hither Spain, on the Turias; destroyed by Pompey, (Sallust); restored by Julius Cæsar. Still called Valencia, on the river Guadalaviar, in Valencia. W. Long. 35', Lat. 39° 20'.

COLONNA, a town of Italy, in the Campagna of Rome, 18 miles eastward of that city. E. Long. 13° 15' N. Lat. 42° 0'.

COLONNA (Pompey), cardinal archbishop of Montreal in Sicily, and bishop of a very great number of places, made a conspicuous figure in the world. He was equally qualified to wear the cardinal's hat and the helmet, and experienced more than once the reverses of fortune. Julius II. removed him from all his dignities; but Leo I. restored him, created him cardinal, and sent him on several embassies. Clement VII. divested him of the purple, and again restored him to it. It was pretended he was obliged to him for his exaltation to the papal throne. The pope refusing him some request, he reproached him, saying, "That it was by his interest he had arrived at his dignity." The pope replied, "It is true, but let me be pope, and do not endeavour to be so yourself; for by acting as you do, you endeavour to dispossess me of that you have raised me to." He died viceroys of Naples in 1532. He wrote some poems in praise of Isabella Filamariui, in which he protests the chastity of his wishes. He wrote another work, *De laudibus mulierum*.

COLONNADE, in architecture, a peristyle of a circular figure; or a series of columns disposed in a circle, and insulated within side.

A *Polystyle COLONNADE*, is that whose numbers of columns is too great to be taken in by the eye at a single view. Such is the colonnade of the palace of St Peter's at Rome, consisting of 284 columns of the Doric order, each above four feet and an half diameter, all in Tiburtine marble.

COLONOS, (anc. geog.) an eminence near Athens, whither Ædipus, after his banishment from Thebes, is said to have retired: and hence it is that Sophocles calls the tragedy on the subject, *Oedipus Coloneus*. A place sacred to Neptune, and where stood an equestrian statue of him. Here also stood Timon's tower; who, for his love of solitude, and hatred to mankind, was called *Misanthropos*, (Pausanias).

COLONSAY, one of the Hebrides or Western Islands belonging to Scotland. It comprehends that of Oronsay, from which it is only separated in time of flood, and both belong to the same proprietor, *viz.* Mr McNeil. See ORONSAY.

COLONUS, an husbandman, or villager, who was bound to pay yearly a certain tribute, or at certain times of the year to plough some part of the lord's land; and from hence comes the word *colon*, who is called by the Dutch *boor*.

COLONY, a company of people transplanted in-

to a remote province in order to cultivate and inhabit it. Colony.

We may distinguish three kinds of colonies. First, those serving to ease or discharge the inhabitants of a country, where the people are become too numerous, so that they cannot any longer conveniently subsist.

The second are those established by victorious princes and people in the middle of vanquished nations, to keep them in awe and obedience.

The third may be called *colonies of commerce*; because, in effect, it is trade that is the sole occasion and object thereof.

It was by means of the first kind of colonies that, some ages after the deluge, the east first, and successively all the other parts of the earth, became inhabited: and without mentioning any thing of the Phœnician and Grecian colonies, so famous in ancient history, it is notorious that it was for the establishment of such colonies, that, during the declension of the empire, those torrents of barbarous nations, issuing, for the generality, out of the north, over-run the Gauls, Italy, and the other southern parts of Europe; and, after several bloody battles, divided it with the ancient inhabitants.

For the second kind of colonies, the Romans used them more than any other people; and that to secure the conquests they had made from the west to the east. Every one knows how many cities in Gaul, Germany, Spain, and even England, value themselves on their having been of the number of Roman colonies.

There were two kinds of colonies among the Romans: those sent by the senate; and the military ones, consisting of old soldiers, broken and disabled with the fatigues of war, who were thus provided with lands as the reward of their services. See *BENEFICE*. The colonies sent by the senate were either Roman or Latin, *i. e.* composed either of Roman citizens or Latins. The *Coloniæ Latinæ* were such as enjoyed the *jus Latii*; said to consist in those two things: one, that whoever was edile or pretor in a town of Latium, became for that reason a Roman citizen; the other, that the Latins were subject to the edicts of their own, and not to those of the Roman magistrates: in the year of the city six hundred and sixty two, after the social war, the city was granted to all Latium, by the *lex Julia*. The *coloniæ Romanæ*, were such as had the *jus Romanum*, but not in its full extent; namely, in the right of suffrage, putting up for honours, magistracies, command in the army, &c.; but the *jus Quiritium* only, or private right; as right of liberty, of gentility, or dignity of family, sacrifice, marriage, &c. For it was long a rule, never to grant the liberty of the city in full to colonies: nor is there any instance to the contrary, till after the social war, in the year of the city six hundred and sixty-two. According to Ulpian (*l. 1. D. de Cens.*), there were other colonies, which had little more than the name; only enjoying what they called *jus Italicum*, *i. e.* they were free from the tributes and taxes paid by the provinces. Such were the colonies of Tyre, Berytus, Heliopolis, Palmyra, &c. M. Vaillant has filled a volume in folio with medals struck by the several colonies, in honour of the emperors who founded them.

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ony. The ordinary symbol they engraved on their medals, was either an eagle; as when the veteran legions were distributed in the colonies: or a labourer, holding a plough drawn by a pair of oxen; as when the colony consisted of ordinary inhabitants. On all the medals are seen the names of the decemviri, who held the same rank and had the same authority there as the consuls had at Rome.

Lastly, the colonies of commerce, are those established by the English, French, Spaniards, Portuguese, and other nations within these two last centuries, and which they continue still to establish, in several parts of Asia, Africa, and America; either to keep up a regular commerce with the natives, or to cultivate the ground, by planting sugar-canes, indigo, tobacco, and other commodities. The principal of this kind of colonies, are in the one and the other America, northern and southern; particularly Peru, Mexico, Canada (lately Virginia, New-England, Carolina), la Louisiana, l'Acadia, Hudson's Bay, the Antilles Islands, Jamaica, Domingo, and the other islands.—In Africa, Madagascar, Cape of Good Hope, Cape Verd, and its islands, and all those vast coasts extended thence as far as to the Red Sea. Lastly, in Asia, the famous Batavia of the Dutch; Goa, Diu, of the Portuguese; and some other less considerable places of the English, French, and Danes.

The practice of settling commercial colonies in distant countries hath been adopted by the wisest nations of antiquity, who acted systematically upon maxims of sound policy. This appears to have been the case with the ancient Egyptians, the Chinese, the Phœnicians, the commercial states of Greece, the Carthaginians, and even the Romans; for though the colonies of the latter were chiefly military, it could easily be shown that they were likewise made use of for the purposes of trade. The savage nations who ruined the Roman empire, fought nothing but to extirpate or hold in vassalage those whom they overcame; and therefore, whenever princes enlarged their dominions at the expence of their neighbours, they had recourse to strong forts and garrisons to keep the conquered in awe. For this they have been blamed by the famous Machiavel; who labours to show, that the settling of colonies would have been a cheaper and better method of bridling conquered countries, than building fortresses in them. John de Witt, who was one of the ablest and best statesmen that ever appeared, strongly recommended colonies; as affording a refuge to such as had been unfortunate in trade; as opening a field for such men to exert their abilities, as through want of interest could not raise themselves in their own country; and as a supplement to hospitals and other charitable foundations, which he thought in time might come to be overcharged. Some, however, have ridiculed the supposed advantages of colonies, and asserted that they must always do mischief by depopulating the mother-country.

The history of the British colonies undoubtedly shows, that when colonists become numerous and opulent, it is very difficult to retain them in proper subjection to the parent state. It becomes then a question not very easily answered, how far they are entitled to the rights they had as inhabitants of the mother-country, or how far they are bound by its laws?

On this subject Mr Blackstone hath the following observations.

“ Plantations, or colonies in distant countries, are either such where the lands are claimed by right of occupancy only, by finding them desert and uncultivated, and peopling them from the mother-country; or where, when already cultivated, they have either been gained by conquest, or ceded to us by treaties. And both the rights are founded upon the law of nature, or at least on that of nations. But there is a difference between these two species of colonies with respect to the laws by which they are bound. For it hath been held, that if an uninhabited country be discovered and planted by English subjects, all the English laws then in being, which are the birthright of every subject, are immediately there in force. But this must be understood with many and very great restrictions. Such colonists carry with them only so much of the English law as is applicable to their own situation, and the condition of an infant colony; such, for instance, as the general rules of inheritance, and of protection from personal injuries. The artificial refinements and distinctions incident to the property of a great and commercial people, the laws of policy and revenue (such especially as are enforced by penalties), the mode of maintenance for the established clergy, the jurisdiction of spiritual courts, and a multitude of other provisions, are neither necessary nor convenient for them, and therefore are not in force. What shall be admitted, and what rejected, at what times, and under what restrictions, must, in cases of dispute, be decided in the first instance by their own provincial judicature, subject to the revision and controul of the king in council; the whole of their constitution being also liable to be new-modelled and reformed by the general superintending power of the legislature in the mother-country. But in conquered or ceded countries, that have already laws of their own, the king may indeed alter and change those laws; but, till he does actually change them, the ancient laws of the country remain, unless such as are against the law of God, as in an infidel country. Our American plantations are principally of this latter sort, being obtained in the last century, either by right of conquest and driving out the natives (with what natural justice I shall not at present inquire), or by treaties. And therefore, the common law of England, as such, has no allowance or authority there; they being no part of the mother country, but distinct (though dependent) dominions. They are subject, however, to the controul of the parliament; though (like Ireland, Mann, and the rest) not bound by any acts of parliament, unless particularly named.”

With respect to their interior polity, our colonies, whether those we formerly possessed or still possess, may be distinguished into three sorts. 1. Provincial establishments, the constitutions of which depend on the respective commissions issued by the crown to the governors, and the instructions which usually accompany those commissions; under the authority of which provincial assemblies are constituted, with the power of making local ordinances not repugnant to the laws of Britain. 2. Proprietary governments, granted out by the crown to individuals, in the nature of feudatory principalities, with all the inferior regalities.

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Colophony

galities, and subordinate powers of legislation, which formerly belonged to the owners of counties palatine: yet still with these express conditions, that the ends for which the grant was made be substantially pursued, and that nothing be attempted which may derogate from the sovereignty of the mother-country. 3. Charter governments, in the nature of civil corporations; with the power of making bye-laws for their own interior regulation, not contrary to the laws of Britain; and with such rights and authorities as are specially given them in their several charters of incorporation. The form of government, in most of them, is borrowed from that of England. They have a governor named by the king (or, in some proprietary colonies, by the proprietor), who is representative or deputy. They have courts of justice of their own, from whose decisions an appeal lies to the king in council here in England. Their general assemblies, which are their house of commons, together with their council of state, being their upper house, with the concurrence of the king, or his representative the governor, make laws suited to their own emergencies. But it is particularly declared, by stat. 7 and 8 W. III. c. 22. that all laws, bye-laws, usages, and customs, which shall be in practice in any of the plantations, repugnant to any law made or to be made in this kingdom relative to the said plantations, shall be utterly void and of none effect. And, because several of the colonies had claimed the sole and exclusive right of imposing taxes upon themselves, the statute 6 Geo. III. c. 12. expressly declares, that all his Majesty's colonies in America, have been, are, and of right ought to be, subordinate to and dependent upon the imperial crown and parliament of Great Britain; who have full power and authority to make laws and statutes of sufficient validity to bind the colonies and people of America, subjects to the crown of Great Britain in all cases whatsoever. And the attempting to enforce this by other acts of Parliament, penalties, and at last by military power, gave rise, as is well known, to the late revolt and final separation of thirteen colonies. See the article AMERICA.

COLOPHON (anc. geog.), a town of Ionia, in the Hither Asia, on a promontory on the Egean sea, and washed by the Hæsus. The ancient Colophon was destroyed by Lyfimachus, in his war with Antigonus, in order to enlarge Ephesus. Pausanias says, it was rebuilt in the neighbourhood, in a more commodious site. This was one of the cities that laid claim to Homer. *Colophonem addere*, a proverbial saying, explained by Strabo to denote, that the Colophonian horse turned the scales in favour of the side on which they fought. The Colophonians had a grove, a temple, and an oracle of Apollo Clarius (Strabo). Of this town was the poet Antimachus, remarked on for his tumid style by Catullus. He wrote a life of Homer, whom he makes a Colophonian (Plutarch).

COLOPHONY, in pharmacy, black resin, or turpentine, boiled in water, and afterwards dried; or, which is still better, the caput mortuum remaining after the distillation of the ethereal oil, being further urged by a more intense and long continued fire.—It receives its name of *colophonia*, from Colophon, a city of Ionia; because the best was formerly brought from thence. Two sorts are mentioned in ancient writings; the one dry, the other in a liquid form. The latter

seems to have been liquid pitch, which is the crude resin of the pine brought from Colophon; the other was called *resina friida*, and consisted only of the former deprived of its humid parts.

COLOQUINTIDA, in botany. See CUCUMIS.

COLORATURA, in music, denotes all manner of variations, trillos, diminutions, &c. serving to make a song agreeable.

COLORNO, a town of Italy, in the Parmazan, near the river Po, eight miles from Parma. The duke of Parma has a pleasure-house here, one of the most delightful seats in all Italy, and the gardens are very fine. E. Long. 9. 15. N. Lat. 44. 54.

COLOSSAE, or COLOSEAE (anc. geog.), a considerable town of Phrygia Magna, in which the Lycus falls into a gulph, and at the distance of five stadia emerges again, and runs into the Meander (Herodotus). Other say, the genuine name is *Colassæ*, and the people *Colassenses*, to whom St Paul wrote an epistle: Strabo calls them *Colosseni*. In Nero's time the town was destroyed by an earthquake (Orosius).

COLOSSUS, a statue of enormous or gigantic size. The most eminent of this kind was the Colossus of Rhodes; a statue of Apollo, so high, that ships passed with full sails betwixt its legs. It was the workmanship of Chares, a disciple of Lyfippus; who spent 12 years in making it: it was at length overthrown by an earthquake, after having stood 1360 years. Its height was sixscore and six feet: there were few people could fathom its thumb, &c. When the Saracens became possessed of the island, the statue was found prostrate on the ground; they sold it to a Jew, who loaded 900 camels with the brass.

The basis that supported it was a triangular figure; its extremities were sustained with 60 pillars of marble. There was a winding-stair-case to go up to the top of it; from whence one might discover Syria, and the ships that went into Egypt, in a great looking-glass, that was hung about the neck of the statue. Among the antiquities of Rome, there are seven famous Colossuses: two of Jupiter, as many of Apollo, one of Nero, one of Domitian, and one of the Sun.

COLOSTRUM, the first milk of any animal after bringing forth young, called *beeflings*. It is remarkable that this milk is generally cathartic, and purges the meconium; thus serving both as an aliment and medicine.

An emulsion prepared with turpentine dissolved with the yolk of an egg, is sometimes called by this name.

COLOSWAR, a large and celebrated town of Transylvania, where the senates have their meetings. It is seated on the river Samos, in E. Long. 22. 45. N. Lat. 46. 53.

COLOUR, in physics, a property inherent in light, by which, according to the various sizes of its parts, or from some other cause, it excites different vibrations in the optic nerve; which propagated to the sensorium, affect the mind with different sensations. See CHROMATICS and OPTICS.

COLOUR, in painting, is applied both to the drugs, and to the tints produced by those drugs variously mixed and applied.

The principal colours used by painters are red and white lead, or cerufs; yellow and red ochres; several kinds of earth, umbre, orpiment, lamp-black, burnt ivory,

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ivory, black lead, cinnabar or vermilion, gamboge, lacca, blue and green ashes, verdigris, bistre, bice, smalt, carmine, ultramarine: each of which, with their uses, &c. are to be found under their proper articles.

Of these colours some are used tempered with gum-water: some ground with oil; others only in fresco; and others for miniature.

Painters reduce all the colours they use under these two classes, of dark and light colours: dark colours are black, and all others that are obscure and earthy, as umbre, bistre, &c.

Under light colours are comprehended white, and all that approach nearest to it.

Painters also distinguish colours into simple and mineral.

Under simple colours they rank all those which are extracted from vegetables, and which will not bear the fire; as the yellow made of saffron, French berries, lacca, and other tinctures extracted from flowers, used by limners, illuminers, &c.

The mineral colours are those which being drawn from metals, &c. are able to bear the fire, and therefore used by enamellers. Changeable and permanent colours is another division, which, by some, is made of colours.

Changeable colours are such as depend on the situation of the objects with respect to the eye, as that of a pigeon's neck, taffeties, &c. the first however being attentively viewed by the microscope, each fibre of the feathers appears composed of several little squares, alternately red and green, so that they are fixed colours.

Water COLOURS, are such as are used in painting with gum-water or size, without being mixed with oil.

Incapacity of distinguishing COLOURS. Of this extraordinary defect in vision, we have the following instances in the Philosophical Transactions for 1777. One of the persons lived at Maryport in Cumberland. The account was communicated by Mr Huddart to Dr Priestley, and is as follows. "His name was Harris, by trade a shoe-maker. I had often heard from others, that he could discern the form and magnitude of all objects very distinctly, but could not distinguish colours. This report having excited my curiosity, I conversed with him frequently on the subject. The account he gave was this: That he had reason to believe other persons saw something in objects which he could not see; that their language seemed to mark qualities with precision and confidence, which he could only guess at with hesitation, and frequently with error. His first suspicion of this arose when he was about four years old. Having by accident found in the street a child's stocking, he carried it to a neighbouring house to inquire for the owner: he observed the people called it a *red* stocking, though he did not understand why they gave it that denomination, as he himself thought it completely described by being called a *stocking*. This circumstance, however, remained in his memory, and, together with subsequent observations, led him to the knowledge of his defect.

"He also observed, that when young, other children could discern cherries on a tree, by some pretend-

ed difference of colour, though he could only distinguish them from the leaves by the difference of their size and shape. He observed also, that by means of this difference of colour they could see the cherries at a greater distance than he could, though he could see other objects at as great a distance as they, that is, where the sight was not assisted by the colour. Large objects he could see as well as other persons; and even the smaller ones if they were not enveloped in other things, as in the case of cherries among the leaves.

"I believe he could never do more than guess the name of any colour; yet he could distinguish white from black, or black from any light or bright colour. Dove or straw colour he called *white*, and different colours he frequently called by the same name; yet he could discern a difference between them when placed together. In general, colours of an equal degree of brightness, however they might otherwise differ, he confounded together. Yet a striped ribbon he could distinguish from a plain one; but he could not tell what the colours were with any tolerable exactness. Dark colours, in general, he often mistook for black; but never imagined white to be a dark colour, nor dark to be a white colour.

"He was an intelligent man, and very desirous of understanding the nature of light and colours; for which end he had attended a course of lectures in natural philosophy.

"He had two brothers in the same circumstances as to sight; and two other brothers and sisters, who, as well as their parents, had nothing of this defect.

"One of the first mentioned brothers, who is now living, I met with at Dublin, and wished to try his capacity to distinguish the colours in a prism; but not having one by me, I asked him, whether he had ever seen a rain-bow? he replied, He had often, and could distinguish the different colours; meaning only, that it was composed of different colours, for he could not tell what they were.

"I then procured, and showed him a piece of ribbon: he immediately, and without any difficulty, pronounced it a striped, and not a plain, ribbon. He then attempted to name the different stripes: the several stripes of white he uniformly and without hesitation called white: the four black stripes he was deceived in; for three of them he thought brown, though they were exactly of the same shade with the other, which he properly called black. He spoke, however, with diffidence, as to all those stripes; and it must be owned, that the black was not very distinct: the light green he called yellow; but he was not very positive: he said, "I think this is what you call yellow." The middle stripe, which had a slight tinge of red, he called a sort of blue. But he was most of all deceived by the orange colour: of this he spoke very confidently, saying, "This is the colour of grass, this is green." I also showed him a great variety of ribbons, the colour of which he sometimes named rightly, and sometimes as differently as possible from the true colour.

"I asked him, whether he imagined it possible for all the various colours he saw to be mere difference of light and shade; and that all colours could be composed of these two mixtures only? With some hesitation

Colour. he replied, No, he did imagine there was some other difference.

“It is proper to add, that the experiment of the striped ribbon was made in the day-time, and in a good light.”

COLOURS for staining different kinds of Stones. See CHEMISTRY, n^o 753.

COLOUR, in dyeing. See DYEING.

COLOUR of Plants, is an attribute found to be very variable. Different colours are observed, not only in different individuals of the same species, but likewise in different parts of the same individual. Thus, marvel of Peru, and sweet-William, have frequently petals of different colours on the same plant. Three or four different colours are frequently found upon the same leaf or flower; as on the leaves of the amaranthus, tricolor, and the flowers of the tulip, auricula, three-coloured violet, and others. To produce the most beautiful and striking variety of colours in such flowers, is the principal delight and business of the florist.

The primitive colours, and their intermediate shades or gradations enumerated by botanists, are as follow.

Water-colours, *hyalinus*.

WHITE.

Lead-colour, *cinereus*.

BLACK, *niger*.

Brown, *fuscus*.

Pitch-black, *ater*.

YELLOW, *luteus*.

Straw-colour, *flavus*.

Flame-colour, *fulvus*.

Iron-colour, *gilvus*.

RED.

Flesh-colour, *incarnatus*.

Scarlet, *coccineus*.

PURPLE.

Violet-colour, *caeruleo-purpureus*.

BLUE, *caeruleus*.

GREEN.

These colours seem to be appropriated to particular parts of the plant. Thus, white is most common in roots, sweet berries, and the petals of spring flowers. Water-colour, in the filaments and styles. Black, in the roots and seeds; rarely in the seed-vessel, and scarce ever to be found in the petals. Yellow is frequently in the antheræ or tops of the stamina; as likewise in the petals of autumnal flowers, and the compound legulated flowers of Linnæus. Red is common in the petals of summer flowers, and in the acid fruits. Blue and violet-colour, in the petals. Green, in the leaves and calyx, but rarely in the petals. In the interchanging of colours, which in plants is found to depend upon differences in heat, climate, soil, and culture, a sort of elective attraction is observed to take place. Thus, red is more easily changed into white and blue; blue into white and yellow; yellow into white; and white into purple. A red colour is often changed into a white, in the flowers of heath, mother of thyme, betony, pink, viscous campion, *cucubalus*, trefoil, orchis, fox-glove, thistle, cudweed, saw-wort, rose, poppy, fumitory, and geranium. Red passes into blue in pimpernel. Blue is changed into white in bell-flower, greek-valerian, bindweed, columbine, violet,

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vetch, milk-wort, goat's rue, viper's bugloss, comfrey, borage, hyssop, dragon's-head, scabious, blue-bottle, and succory. Blue is changed into yellow in crocus. Yellow passes easily into white in melilot, agrimony, mullein, tulip, *blattaria*, or moth-mullein, and corn marigold. White is changed into purple in wood-forrel, thorn-apple, pease, and daisy.

Although plants are sometimes observed to change their colour upon being moistened with coloured juices, yet that quality in vegetables seems not so much owing to the nature of their nourishment, as to the action of the internal and external air, heat, light, and the primitive organization of the parts. In support of this opinion, we may observe with Dr Grew, that there is a far less variety in the colours of roots than of the other parts of the plant; the pulp, within the skin, being usually white, sometimes yellow, rarely red. That this effect is produced by their small intercourse with the external air appears from this circumstance, that the upper parts of roots, when they happen to stand naked above the ground, are often dyed with several colours: thus the tops of sorrel roots turn red; those of turnips, mullein, and radishes, purple; and many others green: whilst those parts of the same roots which lie more under ground are commonly white. The green colour is so proper to leaves, that many, as those of sage, the young sprouts of St John's wort, and others which are reddish when in the bud, acquire a perfect green upon being fully expanded. In like manner, the leaves of the sea-side grape, *polygonum*, which when young are entirely red, become, as they advance in growth, perfectly green, except the middle and transverse ribs, which retain their former colour.

As flowers gradually open and are exposed to the air, they throw off their old colour, and acquire a new one. In fact, no flower has its proper colour till it is fully expanded. Thus the purple stock-july-flowers are white or pale in the bud. In like manner bachelor's buttons, blue-bottle, poppy, red daisies, and many other flowers, though of divers colours when blown, are all white in the bud. Nay, many flowers change their colours thrice successively; thus, the very young buds of lady's looking-glass, bugloss, and the like, are all white; the larger buds purple, or murrey; and the open flowers blue.

With respect to the colours of the juices of plants, we may observe, that most resinous gums are tintured; some, however, are limpid; that which drops from the domestic pine is clear as rock-water. The milk of some plants is pale, as in burdock; of others white, as in dandelion, euphorbium, and scorzonera; and of others yellow, as in lovage, and greatercelandine. Most mucilages have little colour, taste, or smell. Of all the colours above enumerated, green is the most common to plants, black the most rare.

Colour being a quality in plants so apt to change, ought never to be employed in distinguishing their species. These ought to be characterized from circumstances not liable to alteration by culture or other accidents. The same inconstancy of colour observed in the flowers, is likewise to be found in the other parts of plants. Berries frequently change from green to red, and from red to white. Even in ripe fruits, the colour, whether white, red, or blue, is apt to vary; particularly

Colour. particularly in apple, pear, plum, and cherry trees. Seeds are more constant in point of colour than the vessel which contains them. In the seeds, however, of the poppy, oats, pea, bean, and kidney-bean, variations are frequently observed. The root, too, although not remarkably subject to change, is found to vary in some species of carrot and radish. Leaves frequently become spotted, as in a species of orchis, hawk-weed, ranunculus, knot-grass, and lettuce; but seldom relinquish their green colour altogether. Those of some species of amaranthus, or flower-gentle, are beautifully coloured. The spots that appear on the surface of the leaves are of different colours, liable to vary, and not seldom disappear altogether. The leaves of officinal lung-wort, and some species of fowbread, sorrel, trefoil, and ranunculus, are covered with white spots. Those of dog's-tooth violet, with purple and white. Those of several species of ranunculus, and orchis, with black and purple. Those of amaranthus, tricolor, with green, red, and yellow. Those of ranunculus acris, and a species of bog-bean, with red or purple. The under surface of the leaves of some species of pimpernel and the sea-plantain is marked with a number of dots or points; a white line runs through the leaves of Indian reed, black-berried heath, and a species of Canary grass: and the margin or brim of the leaf, in some species of box, honey-suckle, ground-ivy, and the evergreen oak, is of a silver-white colour. The whole plant is often found to assume a colour that is unnatural or foreign to it. The varieties in some species of eryngo, mug-wort, orrach, amaranthus, purslane, and lettuce, furnish examples.

Such being the inconstancy of colour in all the parts of the plant, specific names derived from that quality are, very properly, by Linnæus, deemed erroneous; whether they respect the colour of the flower, fruit, seeds, root, leaves, or express in general the beauty or deformity of the entire plant, with a particular view to that circumstance. Of this impropriety committed by former botanists, Linnæus himself is not always guiltless. Thus the two species of *sarracena*, or the side-saddle flower, are distinguished by the colour of their petals into the yellow and purple *sarracena*; although the shape and figure of the leaves afforded much more constant as well as striking characters. The same may be said of his *lupinus albus* and *luteus*; *refeda alba*, *glauca*, and *lutea*; *angelica atro-purpurea*; *dictamnus albus*; *lamium album*; *selago coccinea*; *fida alba*; *passiflora rubra*, *lutea*, *incarnata*, and *cœrulea*; and of many others, in which the specific name is derived from a character or quality that is so liable to vary in the same species.

We shall conclude this article with observing, that of all sensible qualities, colour is the least useful in indicating the virtues and powers of vegetables. The following general positions on this subject are laid down by Linnæus, and seem sufficiently confirmed by experiment. A yellow colour generally indicates a bitter taste; as in gentian, aloe, celandine, turmeric, and other yellow flowers. Red indicates an acid or sour taste; as in cranberries, barberries, currants, raspberries, mulberries, cherries; the fruit of the rose, sea-buckthorn, and service-tree. Herbs that turn red towards autumn, have likewise a sour taste; as sorrel, wood-

Colour. sorrel, and bloody dock. Green indicates a crude alkaline taste, as in leaves and unripe fruits. A pale colour denotes an insipid taste, as in endive, asparagus, and lettuce. White promises a sweet luscious taste; as in white currants and plums, sweet apples, &c. Lastly, black indicates a harsh, nauseous, disagreeable taste; as in the berries of deadly nightshade, myrtle-leaved fumach, herb-christopher, and others; many of which are not only unpleasant to the taste, but pernicious and deadly in their effects.

To be ascertained of the acid or alkaline property of any plant, express some of the juice, and rub it upon a piece of blue paper; which, if the plant in question is of an acid nature, will turn red; if of an alkaline, green. For the methods of extracting colours from the different parts of plants, see the article *COLOUR-Making*.

COLOUR of the Human Species, Difference of. See COMPLEXION.

COLOUR, in heraldry. The colours generally used in heraldry are, red, blue, black, green, and purple; which the heralds call *gules*, *azure*, *sable*, *vert* or *sinople*, and *purpure*; tenne, or tawny, and sanguine, are not so common: as to yellow and white, called *or* and *argent*, they are metals, not colours.

The metals and colours are sometimes expressed in blazon by the names of precious stones, and sometimes by those of planets or stars. See BLAZONING.

Enomaus is said first to have invented the distinction of colours, to distinguish the gundillæ of combatants of the Circensian games; the green for those who represented the earth, and blue for those who represented the sea.

COLOURS, in the military art, include the banners, flags, ensigns, &c. of all kinds, borne in the army or fleet. See FLAG and STANDARD.

COLOURS, in the Latin and Greek churches, are used to distinguish several mysteries and feasts celebrated therein.

Five colours only are regularly admitted into the Latin church: these are white, green, red, violet, and black. The white is for the mysteries of our Saviour, the feast of the Virgin, those of the angels, saints, and confessors; the red is for the mysteries and solemnities of the holy sacrament, the feasts of the apostles and martyrs; the green for the time between pentecost and advent; and from epiphany to septuagesima; the violet in advent and Christmas, in vigils, rogations, &c. and in votive masses in time of war; lastly, the black is for the dead, and the ceremonies thereto belonging.

In the Greek church, the use of colours is almost abolished, as well as among us. Red was, in the Greek church, the colour for Christmas and the dead, as black among us.

To COLOUR Stranger's Goods, is when a freeman allows a foreigner to enter goods at the custom-house in his name.

COLOUR-Making, the art of preparing the different kinds of colours used in painting.

This art properly belongs to chemistry; and is one of the most curious, though least understood, parts of it. The principles on which colour-making depends are entirely different from those on which the theory of other parts of chemistry is founded; and the practical

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cal part being in the hands of those who find it their interest to conceal their methods as much as possible, it thence happens, that there is not only no distinct theory of this art, but scarce a single good receipt for making any one colour hath ever appeared.

1
Division of colours into opaque and transparent.

The first general division of colours is into opaque and transparent. By the first are meant such colours as, when laid over paper, wood, &c. cover them fully so as to efface any other painting or stain that might have been there before; the others are of such a nature as to leave the ground on which they are laid visible through them. Of the first kind are white-lead, red-lead, vermilion, &c.; of the latter kind are the colours used for illuminating maps, &c.

2
Oil and water colours

Another division is into oil-colours and water-colours; by which is meant, such as are appropriated to painting in oil and in water. Most of those which are proper for painting in water, are also proper for being used in oil. There is, however, this remarkable difference betwixt colours when mixed with water and with oil, that such as are quite opaque in water will become perfectly transparent in oil. Thus, blue verditer, though exceedingly opaque in water, if ground with oil, seems totally to dissolve, and will become very transparent. The same thing happens to such colours as have for their basis the calx of tin, alabaster, or calcareous earth. The most perfectly opaque colours in oil are such as have lead, mercury, or iron, for their basis: to the latter, however, Prussian blue is an exception; for though the basis of that colour is iron, it proves quite transparent when ground with oil. In water-colours, those prepared from metals, Prussian blue alone excepted, are always opaque; from vegetables or animals, transparent. Coals, however, whether vegetable or animal, are opaque both in water and oil.

3
Simple and compound ones.

Colours again, may be considered as either simple or compound. The simple ones are such as require nothing to be superadded to them, in order to make a full strong colour, without regarding whether they are formed of many or few ingredients; and in this view, white-lead, red-lead, vermilion, calces of iron, &c. are simple colours. The compound ones are formed by the union of two or more colouring substances; as blue and yellow united together to form a green, red and yellow to form an orange, a white earth or calx with the red colour of cochineal or brazil to form a lake, &c.; and thus carmine, lake, rose-pink, Dutch-pink, English-pink, &c. are compound colours.

4
True and false colours.

The last and most important division of colours is into true and false. By the former are meant those which retain their colour under every possible variety of circumstances, without fading in the least: the others are such as do not; but either lose their colour altogether, or change to some other. What is chiefly apt to affect colours, is their being exposed to the sun in summer, and to the cold air in winter: but to this there is one exception, *viz.* white-lead; which, when ground with oil, retains its whiteness if exposed to the weather, but degenerates into a brownish or yellowish colour if close kept. In water this substance is very apt to lose its colour, whether exposed to the air or not. The great desideratum in colour-making is to produce the first kind of colours, *viz.* such as will not fade by exposure to the weather; and indeed it is to

be regretted, that the most beautiful are in general the least permanent. It may, for the most part, however, be expected, that the more simple any colour is, the less liable will it be to change upon exposure to the air.

The great difficulty of knowing *a priori* whether a colour will fade or not, is owing to our ignorance concerning the nature of colouring substances. With all our disadvantages, however, we may observe, that whatever change of colour is produced in any substance by exposure to the sun and air, that colour to which it changes will bid fair for being permanent, and therefore ought to be employed where it can be done.

Of these changes the instances are but very rare. One is in the purple of the ancients, which assumed its colour by exposure to the sun, and consequently was exceedingly permanent. Another is in the solution of silver; which, being mixed with chalk, the precipitate turns to purplish black where it is exposed to the sun. A third is in solutions of indigo by alkaline substances, which constantly appear green till exposed to the air by spreading them very thin, upon which they become almost instantaneously blue, and continue so ever after. Sometimes, though still more rarely, a very remarkable change of colour happens, upon mixing two vegetable juices together. Almost the only instance of this we have on the authority of Mr George Forster, who informs us, that the inhabitants of Otaheite dye their cloth of a crimson colour, by mixing together the yellow juice of a small species of fig with the greenish juice of a kind of fern. But the most remarkable alterations of colour are effected by different metallic and saline solutions mixed with certain animal or vegetable substances; and with these the colour-maker will be principally conversant.

It is a common observation in chemistry, that acids mixed with blue vegetable juices turn them red, and alkalis green. It is equally certain, though not so generally known, that acids of all kinds generally tend to heighten red colours, so as to make them approach to the scarlet or true crimson; and alkalis to darken, or make them approach to blue or purple. Mixed with yellow colours, acids also universally tend to brighten the yellow; and alkalis to turn it to an orange, and make it become more dull. But though this is very generally the case, we are not to expect that all acids are equally powerful in this respect. The nitrous acid is found to heighten the most of any, and the marine acid the least of the mineral ones. The vegetable, as might be expected, are less powerful than the mineral acids. Thus, if with a tincture of cochineal, either in water or spirit of wine, is mixed the pure nitrous acid, it will change the colour to an exceeding high orange or flame colour, which it will impart to cloth. If the vitriolic acid is used, a full scarlet, inclining to crimson rather than orange, is produced. With marine acid a true crimson colour, bordering on purple, is the consequence. Alkalis, both fixed and volatile, change the colour to a purple, which is brighter with the volatile than the fixed alkalis.

Here it is obvious, that whatever colours are produced by the mixtures of different substances together, the permanency of these colours can only be in proportion to the ability of such mixtures to resist the

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5
Instances of colours produced by exposure to the sun and air.

6
By the mixture of two vegetable juices.

7
Effects of acids and alkalis on colours.

8
Permanency of colours, by what det. the mind. weather.

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weather. Thus, suppose a high scarlet or orange colour is produced by means of spirit of nitre, it is plain that, was such a colour exposed to the air, it could remain no longer than the spirit of nitre which produced it remained. In proportion, therefore, as the spirit of nitre was exhaled into the air, or otherwise destroyed, it behoved the colour to fade, and at last to be totally destroyed; and thus, in proportion to the destructibility of the substances by which colours are produced, will be the disposition of such colours to fade, or the contrary. In this respect alkalies are much more destructible than acids, and consequently less proper for the preparation of colours. With regard to acids, the nitrous seems most destructible, the vitriolic less so, and the marine the least of all. From the extreme fixity of the phosphorine acid and sedative salt, perhaps they might be of service in preserving colours.

As all colours, whether derived from the animal or vegetable kingdom, must be extracted either by pure water or some other liquid menstruum, they cannot be used for the purposes of painting till the colouring substance is united with some earthy or solid matter, capable of giving it a *body*, as the workmen call it; and according to the nature of this substance, the colour will be transparent or otherwise. This basis ought to be of the most fixed and durable nature; unalterable by the weather, by acids, or by alkalies. It ought also to be of a pure white colour, and easily reducible into an impalpable powder. For this reason all earthy substances should be avoided as being acted upon by acids; and therefore, if any of these were added to heighten the colour, they would not fail to be destroyed, and their effect totally lost. Precipitates of lead, bismuth, &c. though exceedingly fine and white, ought also to be avoided, as being apt to turn black by exposure. The only substance to be chosen in preference to all others, is calx of tin, prepared either by fire or the nitrous acid. This is so exceedingly refractory as not only to be unalterable by alkalies, acids, or the sun and weather, but even by the focus of a very large burning mirror. It is besides white as snow, and capable of being reduced to an extreme degree of fineness, insomuch that it is made use of for polishing metalline speculums. For these reasons, it is the most proper basis for all fine colours. For coarse ones, the white precipitate of lead, mentioned under the article CHEMISTRY, n^o 703, will answer very well. It hath a very strong body, *i. e.* is very opaque, and will cover well; may be easily ground fine, and is much less apt to turn black than white lead; it is besides very cheap, and may be prepared at the small expence of 3d. *per* pound.

If what we have just now observed is attended to, the general method of extracting colours from any vegetable or animal substance, and fixing them on a proper basis, must be very easily understood. For this purpose, a quantity of calx of tin is to be procured in proportion to the quantity of colour desired. This must be well rubbed in a glass mortar, with a little of the substance designed for brightening the colour, as alum, cream of tartar, spirit of nitre, &c. after which it must be dried, and left for some time, that the union between the two substances may be as perfect as possible. If the colour is to be a very fine one, suppose from cochineal, the colouring mat-

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ter must be extracted with spirit of wine without heat. When the spirit is sufficiently impregnated, it is to be poured by little and little upon the calx, rubbing it constantly, in order to distribute the colour equally through all parts of the calx. The spirit soon evaporates, and leaves the calx coloured with the cochineal. More of the tincture is then to be poured on, rubbing the mixture constantly as before; and thus, with proper management, may very beautiful colours, not inferior to the best carmine, be prepared at a moderate expence. If, instead of cochineal, we substitute brazil-wood, turmeric, logwood, &c. different kinds of red, yellow, and purple, will be produced. For the coarser colours, aqueous decoctions are to be used in a similar manner; only as these are much longer of evaporating than the spirit of wine, very little must be poured on at a time, and the colours ought to be made in large quantity, on account of the tediousness of the process.

Hitherto we have considered only the effects of the pure and simple salts, *viz.* acids and alkalies, on different colours; but by combining the acids with alkalies, earths, or metals, these effects may be varied almost *in infinitum*; neither is there any rule yet laid down by which we can judge *a priori* of the changes of colour that will happen on the admixture of this or that particular salt with any colouring substance. In general, the perfect neutrals act weakly; the imperfect ones, especially those formed from metals, much more powerfully. Alum and sal ammoniac considerably heighten the colour of cochineal, brazil, turmeric, fustic, madder, logwood, &c. The same thing is done, though in a less degree, by common salt, Glauber's salt, saltpetre, and many other neutrals. Solutions of iron in all the acids strike a black with every one of the above-mentioned substances; and likewise with fumach, galls, and other astringents. Solutions of lead, or saccharum saturni, universally debase red colours to a dull purple. Solution of copper changes the purple colour of logwood to a pretty good blue; and, in general, solutions of this metal are friendly to blue colours. The effects of solutions of gold, silver, and mercury, are not so well known; they seem to produce dark colours of no great beauty. The most powerful solution, however, with regard to a great number of colours, is that of tin, made in aqua regia. Hence we may see the fallacy of Mr Delaval's hypothesis concerning colours*, that the least refrangible ones are produced by the most dense metals: for tin, which hath the least density of any metal, hath yet, in a state of solution, the most extraordinary effects upon the least refrangible colours as well as those that are most so. The colour of cochineal is changed by it into the most beautiful scarlet; a similar change is made upon the colouring matter of gum-lac. Brazil-wood is made to yield a fine purplish crimson; logwood, a beautiful dark purple; turmeric, fustic, weld, and all yellow-colouring woods and flowers, are made to communicate colours far more beautiful than can be got from them by any other method. The blue colour of the flowers of violets, eye-bright, iris, &c. are heightened so as to equal, if not excel, the blue produced by a solution of copper in volatile alkali. In short, this solution seems to be of much more extensive use in colour-making,

Effects of different kinds of salts.

Solution of tin the most powerful.

* See Chromatics, n^o 8.

9 opaque or transparent colours, low formed.

10 Calx of tin, the most proper basis for fine colours.

11 Precipitate of lead most proper for coarse ones.

12 General method of preparing colours.

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when properly applied, than any thing hitherto thought of. It is not, however, univerfally ferviceable. The colour of madder it totally deftroys, and likewise that of faf-flower, changing them both to a dull orange. It likewise fpoils the colour of archil; and what is very remarkable, the fine red colour of tincture of rofes made with oil of vitriol, is by folution of tin changed to a dirty green.

15
Directions for the choice of colouring materials.

The moft important confideration in colour making is to make choice of fuch materials as produce the moft durable colours; and if thefe can be procured, an ordinary colour from them is to be preferred to a bright one from thofe which fade fooner. In what the difference confifts between the colours that fade and thofe which do not, is not known with any degree of certainty. From fome appearances it would feem, that thofe fubftances which are moft remarkable for keeping their colour, contain a viscus glutinous matter, fo combined with a refinous one as to be foluble both in water and fpirit of wine. The moft durable red colour is prepared from gum-lac. This is very ftrongly refinous, though at the fame time fo far glutinous, that the colouring-matter can be extracted from it by water. Next to gum-lac are madder roots and cochineal. The madder is an exceedingly penetrating fubftance, infomuch that, when given to animals along with their food, it tinges their bones of a deep red colour. Its colouring-matter is foluble both in water and fpirit of wine. Along with the pure red, however, there is in madder a kind of viscus aftringent fubftance, of a dark brown colour, which feems to give the durability to the whole. The colouring-matter of cochineal, though foluble both in water and fpirit of wine, is very tenacious and mucilaginous, in which it bears fome refemblance to the *purpura* of the ancients, which kept its colour exceedingly well. Where the colours are fugitive, the tinging fubftance feems to be too refinous or too mucilaginous. Thus the colours of brazil, turmeric, &c. are very refinous, efppecially the latter; infomuch that the colouring-matter of turmeric can fcarcely be extracted by water. Both thefe are perifhable, though beautiful colours; and much more are the red, purple, and blue flowers, commonly to be met with. Thefe feem to be entirely mucilaginous without the leaft quantity of refinous matter. The yellow flowers are different, and in general keep their colour pretty well. Whether it would be poffible, by adding occafionally a proper quantity of gum or refin, to make the fugitive colours more durable, hath not yet been tried, but feems to have fome probability. What tends a little to confirm this, is a procefs given by Mr Hellot for imparting durability to the colour of brazil. It confifts only in letting decoctions of the wood ftand for fome time in wooden casks till they grow ftale and *ropy*. Pieces of woollen cloth now dyed in the liquor acquired a colour fo durable, that they were not in the leaft altered by expofure to the air during four months in the winter feafon. Whether this change in the durability of the colour was effected by the ropinefs following the fermentation, or by fome other caufe, or whether the experiment can be at all depended upon, muft be referred to future obfervation.

16
Mr Hellot's method of improving the durability of brazil-wood.

17
Preparation of different colours.

Having thus collected all that can as yet be de-

pended upon for eftablifhing a general theory of colour-making, we fhall now proceed to give an account of the different pigments generally to be met with in the colour-fhops.

Colour-making.

18
Lamp-black.

1. *Black*. Thefe are lamp-black, ivory-black, blue-black, and Indian-ink. The firft is the fineft of what are called the foot-blacks, and is more ufed than any other. Its preparation is defcribed in the Swedifh Tranfactions for the year 1754, as a procefs dependent on the making of common refin: the impure refinous juice collected from incifions made in pine and fir trees, is boiled down with a little water, and ftrained whilst hot through a bag: the dregs and pieces of bark left in the ftrainer are burnt in a low oven, from which the fmoke is conveyed through a long paffage into a fquare chamber, having an opening on the top on which is a large fack made of thin woollen ftuff: the foot, or lamp-black, concretes partly in the chamber, from whence it is fwept out once in two or three days, and partly in the fack, which is now and then gently ftruck upon, both for fhaking down the foot, and for clearing the interfices betwixt the threads, fo as to procure a fufficient draught of air through it. In this manner lamp-black is prepared at the turpentine houfes in England, from the dregs and refuse of the refinous matters which are there manufactured.

19
Dr Lewis's observations.

On this fubject Dr Lewis hath fome curious obfervations. "The foot (fays he) arifing in common chimneys, from the more oily or refinous woods, as the fir and pine, is obferved to contain more diffoluble matter than that from the other woods: and this diffoluble matter appears, in the former, to be more of an oily or refinous nature than in the latter; fpirit of wine extracting it moft powerfully from the one, and water from the other. The oilynefs and folubility of the foot feeming therefore to depend on thofe of the fubject it is made from, it has been thought that lamp-black muft poffefs thefe qualities in a greater degree than any kind of common foot. Nevertheless, on examining feveral parcels of lamp-black, procured from different fhops, I could not find that it gave any tincture at all, either to fpirit or to water.

"Suspecting fome miftake or fophiftication, or that the lamp-black had been burnt or charred, as it is to fit it for fome particular ufes, I prepared myfelf fome foot from linfeed oil, by hanging a large copper pan over the flame of a lamp to receive its fmoke. In this manner the more curious artifts prepare lamp-black for the nicer purpofes; and from this collection of it from the flame of a lamp, the pigment probably received its name. The foot fo prepared gave no tincture either to water or to fpirits, any more than the common lamp-black of the fhops. I tried different kinds of oily and refinous bodies with the fame event; even the foots obtained from fifh-oils and tallow did not appear to differ from thofe of the vegetable-oils and refinous. They were all of a finer colour than the lamp-black commonly fold.

"Some foot was collected in like manner from fir and other woods, by burning fmall pieces of them flowly under a copper-pan. All the foots were of a deeper black colour than thofe obtained from the fame kinds of woods in a common chimney; and very little, if at all, inferior to thofe of the oils: they gave only

a just discernible tincture to water and spirit, while the soots of the chimney imparted a strong deep one to both. The soot of mineral bitumens, in this close way of burning, appears to be of the same qualities with those of woods, oils, and resins: in some parts of Germany, great quantities of good lamp-black are prepared from a kind of pit-coal.

"It appears, therefore, that the differences of soots do not depend altogether on the qualities of the subjects, but in a great measure on the manner in which the subject is burnt, or the soot caught. The soots produced in common chimneys, from different kinds of wood, resinous and not resinous, dry and green, do not differ near so much from one another, as those which are produced from one kind of wood in a common chimney, and in the confined way of burning above mentioned."

Ivory-black is prepared from ivory or bones burnt in a close vessel. This, when finely ground, forms a more beautiful and deeper colour than lamp-black; but in the common methods of manufacturing, it is so much adulterated with charcoal dust, and so grossly leigated, as to be unfit for use. An opaque deep black for water-colours, is made by grinding ivory-black with gum-water, or with the liquor which settles from the whites of eggs after they have been suffered to stand a little. Some use gum-water and the whites of eggs together, and report, that a small addition of the latter makes the mixture flow more freely from the pencil, and improves its glossiness. It may be observed, however, that though ivory-black makes the deepest colour in water as well as in oil-painting, yet it is not on this account always to be preferred to other black pigments. A deep jet-black colour is seldom wanted in painting; and in the lighter shades, whether obtained by diluting the black with white bodies, or by applying it thin on a white ground, the particular beauty of the ivory-black is in a great measure lost.

Blue-black is said to be prepared from the burnt stalks and tendrils of the vine. These, however, the colour-makers seldom give themselves the trouble of procuring, but substitute in its place a mixture of ivory-black and the common blue used for clothes.

Indian-ink is an excellent black for water-colours. It hath been discovered by Dr Lewis to consist of a mixture of lamp-black and common glue. Ivory-black, or charcoal, he found to answer equally well, provided they were levigated to a sufficient degree of fineness, which indeed requires no small trouble.

2. *White.* The white colours commonly to be met with are, white-flake, white-lead, calcined hartshorn, pearl-white, Spanish-white, egg-shell white, and magistery of bismuth. The flake-white and white-lead are properly the same. The preparation of the former is kept a secret; the method of preparing the latter is described under CHEMISTRY, n^o 875. These are the only whites that can be used in oil, all the rest being transparent unless they are laid on with water. Calcined hartshorn is the most useful of the earthy whites, as being the least alkaline. Spanish-white is only finely prepared chalk. Pearl-white is made from oyster-shells; and egg-shell white from the shells of eggs. All these, by their attraction for acids, must necessarily destroy such colours as have any acid or

metallic salt in their composition. The magistery of bismuth is apt to turn black, as are also flake-white and white-lead, when used in water. The white precipitate of lead recommended under CHEMISTRY, n^o 703, is greatly superior as a water-colour to all these; being perfectly free of any alkaline quality, and not at all apt to lose its own colour, or to injure that of other substances.

3. *Red.* The red colours used in painting are of two sorts; viz. those which incline to the purple, and such as are of a full scarlet and tend rather to the orange. The first are carmine, lake, rose-pink, red-ochre, and Venetian-red. The second are vermilion, red-lead, scarlet-ochre, common Indian-red, Spanish-brown, and terra di Sienna, burnt.

We have already (n^o 12.) laid down some general rules for the preparation of carmine and lake. Particular receipts have been delivered with the greatest confidence for making these fine colours; but all of them must necessarily prove ineffectual, because an earthy basis is recommended for striking the colour upon: from the principles of chemistry, however, we are certain, that if aquafortis, or solution of tin, is made use of for brightening a colour made with any earthy basis, it must infallibly be destroyed by that basis, by reason of its alkaline quality. Carmine is the brightest and most beautiful red colour known at present; the best comes from France. Lake differs from it in being capable of mixture with oil; which carmine is not, unless with great difficulty. The former is also much more inclined to purple than carmine. This last quality, however, is reckoned a defect; and accordingly, the more that lake approaches to the scarlet or true crimson, the more it is valued. On dropping solution of tin into an aqueous tincture of brazil-wood, a beautiful precipitate falls, of a purplish crimson colour. This may be very well substituted in place of the dearer lakes on many occasions.

Rose-pink is a very beautiful colour, inclining more to the purple than scarlet. It seems to be made of chalk, coloured with a decoction of brazil-wood, heightened by an alkaline salt; for which reason it is exceedingly perishable, and but little esteemed. The colour might be made much more durable as well as better, by employing for a basis the white precipitate of lead above-mentioned, and brightening it with solution of tin.

Red ochre and Venetian red differ in nothing from the colcothar of vitriol well calcined. The calces of iron may be made to appear either purplish, or inclining to the scarlet, according to the manner in which the calcination is performed. If the matter is perfectly deprived of its phlogiston, and subjected to an intense fire, it always turns out red: but the mixture of a small quantity of inflammable matter gives it a purplish cast. Hence various paints are kept in the shops under different names, which yet differ from each other only in the slight circumstance above mentioned: and such are the scarlet-ochre, Spanish-brown, and terra di Sienna burnt. It is remarkable, that the calces of iron never show their colour till they become cold. Colcothar of vitriol, while hot, always appears of a very dark dusky purple.

Of the preparation of vermilion and red lead, an account is given under the article CHEMISTRY, n^o 1213; 14C4. These are very durable colours, the first is the

best

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Red colours.

Colour-making.

20
Ivory-black.

21
Blue-black.

22
Indian-ink.

23
White colours.

Colour-making.

best red used in oil painting, but does not answer well in water; the other is rather an orange; and, like other preparations of lead, is in some cases apt to turn black.

25
Orange colours.

4. *Orange.* The only true orange-coloured paints are red orpiment and orange lake. The first is a sublimate formed of arsenic and sulphur; the other may be prepared from turmeric infused in spirit of wine, having its colour struck upon calx of tin, and brightened by a solution of that metal. All the shades of orange, however, may be extemporaneously prepared by mixing red and yellow colours together, in due proportions.

26
Yellow colours.

5. *Yellow.* The yellow paints most commonly in use are, king's-yellow, Naples-yellow, Dutch-pink, English-pink, masticot, common orpiment, yellow-ochre, terra di Sienna unburnt, and Turbith-mineral.

King's-yellow is evidently an arsenical preparation. Its colour is exceedingly beautiful, but apt to fade; on which account, and its great price, it is seldom used.

Naples-yellow was for a long time thought to be a preparation of arsenic, but is now discovered to have lead for its basis. It is therefore apt to turn black and lose its colour, which makes it the less valuable. It is nevertheless used in preference to king's-yellow, on account of its inferiority in price. This colour is particularly liable to be spoiled by iron when moist, and therefore should never be touched by that metal unless previously ground in oil.

Dutch-pink is said to be prepared by striking the colour of yellow berries upon finely levigated chalk. But of this there is great reason to doubt; the basis of Dutch-pink seems much more hard and gritty than chalk, and its colour more durable than those struck upon that earth usually are. Very good yellows may be prepared with the white precipitate of lead, formerly mentioned, by using either yellow berries, fustic, or any other substance capable of yielding that colour. English pink is paler than the Dutch, and keeps its colour greatly worse.

Masticot is prepared by calcining white-lead till it assumes a yellowish colour. It is not apt to change, but the colour is so dull that it is seldom used either in oil or water.

Common orpiment is a pretty bright greenish-yellow, prepared by subliming arsenic with sulphur. Its nauseous smell, which is greatly increased by grinding in oil, makes it very disagreeable; nor does it keep its colour for any length of time. That kind of orpiment least inclined to green is to be preferred for the purposes of painting.

Yellow-ochre and terra di Sienna, are ferruginous earths, capable of becoming red by calcination. Green vitriol precipitated by lime may be advantageously substituted to either of them. See CHEMISTRY, n° 699.

Turbith mineral is but little used in painting, though its fine yellow colour seems greatly to recommend it. This preparation is in all probability very durable; and should seem therefore worthy of a preference either to king's or Naples yellow. The method of preparing it is described under CHEMISTRY, n° 705.

Gamboge is a paint that can only be used in water, and is the most common yellow made use of for co-

louring maps, &c. but for this it is not very proper, being neither quite transparent, nor very durable.

6. *Green.* The only simple green colour that hath a tolerable degree of brightness is verdigrease, or preparations of it. This, however, though a very beautiful colour, is far from being durable. It is improved in colour, though not in durability, by dissolution and crystallization in distilled vinegar; in which state it is called *distilled verdigrease*. A more durable water-colour is made by dissolving the verdigrease in cream of tartar, or rather the pure tartarous acid; but in oil this is found to be equally fugitive with the verdigrease itself. For an account of these preparations, see CHEMISTRY, n° 894.

Compound greens are either made of Prussian or some other blue, mixed with yellow; but in whatever way these colours can be compounded, the beauty of the green produced is greatly inferior to distilled, or even common, verdigrease. The tartarous solution of verdigrease, mixed with a little gamboge, is the best transparent green water-colour we have had an opportunity of trying; and a mixture of Prussian-blue and turbith-mineral is probably the best opaque one.

Sap-green is a simple colour, but exceedingly inferior to distilled verdigrease, or even to the tartarous solution of verdigrease with gamboge. It is prepared from the juice of unripe buckthorn berries evaporated to the consistence of a gum. Its green colour is greatly inclined to yellow. A kind of compound green has been sometimes used, called *Prussian-green*, which consists only of Prussian blue and yellow-ochre. It has no beauty, nor is it durable. It is prepared as Prussian-blue, only not pouring on any spirit of salt to dissolve the ochreous sediment which falls at the same time.

Another green sometimes used is called *terra verte*. This is a native earth, probably impregnated with copper. It is of a bluish green colour, much of that taint called *sea-green*. It is gritty, and therefore must be well levigated before it is used. Its colour is durable, but not very bright.

7. *Blue.* The blue colours are ultramarine, Prussian-blue, verditer, smalt, bice, and indigo. Of these the ultramarine is the finest, but its great price hinders its being much used. It is a preparation from lapis lazuli; is an exceeding bright colour, and never fades with whatever substance it is mixed. It is now, however, in a great measure superseded by Prussian blue, to the disadvantage of painting in general; as Prussian blue, though very beautiful, is far from being durable. For an account of its preparations see the article ULTRAMARINE.

The process for making Prussian blue is described, and its nature fully considered, under CHEMISTRY, n° 1163: so that it is sufficient here to observe, that Prussian blue is to be accounted of the best quality when it is deep, bright, and not inclined to purple. It ought to be tried by mixture with white lead, as the brightness of the colour will appear much more when diluted than when concentrated in the lumps of the blue itself.

The preparation of blue verdites is kept a secret, and the best chemists have been puzzled to find out the method. The colour is exceedingly bright, and has a

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Green colours.28
Blue colours.

considerable tinge of green. A method of preparing a colour equally beautiful, and agreeing in all respects with what is sold in the shops, except that of effervescing with acids, we have found to be as follows: Dissolve copper in strong caustic alkali, until the liquid has assumed a very deep blue colour; and the deeper this colour is, the finer will your verditer be. When the menstruum has dissolved as much of the metal as it can take up, it is to be poured out into a broad and well glazed earthen pan, held over a very gentle fire; and from the moment it is put on the liquor is to be continually agitated with a wooden spatula, so that the liquor may be heated as equally as possible. The whole secret consists in properly regulating the degree of heat; for if it exceeds the due proportion ever so little, the verditer will turn out of a dirty green. The proper degree is about 90° of Fahrenheit's thermometer. In this gentle heat the alkali slowly evaporates; and in proportion to its doing so the verditer falls to the bottom. After it is once formed, freed from the alkaline liquor, and dried, it can bear the affusion of boiling water without the least injury. Dr Priestley, in his sixth volume, takes notice, that solution of copper in volatile alkali affords a blue precipitate by heat, but without taking notice of the requisites for its success. In making this preparation, it is necessary to dissolve copper in its metallic state; for the solution of any calx will not yield a blue but a green colour. This colour is durable in water, but dissolves in oil, and has then all the inconveniences of verdigrease above mentioned.

Smalt is glass-coloured with zaffre, a preparation from cobalt*. It is commonly so grossly powdered that it cannot be used in painting, and its texture is so hard that it cannot easily be levigated. Its colour is exceedingly bright and durable; so that when finely levigated it is used instead of ultramarine. The most proper materials for levigating this substance seem to be the plates of M. Reaumur's porcelain recommended by Dr Lewis. See CHEMISTRY, n° 592, 599. For the preparation and qualities of bice, see the articles *ARMENUS Lapis* and *BICE*.

Indigo is but little used in painting either in oil or water, on account of the dulness of the colour. It requires no other preparation than being washed over. Its goodness is known by the darkness and brightness of the colour. See *INDIGO*.

8. *Purple*. The only simple colour of this kind used at present is colcothar of vitriol. A beautiful purple lake may be prepared from logwood by means of solution of tin; but this method of preparing colours is very little known as yet.

9. *Brown*. The brown colours are, bistre, brown-ochre, Cologne-earth, umbre, and brown-pink. Under the article *BISTRE* is given a process for making that colour, by infusing foot in water, pouring off the tincture, and then evaporating it to an extract; but Dr Lewis is of opinion, with Mr Landois in the French *Encyclopédie*, that the foot is either boiled in water, or ground with a little liquid of some kind into a smooth paste; it is then diluted with more water, and after standing for about half an hour till the grosser substance of the foot has settled, the liquor is poured off into another vessel, and set by for two or three days, that the finer parts may fall to the bottom, and this

fine matter is the bistre. This is a very useful colour in water, being exceedingly fine, durable, and not apt to spoil any other colours with which it is mixed. The brown pink is said to consist of chalk tinged with the colouring matter of fustic, heightened by fixed alkaline salts. It is therefore very perishable, and is seldom used. The other browns are a kind of ochreous earths; for a description of which see their proper articles.

Having now considered most of the colouring substances usually to be met with in the shops, we shall next take notice of some attempts that have been made to produce all the different colours from vegetables, after the manner of lakes; which, though the methods hitherto tried have for the most part failed of success, may perhaps some time or other be found applicable to valuable purposes.

From infusions of astringent vegetables mixed with green vitriol, is produced a deep black liquor of extensive use in dyeing†. The substances which produce the deepest blacks are galls and logwood. When a decoction or infusion of the galls is dropped into a solution of the vitriol largely diluted with water, the first drops produce bluish or purplish red clouds, which soon mingling with the liquor, turn it uniformly of their own colour. It seems to be on the quality of the water that this difference in the colour depends. With distilled water, or the common spring-waters, the mixture is always blue. If we previously dissolve in the water the most minute quantity of any alkaline salt, too small to be discovered by any of the common means by which waters are usually tried, or if the water is in the least putrid, the colour of the mixture proves purple or reddish. Rain-water, caught as it falls from the clouds in an open field in clean glass-vessels, gives a blue; but such as is collected from the tops of the houses, grows purple with the mixture of vitriol and galls: from whence it may be presumed, that this last has contracted a putrid tendency, or received an alkaline impregnation, though so slight as not to be sensible on other ways of trial.

Both the purple and blue liquors, on adding more of the astringent infusion, deepen to a black, more or less intense according to the nature of dilution: if the mixture proves of a deep opaque blackness, it again becomes bluish or purplish when further diluted. If suffered to stand in this diluted state for two or three days, the colouring matter settles to the bottom in form of a fine black mud, which by slightly shaking the vessel, is diffused again through the liquor, and tinges it of its former colour. When the mixture is of a full blackness, this separation does not happen, or in a far less degree; for though a part of the black matter precipitates in standing, yet so much remains dissolved, that the liquor continues black. This suspension of the colouring substance, in the black liquid, may be attributed in part to the gummy matter of the astringent infusion increasing the consistence of the watery fluid; for the separation is retarded in the diluted mixture by a small addition of gum Arabic. If the mixture either in its black or diluted state is poured into a filter, the liquor passes through coloured; only a part of the black matter remaining on the filter. The filtered liquor on standing for some time becomes turbid and full of fine black flakes: being

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Attempts to make lakes of all colours.33
Black from astringents. See Dyeing.

Colour-making.

See Zaffre from cobalt.
Smalt.29
Purple colours.30
Brown colours.31
Lewis's opinion concerning Bistre.

freed

Colour-making.

freed from these by a second filtration, it again puts on the same appearance; and thus repeatedly till all the colouring parts are separated, and the liquor has become colourless.

Dr Lewis, from whose Philosophical Commerce of Arts this account is taken, further informs us, that this colouring matter, when separated from the liquor and dried, appeared of a deep black, which did not seem to have suffered any change from the air by exposure for upwards of four months. Made red-hot, it glowed and burnt, but did not flame, and became a rusty brown powder, which was readily attracted by a magnetic bar; though in its black state the magnet had no action upon it. The vitriolic acid, diluted with water and digested on the black powder, dissolved the greatest part of it, leaving only a very small quantity of whitish matter. Solution of pure fixed alkaline salt dissolved very little of it: the liquor received a reddish brown colour, and the powder became blackish brown. This residuum was attracted by the magnet after being red-hot, though not before: the alkaline tincture, passed through a filter, and mixed with a solution of green vitriol, struck a deep brownish black colour, nearly the same with that which results from mixing with the vitriolic solution, an alkaline tincture of galls.

34
Black from a combination of other colours.

It hath also been attempted to produce black from a combination of other colours; as green may be produced from a mixture of blue and yellow. Mr le Blon, in his *Harmony of Colours*, gives a method of forming black, by mixing together the three colours called *primitive*, viz. blue, red, and yellow; and Mr Castel, in his *Optique des Couleurs*, published in 1740, says that this compound black has an advantage, in painting, above the simple ones, of answering better for the darkening of other colours. Thus, if blue, by the addition of black, is to be darkened into the colour called *blue-black*, the simple blacks, according to him, if used in sufficient quantity to produce the requisite deepness, conceal the blue, while the compound blacks leave it distinguishable. Le Blon does not mention the proportions of the three colours necessary for producing black. Castel directs 15 parts of blue, five of red, and three of yellow; but takes notice, that these proportions are rather speculatively than practically just, and that the eye only can be the true judge; our colours being all very imperfect, and our pigments or other bodies of one denomination of colour being very unequal in their degree of intensity. He observes, that the pigments should all be of the deepest and darkest kind: and that, instead of taking one pigment for each colour, it is better to take as many as can be got; for the greater discord there is of heterogeneous and discordant drugs, the more true and beautiful, he says, will the black be, and the more capable of uniting with all other colours, without suppressing them, and even without making them tawney.

Dr Lewis acquaints us, that by mixing different blue, red, and yellow colours, he has not been able to produce a perfect black; but has often obtained from them very dark colours, such as may be called *brown-blacks*, or *grey-blacks*; such as we commonly see in the dark parts of paintings, and such as the charcoal and soot blacks appear when diluted a little. The ingre-

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dients being each of a dark deep colour is a very necessary condition; for bright blues, bright reds, and bright yellows, mixed in such proportions that neither colour prevailed, produced only a grey. In effect, all compositions of this kind, physically considered, can be no other than greys, or some of the intermediate tints between whiteness and darkness; and these greys will be so much the lighter or darker as the component colours of themselves are bright or dark.

With regard to the extraction of the colouring matter from the different kinds of vegetables commonly to be met with of all colours, this would certainly be a very valuable acquisition, could the colours so procured be made durable. On this subject nothing hath yet appeared more satisfactory than what is delivered by Dr Lewis in his notes on Neumann's chemistry. His observations are curious, but promise very little success to any who shall attempt to fix these vegetable colours.

“Among the infinite variety of colours (says he), which glow in the flowers of plants, there are very few which have any durability, or whose fugitive beauty can be arrested by art, so as to be applied to any valuable purposes. The only permanent ones are the yellow, the red, the blue; and all the intermediate shades of purple, crimson, violet, &c. are extremely perishable. Many of these flowers lose their colours on being barely dried; especially if they are dried slowly, as has been usually directed, in a shady, and not warm place. The colours of all of them perish on keeping even in the closest vessels. The more hastily they are dried, and the more perfectly they are secured from the air, the longer they retain their beauty. The colouring matter extracted and applied on other bodies is still more perishable: oftentimes it is changed or destroyed in the hands of the operator.

“The colour of many blue flowers is extracted by infusion in water; but there are some from which water gains only reddish, or purplish blue. Of those that have been tried there is not one which gives any blue tincture to spirituous liquors: some give no colour at all, and some a reddish one. The juice pressed out from the fresh flowers is for the most part blue. The blue juices and infusions are changed red by all acids. The marine acid seems to strike the most florid red. The flowers themselves, macerated in acid liquors, impart also a deep red tincture. Alkalies, both fixed and volatile, and lime-water, change them to a green. Those infusions of the juices which have nothing of the native colour of the flowers, suffer the same changes from the addition of acid and alkaline liquors: even when the flowers have been kept till their colour is lost, infusions made from them acquire still a red colour from the one, and a green from the other, though in a less degree than when the flowers were fresh. The red colour produced by acids is scarcely more durable than the original blue: applied upon other bodies and exposed to the air, it gradually degenerates into a faintish purple, and at length disappears, leaving hardly any stain behind. The green produced by alkalies changes to a yellow, which does not fade so soon. The green, by lime-water, is more permanent and more beautiful: green lakes, prepared from these flowers by lime-water, have been used as pigments by

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Dr Lewis experiments on vegetable colours.

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the painter. The flowers of cyanus have been greatly recommended, as affording elegant and durable blue pigments; but I have never been able to extract from them any blue colour at all. They retain their colour indeed, when hastily dried, longer than some other blue flowers: but they communicate nothing of it to any kind of menstruum. Infusions of them in watery, spirituous, and oily liquors, are all of them more or less of a reddish cast, without any tendency to blue. Alum, which is said to heighten and preserve their blue colour, changes it, like that of other blue flowers, to a purplish red; acids to a deep red; alkalies and lime-water to a green; solution of tin added to the watery infusion, turns it of a fine crimson; on standing, a beautiful red *fæcula* subsides, but it loses all its colour by the time it is dry. The watery infusion, inspissated to the consistence of an extract, appears of a dark reddish brown: an extract made with rectified spirit is of a purplish colour. The colour of both extracts spread thin and exposed to the air quickly fades. The flowers employed in these experiments were those of the common blue-bottle of the corn-fields.

“Red flowers readily communicate their own red colour to watery menstrua: among those that have been tried, there is not one exception. Those of a full red colour give to rectified spirit also a deep red tincture, brighter, though somewhat paler, than the watery infusion: but the lighter red flowers, and those which have a tendency to purplish, impart very little colour to spirit, and seem to partake more of the nature of the blue flowers than of the pure red. Infusions of red flowers are supposed to be heightened by acids, and turned green by alkalies, like those of the blue; but this is far from being universal. Among those I have examined, the rose-colours and purplish reds were changed nearly in the same manner as the blues; but the full deep reds were not. The deep infusion of red poppies is changed by alkalies, not to a green, but to a dusky purple.

“The colours of yellow flowers, whether pale or deep, are in general durable. Many of them are as much so, perhaps, as any of the native colours of vegetables. The colour is extracted both by water and by spirit. The watery infusions are the deepest. Neither alkalies nor acids alter the species of the colour, though both of them vary its shade; acids rendering it paler, and alkalies deeper: alum likewise considerably heightens it, though not so much as alkalies. An infusion of the flowers, made in alkaline ley, precipitated by alum, gives a durable yellow lake. In some of the deep reddish yellow, or orange-coloured flowers, the yellow matter seems to be of the same kind with that of the pure yellow flowers, but the red to be of a different kind from the pure red ones; watery menstrua take up only the yellow, and leave the red, which may afterwards be extracted by rectified spirit of wine, or by water acuated by fixed alkaline salt. Such particularly are the saffron-coloured flowers of *carthamus*. These, after the yellow matter has been extracted by water, are said to give a red tincture to ley; from which, on standing at rest for some time, a deep bright red *fæcula* subsides; called from one of the names of the plant which produces it, *safflower*; and from the countries whence it is commonly brought to

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us, *Spanish-red*, and *China-lake*. This pigment impregnates spirit of wine with a beautiful red tincture, but communicates no colour to water. I have endeavoured to separate, by the same treatment, the red matter of some of the other reddish yellow flowers, as those of garden marigold, but without success. Plain water extracted a yellow colour, and alkaline ley extracted afterwards only a paler yellow: though the digestions were continued till the flowers had lost their colour, the tinctures were no other than yellow, and not so deep as those obtained from the pure yellow flowers. The little yellow *flosculi*, which in some kinds of flowers are collected into a compact round disc, as in the daisy and corn-marigold, agree, so far as they have been examined, with the expanded yellow petala. Their colour is affected in the same manner by acids, by alkalies, and by alum; and equally extracted by water and by spirit. But the yellow farina, or fine dust, lodged on the tips of the stamina of flowers, appears to be of a different kind. It gives a fine bright yellow to spirit, and a duller yellow to water; the undissolved part proving in both cases of a pale yellowish white. Both the watery and spirituous tinctures were heightened by alkaline liquors, turned red by acids, and again to a deep yellow on adding more of the alkali: I know no other vegetable yellow that is turned red by acids.

“White flowers are by no means destitute of colouring matter. Alkaline *lixivia* extract from some of them a green tincture, and change their colourless expressed juices to the same colour; but I have not observed that they are turned red by acids. The flowers of the common wild convolvulus or bind-weed, which in all their parts are white, give a deep yellow or orange tincture to plain water; which, like the tinctures of flowers that are naturally of that colour, is rendered paler by acids, heightened a little by alum, and more considerably by alkaline salts. The vapours of the volatile vitriolic acid, or of burning sulphur, which whiten or destroy the colour of the coloured flowers, make no change in the white.

“The red juices of fruits, as currants, mulberries, elder-berries, morello, and black cherries, &c. gently inspissated to dryness, dissolve again almost totally in water, and appear nearly of the same red colour as at first. Rectified spirit extracts the tinging particles, leaving a considerable portion of mucilaginous matter undissolved; and hence the spirituous tincture proves of a brighter colour than the watery. The red solutions, and the juices themselves, are sometimes made dull, and sometimes more fluid, by acids, and generally turned purplish by alkalies. The colours of these juices are for the most part perishable. They resist, indeed, the power of fermentation, and continue almost unchanged, after the liquor has been converted into wine; but when the juice is spread thin upon other bodies, exsiccated, and exposed to the air, the colour quickly alters and decays: the bright lively red changes the soonest: the dark dull red stain from the juice of the black cherry, is of considerable durability. The fruit of the American *opuntia* or prickly pear, the plant upon which the cochineal insect is produced, is perhaps an exception: This bright red fruit, according to Labat, gives a beautiful red dye. Some experiments, however, made upon the juice of that

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fruit, as brought into England, did not promise to be of any great advantage: but the particulars I cannot now recollect.

“ The ripe berries of buckthorn stain paper of a green colour. From these is prepared the substance called *sap-green*, a pigment sufficiently durable, readily soluble in water, but not miscible with oil. The berries dried while green, and macerated in alum-water, are said to yield a yellow pigment; and when they have grown over ripe so as to fall off spontaneously, a purple one. It is said that the berry of the heliotropium tricoccum, which grows wild about Montpellier, stains paper of a green colour, and that this green turns presently to a blue: that the common blue paper receives its colour from this juice: and that the red rags called *turnsol*, employed for colouring wines and other liquors, are tintured by the same juice turned red by acids. According to M. Niffole of the French academy of sciences (as quoted by Savary in his *Dictionnaire de Commerce*), the colouring juice is obtained not from the berries, but from tops of the plant gathered in August, ground in mills, and then committed to the press. The juice is exposed to the sun about an hour, the rags dipt in it, dried in the sun, moistened by the vapour which arises during the flaking of quicklime with urine, then dried again in the sun, and dipped again in the juice. The Dutch and others are said to prepare *turnsol* rags, and *turnsol* in the mafs, from different ingredients, among which archil is a principal one.

“ In some plants, peony for instance, the seeds at a certain point of maturity are covered with a fine shining red membrane. The pellicles of the seeds of a certain American tree afford the red masses brought into Europe under the names of *annotto*, *orlean*, and *raucou* *. Mr Pott, in the Berlin Memoirs for the year 1752, mentions a very extraordinary property of this concrete. ‘ With the vitriolic acid it produces a blue colour, of extreme beauty; but with this capital defect, that all salts and liquors, and even common water, destroy it.’ The specimen of *annotto*, which I examined, was not sensibly acted upon by spirit of vitriol; it received no change in its own colour, and communicated none to the liquor. Nor did any visible change ensue upon dropping the acid into tinctures of *annotto* made in water, or in spirit.

“ The green colour of the leaves of plants is extracted by rectified spirit of wine and by oils. The spirituous tinctures are generally of a fine deep green, even when the leaves themselves are dull-coloured, or yellowish, or hoary. The colour, however, seldom abides long even in the liquor; much less when the tinging matter is separated in a solid form, and exposed with a large surface to the air. The editor of the Wirtemberg Pharmacopeia observes, that the leaves of *acanthus*, *brankursine*, or bear’s-breach, give a more durable green tincture to spirit than those of any other herb. Alkalies heighten the colour both of the tinctures and green juices; acids weaken, destroy, or change it to a brownish: lime-water improves both the colour and durability: by means of lime, not elegant green lakes are procurable from the leaves of *acanthus*, lily of the valley, and several other plants. There are very few herbs which communicate any share of their green colour to water; perhaps none

that give a green of any considerable deepness. It is said, however, that the leaves of some plants give a green dye to woollen, without the addition of any other colouring matter; particularly those of the wild chervil, or cow-weed, the common ragwort, and devil’s-bit. The leaves of many kinds of herbs and trees give a yellow dye to wool or woollen cloth that has been previously boiled with a solution of alum and tartar. Weld, in particular, affords a fine yellow, and is commonly made use of for this purpose by the dyers, and cultivated in large quantity in some parts of England. There is no colour for which we have such plenty of materials as for yellow. Mr Hellot observes, that all leaves, barks, and roots, which on being chewed discover a slight astringency, as the leaves of the almond, peach, and pear-trees, ash-bark (especially that taken off after the first rising of the sap in the spring), the roots of wild patience, &c. yield durable yellows, more or less beautiful according to the length of time that the boiling is continued, and the proportions of alum and tartar in the preparatory liquor: that a large quantity of alum makes these yellows approach to the elegant yellow of weld: that if the tartar is made to prevail, it inclines then to an orange: that if the roots, barks, or leaves, be too long boiled, the yellow proves tarnished, and acquires shades of brown.” See the article DYEING.

The most capital preparations from the leaves of plants, are those of indigo and weld; which are both very much used in dyeing, though the first only in painting *. Both the indigo and woad plants give out their colour, by proper management, to water, in form of a blue fecula or lake. Mr Hellot suspects that a like blue fecula is procurable from many other vegetables. Blue and yellow blended together, compose a green. He supposes the natural greens in vegetables to be compounded in like manner of these two colours; and that the blue is oftentimes the most permanent, so as to remain entire after the putrefaction or destruction of the yellow. The theory is specious, and perhaps just: we know of no other that accounts in any degree for the production of the indigo and woad blue. Dr Lewis, however, informs us, that he never was able to produce the least appearance of either blue or yellow from any of the plants he tried by treating them in the manner used for the preparation of indigo.

There are sundry mosses, which in their natural state, like the indigo and woad plants, promise nothing of the elegant colours that can be extracted from them by art. The most remarkable of these is archil; for the preparation of which, and the colours that may be produced from it, see the article. Linnæus suspects that there are several other more common mosses from which valuable colours might be extracted: a quantity of sea-moss, having rotted in heaps on the shore, he observed the liquor in the heaps to be as red as blood; the sea-water, the sun, and the putrefaction, having brought out the colour. Mr Kalm, in an appendix to Linnæus’s paper, in 1745, mentions two sorts of mosses actually employed in Sweden for dyeing woollen red: one is the *Lichenoides coralliforme apicibus coccineis* of Ray’s Synopsis; the other the *Lichenoides tartareum, farinaceum, scutellarum*.

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* See Indigo and Woad.
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Production of indigo accounted

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Colours from mosses.

* See Annotto.

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Colours from leaves.

larum umbone fusco, of Dillenius. This last is a white substance like meal clotted together, found on the sides and tops of hills. It is shaved off from the rocks after rain, purified from the stony matters intermixed among it by washing with water, then dried in the sun, ground in mills, and again washed and dried: it is then put into a vessel with urine, and set by for a month: a little of this tincture added to boiling water makes the dyeing colour. In the same Transactions for the year 1754, there is an account of another moss which, prepared with urine, gives a beautiful and durable red or violet dye to wool and silk. This is the lichen foliaceus umbilicatus subtus lacunensis, Linn. flor. Suec. It grows upon rocks, and is readily distinguishable from others of that class, by looking as if burnt or parched, consisting of leaves as thin as paper, convex all over on the upper side, with corresponding cavities underneath, adhering firmly to the stones by a little root under the leaves, and coming asunder, when dry, as soon as touched. It is gathered after rain, as it then holds best together, and parts easiest from the stone. In France, a crustaceous moss, growing upon rocks in Auvergne, is prepared with lime and urine, and employed by the dyers as a succedaneum for the Canary archil, to which it is said to be very little inferior. Mr Hellot relates, that he has met with several other mosses, which, on being prepared in the same manner, acquire the same colour. The most expeditious way, he says, of trying whether a moss will yield an archil or not, is to moisten a little of it with a mixture of equal parts of spirit of sal ammoniac and strong lime-water, and add a small proportion of crude sal ammoniac. The glass is then to be tied over with a piece of bladder, and set by for three or four days. If the moss is of the proper kind, the little liquor which runs from it upon inclining the vessel, will appear of a deep crimson colour; and this afterwards evaporating, the plant itself acquires the same colour. Dr Lewis informs us, that he has tried a good number of the common mosses, many both of the crustaceous and foliaceus kind, and not a few of the fungi; as also the herbs chamomile and milfoil, which yield a blue essential oil; and thyme, whose oil becomes blue by digestion with volatile spirits; but never met with any that yielded a colour like archil. Most of them gave a yellow or reddish brown tincture. A few gave a deep red colour to the liquor: but, when diluted, it showed a yellowish cast, and when applied on cloth it gave only a yellowish red.

To these observations we shall only add, that though, in general, the blue colours of flowers are exceedingly perishable, there seem to be at least two exceptions to this rule; for the blue flowers of iris, or flower-de-luce, and those of columbine, when treated with solution of tin, yielded a colour tolerably permanent. Indeed, when experiments are made with a view to extract the colour from any part of a vegetable, it will always be proper to try whether it can bear a mixture with this solution. If the colour is not destroyed by it, there is a very great probability that the solution will, by proper management, preserve, and give a durability to it, which could scarce be obtained by any other method. It must, however, be observed, that there are several substances used in colour-

making, which solution of tin cannot bear to be mixed with. These are principally sugar of lead and cream of tartar, as well as all the calcareous earths and alkaline salts. With alum it may be mixed very safely, and is in many cases the better for it. The roots of plants, however, seem to promise more durability of colour than the upper parts. We have seen a blue colour of considerable durability and brightness prepared from the roots of common radishes by expressing the juice, combining it with tobacco-pipe clay, and brightening it with a little alum. The root of the red beet is also said to yield a durable colour of a beautiful red, inclining to scarlet; but this we cannot affirm from our own experience.

With regard to liquid colours for maps, &c. we apprehend there can be very little difficulty of preparing all the possible varieties of them, if what we have above laid down is attended to. The only colour with which there can be any difficulty is *blue*; but the common solutions of indigo in alkalies or acids may be made to answer best together, though, on account of their strongly saline quality, they are not very proper. A very curious method of procuring a beautiful transparent blue colour is by extracting the colouring matter from Prussian blue, by means of a caustic alkali. This when laid upon paper appears of a dirty brown colour; but if washed over with a weak solution of green vitriol, is instantly changed to a most beautiful blue. This seems to afford a method of procuring blue transparent colours of greater beauty than they are usually met with.—See specimens of transparent colours prepared according to the above rules, on the *Chart* subjoined to HISTORY.

COLOURING, among painters, the manner of applying and conducting the colour of a picture; or the mixtures of light and shadows, formed by the various colours employed in painting. See PAINTING.

COLOURING of Glass. See GLASS.

COLOURING of Porcelain. See PORCELAIN.

COLT, in zoology, a general name for the young of the horse-kind: the male being likewise, for distinction's sake, called a *horse-colt*; the female, a *filly*.

After the colts have been foaled, you may suffer them to run with the mare till about Michaelmas, sooner or later, according as the cold weather comes in; then they must be weaned; though some persons are for having them weaned after Martinmas, or the middle of November. The author of the *Complete Horseman* is of opinion, that the reason why most foals advance so slowly, and are not capable of service till they are six or seven years old, is because they have not suckled long enough; whereas, if they had suckled the whole winter over, they would be as good at four or five years old as they are now at eight.

They ought now to be kept in a convenient house, with a low rack and manger for their hay and oats, which must be sweet and good; with a little wheaten bran mixed with the oats to cause them to drink, and to keep their bodies open. But, since there are some who allege that oats make foals become blind, or their teeth crooked; the same author is of opinion, that oats will wear their teeth, and make them the sooner to change, and also to raze; therefore he judges it to be the best way to break them in a mill, because that by endeavouring with their jaws to bruise

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and chew them, they stretch and swell their eye and nether-jaw veins, which so attract the blood and humours that they fall down upon the eyes, and frequently occasion the loss of them: so that it is not the heating quality of the oats, but the difficulty in chewing, that is the cause of their blindness.

Further, colts thus fed with grain do not grow thickish upon their legs, but grow broader and better knit than if they had eaten nothing but hay and bran, and will endure fatigue the better. But above all, they must be kept from wet and cold, which are hurtful to them, nothing being more tender than they are. For proof of this, take a Spanish stallion, and let him cover two mares, which for age, beauty, and comeliness may admit of no difference between them; and if they produce both horse-colts, or both fillies, which is one and the same thing, let one run abroad, and the other be housed every winter, kept warm, and ordinarily attended; and that colt that has been kept abroad shall have large fleshy shoulders, flabby and gouty legs, weak pasterns, and ill hoofs; and shall be a dull heavy jade, in comparison to the other which is housed, and orderly kept; and which will have a fine forehead, be fine shaped, and have good legs and hoofs, and be of good strength and spirit: by which you may know, that to have the finest stallion, and the beautifullest mare, is nothing if they are spoiled in the breeding up. It is worth observation, that some foals, under six months old, though their dams yield plenty of milk, yet decay daily, and have a cough, proceeding from certain pellicles or skins that breed in their stomachs, which obstruct their breathing, and at last destroy them entirely. To remedy this malady, take the bag wherein the colt was foaled, dry it, and give him as much of it in milk as you can take up with three fingers: but if you have not preserved the bag, procure the lungs of a young fox, and use it instead of the aforesaid powder.

It will be proper to let the colts play an hour or two in some court-yard, &c. when it is fair weather, provided you put them up again carefully, and see that they take no harm. When the winter is spent, turn them into some dry ground, where the grass is short and sweet, and where there is good water, that they may drink at pleasure: for it is not necessary that a colt should fill his belly immediately, like a horse that labours hard. The next winter you may take them into the house, and use them just as you do your other horses; but let not your horse-colts and fillies be kept together after the first year. This method may be observed every summer and winter till you break them, which you may do after they have been three years old; and it will be a very easy thing, if you observe the aforesaid method of housing them: for ordering them the second year as you do your other horses, they will be so tame and gentle, that you need not fear their leaping, plunging, kicking, or the like; for they will take the saddle quietly. As for all those ridiculous methods of beating and cowing them, they are in effect spoiling them, whatever they call it, in ploughed fields, deep ways, or the like; instead of which, let the rider strive to win them by gentle usage, never correcting them but when it is necessary, and then with judgment and moderation. You will not need a cavesson of cord, which is a head

strain, nor a pad of straw; but only a common saddle, and a common cavesson on his nose, such as other horses are ridden with; but it ought to be well lined with double leather; and if you please you may put on his mouth a watering bit, but without reins, only the head-stall, and this but for a few days; and then put on such a bit as he should be always ridden with: and be sure not to use spurs for some time after backing. Take notice, that as yearlings must be kept abroad together, so those of two years old together; the like for those of three yearlings: which ordering is most agreeable to them.

In order to make him endure the saddle the better, the way to make it familiar to him will be by clapping the saddle with your hand as it stands upon his back, by striking it, and swaying upon it, dangling the stirrups by his sides, rubbing them against his sides, and making much of them, and bringing him to be familiar with all things about him; as straining the crupper, fastening and loosening the girths, and taking up and letting out the stirrups. Then as to the motion of him, when he will trot with the saddle obediently, you may wash a trench of a full mouth, and put the same into his mouth, throwing the reins over the forepart of the saddle, so that he may have a full feeling of it; then put on a martingale, buckled at such a length that he may but just feel it when he jerks up his head; then take a broad piece of leather, and put it about his neck, and make the ends of it fast by plaiting of it, or some other way, at the withers, and the middle part before his weasand, about two handfuls below the thropple, betwixt the leather and his neck; let the martingale pass so, that when at any time he offers to duck, or throw down his head, the cavesson being placed upon the tender gristle of his nose, may correct and punish him; which will make him bring his head to, and form him to an absolute rein: trot him abroad, and if you find the reins or martingale grow slack, straiten them, for when there is no feeling there is no virtue.

Colt-Evil, among farriers. See FARRIERY, § xxviii. 4.

Colt-Taming, is the breaking of a colt so as to endure a rider. Colts are most easily broke at three or four years of age; but he who will have patience to see his horse at full five, will have him much more free of diseases and infirmities than if he was broke sooner.

Preparatory to their breaking for the saddle, they should be used to familiar actions, as rubbing, clawing, haltering, leading to water, taking up their feet, knocking their hoofs, &c. In order to bridle and saddle a colt, when he is made a little gentle, take a sweet watering trench, washed and anointed with honey and salt, which put into his mouth, and so place it that it may hang about his tush; then offer him the saddle, but take care not to fright him with it. Suffer him to smell at it, to be rubbed with it, and then to feel it; after that, fix it and gird it fast; and make that motion the most familiar to him to which he seems most averse. Being thus saddled and bridled, lead him out to water and bring him in again: when he has stood reined upon the trench an hour or more, take off the bridle and saddle, and let him go to his meat till the evening, and then lead him out as before.

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Coltie,
Coluber.

fore : and when you carry him in again to fet him up, take off his faddle gently, clothing him for all the night.

COLTIE, a term used by timber-merchants, for a defect or blemish in some of the annular circles of a tree, whereby its value is much diminished.

COLUBER, in zoology, a genus of serpents belonging to the order of amphibia. The characters are these: they have a number of scuta or hard crusts on the belly; and scutellæ or scales on the tail. Linnaeus enumerates no less than 97 species under this name, distinguished solely by the number of scuta and scutellæ. The most remarkable are the following.

1. The Vipera, or common viper of the shops, has 118 scuta, and only 22 scutellæ. The body is very short, and of a pale colour, with brownish spots; and the head is gibbous, and covered with small scales. It is a native of Egypt, and other warm countries. It has always been remarkable for its poisonous nature; inasmuch that vipers, when numerous, have often been thought the ministers of divine vengeance, like the plague, famine, and other national calamities. A notion also prevailed among the ancients, that few or none of the parts of a viper were free from poison; for which reason they made no experiments or discoveries concerning the nature of these creatures. It is now, however, proved, by undoubted experiments, that the poison of vipers, as well as of all other serpents whose bite is hurtful, lies in a bag at the bottom of their two greater teeth or fangs. These teeth are perforated; and when the creature bites, the compression of the bag forces out a little drop of the poison into the wound, where it produces its mischievous effects. The purpose answered by this poisonous liquor to the creatures themselves, is probably the destruction of their prey; for as serpents frequently feed upon animals of very considerable magnitude and strength, they would often undoubtedly make their escape, did not the poisonous juice infused into the wounds made by the serpents teeth almost instantly deprive them of life, or at least of all power to struggle with their enemy. For an account of the symptoms produced by the bites of vipers and other venomous serpents in the human body, together with the best methods of cure, see the *Index* subjoined to *MEDICINE*. After the viper is deprived of those bags which contain its poison, it is entirely harmless: nay the flesh of it is highly nutritive, and justly esteemed a great restorative. It hath been much recommended in scrophulous, leprous, and other obstinate chronic disorders; but, to answer any good purpose, it must undoubtedly be used for a considerable time as food. The dried flesh which comes to this country from abroad, is justly esteemed by Dr Lewis to be totally insignificant. A volatile salt was formerly drawn from vipers, and sold at a great price, as a sovereign remedy against the bites of vipers and other poisonous animals; but it is now found not to be materially different from the volatile alkaline salts produced by distilling other animal substances.

2. The berus, or common British viper, is found in many countries of Europe. They swarm in the He-

brides, or western British isles, and abound in many parts of Britain; particularly in the dry, stony, and chalky counties. According to Mr Pennant and other naturalists, they are viviparous, but proceed from an internal egg. The eggs are, as it were, chained together; and each about the size of the egg of a black-bird. This viper seldom grows longer than two feet; though Mr Pennant tells us he once saw a female (which is nearly a third larger than the male) almost three feet long. The ground colour of the male is of a dirty yellow, that of the female deeper. Its back is marked the whole length with a series of rhomboidal black spots, touching each other at the points; the sides with triangular ones; the belly entirely black. It hath 146 scuta, and 39 scutellæ. There is a variety wholly black; but the rhomboid marks are very conspicuous even in this, being of a deeper and more glossy hue than the rest. The head of the viper, says Mr Pennant, is inflated, which distinguishes it from the common snake. Mr Catesby assures us, that the difference between the vipers and snakes or other serpents is, that the former have long hollow fangs, or tusks, with an opening near the point; the neck is small, the head broad, the cheeks extending wide, scales rough, the body for the most part flat and thick; they are slow of motion; swell the head and neck when irritated, and have a terrible and ugly aspect." Another material difference, however, consists in the production of their young: the viper hatches its eggs within itself, and then discharges the young; whereas the snake deposits its eggs, which are therefore externally hatched. The tongue is forked, the teeth small; the four canine teeth are placed two on each side the upper jaw: these instruments of poison are long, crooked, and moveable; capable, like those of the former species, of being raised or depressed at the pleasure of the animal, and they infuse their poison in the same manner. The vipers are said not to arrive at their full growth till they are six or seven years old; but they are capable of engendering at two or three. They copulate in May, and go about three months with their young. Mr White informs us †, that a viper which he opened had † in it 15 young ones of the size of earth-worms, about 7 inches long. This little fry issued into the world with the true viper-spirit about them. They twitted and wriggled about with great alertness; and when touched, they erected themselves, and gaped very wide, showing immediate tokens of menace and defiance, tho' no fangs could be perceived even with the help of glasses: which the author remarks as an instance among others of that wonderful instinct which impresses young animals with a notion of the situation and use of their natural weapons even before these weapons are formed. Mr Pennant tells us, that he has been assured of a fact mentioned by Sir Thomas Brown *, who was far from being a credulous writer (A), that the young of the viper, when terrified, will run down the throat of the parent, and seek for shelter in its belly, in the same manner as the young of the opossum retire into the ventral pouch of the old one. From this some have imagined that the viper is so unnatural as to devour its

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Hist. of
Selborne.
P. 210.* Vulgar
Errors.
P. 114.

(A) The viper catchers, however, insist, that no such thing ever happens. See *White's Nat. Hist. of Selborne* p. 51.

Coluber. its own young : but the assertion deserves no credit ; it being well known that the food of these serpents is frogs, toads, lizards, mice, and, according to Dr Mead, even an animal so large as a mole, which they are able to swallow entire, their throat and neck being capable of great distension. It is also said, from good authority, that vipers prey on young birds ; but whether on such as nestle on the ground, or whether they climb up trees for them, as the Indian serpents do, is quite uncertain ; the fact, however, is very far from being recent ; for Horace tells us,

*Ut affidens implumibus pullis avis
Serpentium allapsis timet.*

EP. O D. I.

Thus for its young the anxious bird
The gliding serpent fears.

The viper is capable of supporting very long abstinence ; it being known, that some have been kept in a box six months without food, and yet did not abate of their vivacity. They feed only a small part of the year, but never during their confinement ; for if mice, their favourite diet, should at that time be thrown into their box, though they will kill, yet they never will eat them. The violence of their poison decreases in proportion to the length of their confinement, as does also the virtue of their flesh whatever it is. The animals, when at liberty, remain torpid throughout the winter ; but, when confined, have never been observed to take their annual repose. The method of catching them is by putting a cleft flick on or near their head ; after which they are seized by the tail, and instantly put into a bag. The viper-catchers are very frequently bit by them in the pursuit of their business, yet we very rarely hear of their bite being fatal. Salad oil, if applied in time, is said to be a certain remedy. The flesh of the British viper has been celebrated as a restorative, as well as that of the foreign kind. Mr Keyser relates, that Sir Kenelm Digby used to feed his wife, who was a most beautiful woman, with capons fattened with the flesh of vipers.

3. The punctatus of Linnæus, by Mr Catesby called the *water-viper*, is a native of Carolina. According to Linnæus it is ash-coloured, variegated with yellow spots. Mr Catesby informs us, that the head and back of this serpent are brown ; the belly marked transversely with yellow, and also the sides of the neck. The neck is small, the head large, and the mouth armed with the destructive fangs of the viper or rattle-snake, next to which it is reckoned the largest serpent in this country. Contrary to what is observed in most other vipers, these are very nimble and active, and very dexterous in catching fish. In summer, great numbers are seen lying on the branches of trees hanging over rivers ; from which, on the approach of a boat, they drop into the water, and often into the boat on the mens heads. They lie in wait in this manner to surprise either birds or fish : after the latter they plunge with surprising swiftness, and catch some of a large size, which they bring ashore and swallow whole. The tail of this animal is small towards the end, and terminates in a blunt horny point about half an inch long. This harmless little horn hath been the occasion of many terrible reports ; as, that by a jerk of its tail, the animal is capable of instantly destroying both men and beasts ; that a

tree struck with this terrible horn, in a short time grows black, withers, and dies, &c. but all these Mr Catesby assures us have not the least foundation in fact.

4. The chersæa is a native of Sweden, where it is called *asping*. It is a small reddish serpent, whose bite is said to be mortal. Concerning this species Mr Pennant asks, " Is it possible that this could be the species which has hitherto escaped the notice of our naturalists ? I the rather suspect it, as I have been informed that there is a small snake that lurks in the low grounds of Galloway, which bites and often proves fatal to the inhabitants."

5. The prester of Linnæus, or black viper of Mr Catesby, is a native of Carolina and Virginia. It is short and thick, slow of motion, spreads its head surprisingly when irritated, very flat and thick, threatening with a horrid hiss. They are very poisonous ; their bite being as deadly as that of the rattlesnake. They frequent the higher lands, and are of a rusty black colour.

6. The coluber luridus of Forster, called by Mr Catesby the *brown viper* ; is a native of the same countries with the preceding. It is about two feet long, and large in proportion ; very slow in its motion, even when threatened with danger : notwithstanding which, it defends itself very fiercely when attacked, and its bite is as venomous as any. They prey upon efts, lizards, and other animals of that kind.

Besides these species of which we have a particular description, the following are also reckoned among the poisonous serpents, viz. 7. The atropos, with 131 scuta and 22 scutellæ. It is a native of America, the body white, and the eyes brown, with a white iris. 8. The leberis, with 110 scuta and 50 scutellæ, is a native of Canada, and has many black linear rings. 9. The ammodites, with 142 scuta and 32 scutellæ, is a native of the East. It is about six inches long, and has a fleshy protuberance on its nose. 10. The aspis, with 146 scuta and 46 scutellæ, is a native of France ; and is of a reddish colour, with dusky spots on the back. 11. The lebetinus, with 155 scuta and 46 scutellæ, is a native of Asia, and is of a cloudy colour, with red spots on the belly. 12. The severus, with 170 scuta and 42 scutellæ, is likewise a native of Asia, and is ash-coloured with white belts. 13. The stollatus, with 143 scuta and 76 scutellæ, is a native of Asia, and is of a greyish colour, with two white fillets. 14. The lacteus, with 203 scuta and 32 scutellæ, is a native of the Indies. Its colour is white, with black spots. 15. The naja, with 193 scuta and 60 scutellæ, is a native of the East Indies, and is reckoned the most poisonous of all serpents. The root of the lignum colubrinum (*opbiorrhiza*) is said to have been pointed out to the Indians as an antidote against the bite of this serpent by the viverra ichneumon, a creature which fights with this serpent, and cures itself by eating of this plant when wounded. The Indians, when bit, instantly chew it, swallow the juice, and apply the masticated root to the puncture. It is killed by the ichneumon. 16. The atrox, with 196 scuta and 69 scutellæ, is a native of Asia. It is of a hoary colour, and the head is compressed and covered with small scales. 17. The niveus, with 209 scuta and 62 scutellæ, is a native of Africa. It is white, and with-

Coluber. out any spots. 18. The corallinus, with 193 scuta and 82 scutellæ, is a native of Asia. It is greyish, with three brown fillets. 19. The dipfas, with 152 scuta and 135 scutellæ, is a native of America. It is of a bluish colour, with the margins of the scales white. 20. The mycterizans, with 192 scuta and 167 scutellæ, is a native of America. It is of a bluish-green colour, hath a stretched out triangular snout. Inhabits trees, and lives on insects.

The above 20 species are all the serpents of the genus of coluber that are reckoned poisonous. Of the rest we shall only mention the following, which are the most remarkable.

21. The erythrogaster of Forster, called by Mr Catesby the *copper-bellied snake*, is a native of Carolina, and grows sometimes near to the size of a rattlesnake. It is of a brown colour in all parts of its body, except the belly, which is of a red copper colour. They frequent water, and probably prey on fish; but they will also devour birds and such other animals as they are able to overcome. They are bold and active, frequently entering poultry-houses, devouring the fowls and sucking their eggs.

22. The constrictor, or black snake, is a native of several parts of America. They are very long, sometimes measuring six feet, and are all over of a shining black. This species is not only perfectly harmless, but extremely useful in clearing the houses of rats, which it pursues with wonderful agility to the very roofs, and all parts of barns and outhouses, for which good services it is cherished by the generality of Americans. It is also said, that it will destroy the rattlesnake, by twisting round it, and whipping it to death. In the time of copulation it is extremely bold and fierce, and will attack mankind; but its bite has no more effect than a scratch with a pin. It is so swift that there is no escaping its pursuit. Many ridiculous frights have happened from this innocent reptile. As every one in America is full of the dread of the rattlesnake, they are apt to fly at the sight of any of the serpent kind. This pursues, soon overtakes, and by twisting round the legs of the fugitive, soon brings him to the ground: but he happily receives no hurt, but what may result from this fright: all the mischief this species does is to the housewives, for it will skim their milk-pans of the cream, and rob their hen-roosts of all the eggs.

23. The annulatus, or little brown bead-snake, is always small, and is seldom found above ground, but commonly dug up, and found twisting about the roots of shrubs and plants. All the back and other parts of the body have transverse spots of brown and white so disposed as to have some resemblance to a string of English beads; whence probably it takes its name. It is quite harmless, and is a native of Virginia and Carolina.

24. The flagellum, or coach-whip snake, is of a brown colour, very long, slender, and active. It runs swiftly, and is quite inoffensive; but the Indians imagine it is able to cut a man in two with a jerk of its tail.

25. The fulvius, or corn-snake, is beautifully marked with red and white, resembling a species of Indian corn, whence its name. It is harmless as to its bite, but frequently robs hen-roosts.

26. The æstivus, or green snake, is all over of a green colour. It inhabits Carolina; where it lives

among the branches of trees on flies and other insects. It is of a small size, and easily becomes tame and familiar, inasmuch that some people will carry them in their bosom.

27. The fasciatus, or wampum snake, derives its name from its resemblance to the Indian wampum. It sometimes grows to the length of five feet; and like other large snakes, is very voracious, but its bite is not venomous. The back is of a dark blue, the belly finely clouded with spots of a brighter blue; the head is small in proportion to the rest of the body. See further the article SERPENT.

COLUMB-KILL. See JONA.

COLUMBA, the PIGEON, in ornithology, a genus belonging to the order of passeris. The characters of this genus are as follow: The bill is straight, and descends towards the point; the nostrils are oblong, and half covered with a soft tumid membrane; and the tongue is entire, *i. e.* not cloven. There are about 70 species, all natives of different countries. The following are the most remarkable.

1. The œnas, or domestic pigeon, and all its beautiful varieties, derive their origin from one species, the stock-dove; the English name implying its being the stock or stem from whence the other domestic birds spring. These birds, as Varro observes, take their Latin name, *columba*, from their voice or cooing: and, had he known it, he might have added the British also; for *k'lommen*, *kylobman*, *kulm*, and *kolm*, signify the same bird. They were, and still are, to be found in most parts of our island in a state of nature; but probably the Romans first taught the Britons how to construct pigeon-houses, and make the birds domestic. The characters of the domestic pigeon are the following. It is of a deep bluish ash-colour; the breast dashed with a fine changeable green and purple; the sides of the neck with shining copper-colour; its wings marked with two black bars, one on the coverts of the wings, the other on the quill feathers; the back white, and the tail barred near the end with black. They weigh 14 ounces. In the wild state it breeds in holes of rocks and hollows of trees; for which reason some people style it *columba cavernalis*, in opposition to the ring-dove, which makes its nest on the boughs of trees. Nature always preserves some agreement in the manners, characters, and colours of birds reclaimed from their wild state. This species of pigeon soon takes to build in artificial cavities, and from the temptation of a ready provision becomes easily domesticated. Multitudes of these wild birds are observed to migrate into the south of England: and, while the beech-woods were suffered to cover large tracts of ground, they used to haunt them in myriads, reaching in strings a mile in length, as they went out in the morning to feed. They visit Britain the latest of any bird of passage, not appearing till November, and retiring in the spring. Mr Pennant imagines, that the summer haunts of these creatures are in Sweden, as Mr Eekmark makes their retreat thence coincide with their arrival in Britain. Numbers of them, however, breed on cliffs of the coast of Wales, and of the Hebrides. The varieties produced from the domestic are very numerous, and extremely elegant; they are distinguished by names expressive of their several properties, as *tumblers*, *car-*

Columb-
Kill,
Columba.

Columba. riers, jacobines, croppers, powters, runts, turbits, owls, nuns, &c. The most celebrated of these is the carrier, of which an account is already given under the article *CARRIER-Pigeon*. The nature of pigeons is to be gregarious; to lay only two eggs, and to breed many times in the year. So quick is their increase, that the author of the "Oeconomy of Nature" observes, that in the space of four years, 14,760 pigeons may come from a single pair. They bill during their courtship: the male and female sit, and also feed their young, by turns: they cast provision out of their craw into the young one's mouth; and drink, not by sipping, like other birds, but by continued draughts like quadrupeds, and have mournful or plaintive notes.

2. The palumbus, or ring-dove, is a native of Europe and Asia. It is the largest pigeon we have, and might be distinguished from all others by its size alone. Its weight is about 20 ounces; its length 18, the breadth 30, inches. The head, back, and covers of the wings, are of a bluish ash colour: the lower side of the neck and breast are of a purplish red, dashed with ash-colour: on the hind part of the neck is a semicircular line of white; above and beneath that, the feathers are glossy, and of changeable colours as opposed to the light. This species forms its nest of a few dry sticks in the boughs of trees. Attempts have been made to domesticate them by hatching their eggs under the common pigeon in dove-houses; but as soon as they could fly, they always took to their proper haunts. In the beginning of winter they assemble in great flocks, and leave off cooing, which they begin in March when they pair.

3. The turtur, or turtle-dove, is a native of India. The length is 12 inches and a half; its breadth 21; the weight four ounces. The irides are of a fine yellow, and the eye-lids encompassed with a beautiful crimson circle. The chin and forehead are whitish; the top of the head ash-coloured, mixed with olive. On each side of the neck is a spot of black feathers prettily tipped with white: the back ash-coloured, bordered with olive-brown: the scapulars and coverts of a reddish brown spotted with black: the breast of a light purplish red, having the verge of each feather yellow: the belly white. The tail is three inches and a half long; the two middle feathers of a dusky brown; the others black, with white tips; the end and exterior side of the outmost feathers wholly white. In the breeding season these birds are found in Buckinghamshire, Gloucestershire, Shropshire, and the west of England. They are very shy and retired, breeding in thick woods, generally of oak: in autumn they migrate into other countries.

4. The passerina, or ground-dove of Carolina, is about the size of a lark. The bill is yellow, and black at the end; the iris red; the breast and whole front of a changeable purple, with dark purple spots; the large quill-feathers are of a ruddy purple; the legs and feet of a dirty yellow; but the whole bird has such a composition of colours in it, that a very particular description is impossible. They fly many of them together, and make short flights from place to place, generally lighting on the ground.

5. The migratoria, or pigeon of passage, is about the size of an English wood-pigeon; the bill black; iris red; the head of a dusky blue; the breast and

belly of a faint red; above the shoulder of the wing there is a patch of feathers shining like gold; the wing is coloured like the head, having some few spots of black (except that the larger feathers of it are dark brown), with some white on the exterior vanes; the tail is very long, and covered with a black feather, under which the rest are white; the legs and feet are red. They come in prodigious numbers from the north, to winter in Virginia and Carolina. In these countries they roost upon one another's backs in such quantities that they often break down the limbs of oaks which support them, and leave their dung some inches thick below the trees. In Virginia Mr Catesby has seen them fly in such continued trains for three days successively, that they were not lost sight of for the least interval of time, but somewhere in the air they were seen continuing their flight southward. They breed in rocks by the sides of rivers and lakes far north of St Lawrence. They fly to the south only in hard winters, and are never known to return.

6. The coronata, or great crowned pigeon, a very large species, the size of a turkey. The bill is black, and two inches long; the irides are red; the head, neck, breast, belly, sides, thighs, and under tail coverts, cinereous blue; the head is crested; the back, rump, scapulars, and upper tail coverts, are of a deep ash-colour, with a mixture of purplish chestnut on the upper part of the back and scapulars; the wing-coverts are ash-coloured within, and purplish chestnut on the outside and tip; quills deep blackish ash-colour; tail the same, but of a light ash-colour at the tip; the legs are blackish. This species inhabits the Molucca isles and New Guinea, and has been brought to England alive. Buffon mentions five having been at once alive in France. In size it far exceeds any of the pigeon tribe; but its form and manners tell us that it can belong to no other. Indeed Brisson has placed it with the pheasants; and the *planches enluminées* have copied that name; but whoever has observed it cannot doubt in the least to which it belongs. Its note is cooing and plaintive, like that of other pigeons, only more loud in proportion. The mournful notes of these birds alarmed the crew of Bougainville much, when in the neighbourhood of them, thinking they were the cries of the human species. In France they were never observed to lay eggs, nor in Holland, though they were kept for some time; but Scopoli assures us, that the male approaches the female with the head bent into the breast, making a noise more like lowing than cooing; and that they not only made a nest on trees, in the menagery where they were kept, but laid eggs. The nest was composed of hay and stalks. The female never sat, but stood upon the eggs; and he supposed it was from this cause alone that there was no produce. They are said to be kept by some, in the East Indies, in their court-yards, as domestic poultry. The Dutch at the Moluccas call them *crown-vogel*. M. Sonnerat, as well as Dampier, found these in plenty at New Guinea; and it is probable that they were originally transported from that place into Bada, from whence the Dutch chiefly now procure them.

Among the great number of other species of columba, there are some very small, not larger than a wood-lark. The Malacca pigeon described by Sonnerat is little bigger than the house-sparrow. It is a most beautiful

Columba. beautiful species, and the flesh said to be extremely delicate. It has been transported into the isle of France, where it has multiplied exceedingly.

Pigeons, besides being esteemed as a delicacy for the table, are of value on other accounts. Their dung is thought to be so good amendment for some kinds of land, that it has been fetched 16 miles, and a load of coals has been given for a load of it: it is also used for tanning the upper-leathers of shoes, as well as applied as a cataplasm to this day. Indeed formerly salt-petre was collected from it. The greatest use of pigeons is at Ispahan in Persia, where there are recorded to be above 3000 pigeon-houses, and these kept by the Turks alone, as Christians are not allowed to keep any. Dr Pococke mentions the frequency of pigeon-houses in Egypt; adding, that the pigeon-house is reckoned a great part of the estate of the husbandman; and the common proverb in those parts is, that a man who has a pigeon-house need not be careful about the disposal of his daughter. Tavernier says that their dung is used to smoke melons. The usual way taken to entice pigeons to remain where they are intended, is to place what is called a *salt-cat* near them; this is composed of loam, old rubbish, and salt, and will so effectually answer the purpose as to decoy them from other places, and is therefore held illegal.

COLUMBA (St), in allusion to whose name the island of Jona (one of the Hebrides) received its name; *Jona* being derived from a Hebrew word signifying a dove. This holy man, instigated by his zeal, left his native country, Ireland, in the year 565, with the pious design of preaching the gospel to the Picts. It appears that he left his native soil with warm resentment, vowing never to make a settlement within sight of that hated island. He made his first trial at Oran-fay; and finding that place too near to Ireland, succeeded to his wish at *Hy*, for that was the name of Jona at the time of his arrival. He repeated here the experiment on several hills, erecting on each a heap of stones; and that which he last ascended is to this day called *Carnan-chul-reb-Eirium*, or "The eminence of the back turned to Ireland."

Columba was soon distinguished by the sanctity of his manners: a miracle that he wrought so operated on the Pictish king Bradeus, that he immediately made a present of the little isle to the saint. It seems that his majesty had refused Columba an audience; and even proceeded so far as to order the palace-gates to be shut against him; but the saint, by the power of his word, instantly caused them to fly open. As soon as he was in possession of Jona, he founded a cell of monks, borrowing his institutions from a certain oriental monastic order. It is said that the first religious were canons regular, of whom the founder was the first abbot; and that his monks, till the year 716, differed from those of the church of Rome, both in the observation of Easter and in the clerical tonsure. Columba led here an exemplary life, and was highly respected for the sanctity of his manners for a considerable number of years. He is the first on record who had the faculty of *second sight*, for he told the victory of Aidan over the Picts and Saxons on the very instant it happened. He had the honour of burying in his island, Convallius and Kinnatil, two kings of Scotland, and of crowning a third. At length, worn out with age,

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he died in Jona in the arms of his disciples; was interred there, but (as the Irish pretend) in after times translated to Down; where, according to the epitaph, his remains were deposited with those of St Bridget and St Patrick.

Hi tres in *Duno* tumulo tumulantur in uno;
Brigida, Patricius, arque Columba pius.

But this is totally denied by the Scots; who affirm, that the contrary is shown in a life of the saint, extracted out of the pope's library, and translated out of the Latin into Erse, by Father *Gail o horan*; which decides in favour of Jona the momentous dispute.

COLUMBANUS, a saint and a poet, was born in Ireland, and brought up to a religious life among the disciples of St Columba. He made uncommon progress in learning; and very early in life distinguished himself for poetical abilities, by the composition of a book of psalms, and a number of moral poems, intended also to be set to music. Jonas, a writer of ecclesiastical history, mentions, that Columbanus belonged originally to a monastery of the name of *Benchor*. The same monastery is mentioned by St Bernard in his life of his friend St Malachi; and he relates that it sent out a great number of monks, who spread over Europe. Columbanus passed from Britain into France, and founded the monastery of Luxeville near Besançon. He had been kindly received and patronised by king Childebert; but he was afterwards expelled out of France by the wicked queen Brunichild. He retired to Lombardy in Italy, and was well received by king Argulphus. In Lombardy he again founded the monastery of Bobio. The *Regula Cœnobialis* and *Penitentialis*, which he established in that monastery, have been published in the *Codex Regularum* compiled by the learned Holstenius. He was cotemporary with St Benedict. It was in the year 589 he went into France.

COLUMBARIA (anc. geog.), an island like a rock on the west of Sicily, opposite to Drepanum; said by Zonaras to have been taken from the Carthaginians by Numerius Fabius the consul. Now *Columbaria*, with a very strong and almost impregnable citadel (Cluverius).

COLUMBINE, in botany. See **AQUILEGIA**.

COLUMBO-ROOT, an article lately introduced into the materia medica, the natural history of which is not yet well known. According to Dr Percival's account it grew originally on the continent of America; from whence it was transplanted to Columbo, a town in Ceylon, which gives name to it, and supplies all India with it. The inhabitants of these countries have for a long time used it in disorders of the stomach and bowels. They carry it about with them, and take it sliced or scraped in Madeira wine. This root comes to us in circular pieces, which are from half an inch or an inch to three inches in diameter; and divided into *frusta*, which measure from two inches to one quarter of an inch. The sides are covered with a thick corrugated bark, of a dark brown hue on its external surface, but internally of a light yellow colour. The surfaces of the transverse sections appear very unequal, highest at the edges, and forming a concavity towards the centre. On separating this surface, the root is observed to consist of three lamina, viz. the cortical, which, in the larger roots, is a quarter of an inch thick;

Y

thick;

Columba-
nus
||
Columbo.

Columbo. thick; the ligneous, about half an inch; and the medullary, which forms the centre, and is near an inch in diameter. This last is much softer than the other parts, and, when chewed, seems mucilaginous; a number of small fibres run longitudinally through it, and appear on the surface. The cortical and ligneous parts are divided by a black circular line. All the thicker pieces have small holes drilled through them, for the convenience of drying. Columbo-root has an aromatic smell; but is disagreeably bitter, and slightly pungent to the taste, somewhat resembling mustard-seed, when it has lost, by long keeping, part of its essential oil. Yet, though ungrateful to the taste, when received into the stomach, it appears to be corroborant, antiseptic, sedative, and powerfully antiemetic. In the cholera morbus it alleviates the violent *tormina*, checks the purging and vomiting, corrects the putrid tendency of the bile, quiets the inordinate motions of the bowels, and speedily recruits the exhausted strength of the patient. It was administered to a great number of patients, sometimes upwards of 20 in a day, afflicted with the cholera morbus, by Mr Johnson of Chester, in 1756. He generally found that it soon stopped the vomiting, which was the most fatal symptom, and that the purging and remaining complaints quickly yielded to the same remedy. The dose he gave was from half a drachm to two drachms of the powder, every three or four hours, more or less according to the urgency of the symptoms. Though this medicine possesses little or no astringency, it has been observed to be of great service in diarrhoeas, and even in the dysentery. In the first stage of these disorders, where astringents would be hurtful, Columbo-root may be prescribed with safety; as, by its antispasmodic powers, the irregular actions of the primæ viæ are corrected. But as a cordial, tonic, and antiseptic remedy, it answers better when given towards their decline. Its efficacy has also been observed in the vomitings which attend the bilious cholic; and in such cases, where an emetic is thought necessary, after administering a small dose of ipecacuan, the stomach may be washed with an infusion of Columbo-root. This will tend to prevent those violent and convulsive reachings which in irritable habits abounding with bile are sometimes excited by the mildest emetic. In bilious fevers, 15 or 20 grains of this root, with an equal or double quantity of vitriolated tartar, given every four, five, or six hours, produce very beneficial effects. From its efficacy in these bilious diseases of this country, it is probable that it may be useful in the yellow fever of the West Indies, which is always attended with great sickness, violent reachings, and a copious discharge of bile. The vomiting recurs at short intervals, often becomes almost incessant, and an incredible quantity of bile is sometimes evacuated in a few hours. Children during dentition are often subject to severe vomitings and diarrhoeas. In these cases the Columbo-root is an useful remedy, and hath often procured almost instant relief, when other efficacious remedies have been tried in vain. This root is also extremely beneficial in a languid state of the stomach, attended with want of appetite, indigestion, nausea, and flatulence. It may be given either in substance, with some grateful aromatic, or infused in Madeira wine. Habitual vomiting, when it proceeds from a weakness

or irritability of the stomach, from an irregular gout, acidities, acrimonious bile, or an increased and depraved secretion of the pancreatic juice, is greatly relieved by the use of Columbo-root, in conjunction with aromatics, chalybeates, or the testaceous powders. In the nausea and vomiting occasioned by pregnancy, an infusion of Columbo-root succeeds better than any other medicine that hath been tried.

From Dr Percival's experiments on this root, it appears, that rectified spirit of wine extracts its virtues in the greatest perfection. The watery infusion is more perishable than that of other bitters. In 24 hours a copious precipitation takes place; and in two days it becomes ropy, and even musty. The addition of orange-peel renders the infusion of Columbo-root less ungrateful to the palate. An ounce of the powdered root, half an ounce of orange-peel, two ounces of French brandy, and 14 ounces of water, macerated 12 hours without heat, and then filtered through paper, afford a sufficiently strong and tolerably pleasant infusion. The extract made first by spirit and then with water, and reduced by evaporation to a pilular consistence, is found to be equal if not superior in efficacy to the powder. As an antiseptic, Columbo-root is inferior to the bark; but as a corrector of putrid gall, it is much superior to the bark; whence also it is probable that it would be of service in the West India yellow fever. It also restrains alimentary fermentation, without impairing digestion; in which property it resembles mustard. Hence its great service in preventing acidities. It hath also a remarkable power of neutralizing acids already formed. It doth not appear to have the least heating quality; and therefore may be used with propriety and advantage in the phthisis pulmonalis and in hectic cases, to correct acrimony and strengthen digestion. It occasions no disturbance, and agrees very well with a milk diet, as it abates flatulence, and is indisposed to acidity.

COLUMBO, a maritime town of the island of Ceylon in the East Indies, seated on the south-west part of its coast, and subject to the Dutch. E. Long. 63. 10. N. Lat. 7. 5.

COLUMBUS, or *Congregation of St COLUMBUS*, a society of regular canons, who formerly had 100 abbeys or monasteries in the British isles.

COLUMBUS (Christopher), a Genoese, the celebrated navigator, and first discoverer of the islands of America, was a subject of the republic of Genoa. Neither the time nor the place of his birth, however, are known with certainty; only he was descended of an honourable family, who, by various misfortunes, had been reduced to indigence. His parents were sea-faring people; and Columbus having discovered, in his early youth, a capacity and inclination for that way of life, was encouraged by them to follow the same profession. He went to sea at the age of 14: his first voyages were to those ports in the Mediterranean frequented by the Genoese; after which he took a voyage to Iceland; and proceeding still further north, advanced several degrees within the polar circle. After this, Columbus entered into the service of a famous sea-captain of his own name and family. This man commanded a small squadron, fitted out at his own expence; and by cruising, sometimes against the Mahometans and sometimes against the Venetians,

Columbo,
Columbus.

the

Columbus the rivals of his country in trade, had acquired both wealth and reputation. With him Columbus continued for several years, no less distinguished for his courage than his experience as a sailor. At length, in an obstinate engagement off the coast of Portugal, with some Venetian caravals returning richly laden from the Low Countries, the vessel on board which he served took fire, together with one of the enemies ships to which it was fast grappled. Columbus threw himself into the sea; laid hold of a floating oar; and by the support of it, and his dexterity in swimming, he reached the shore, though above two leagues distant.

After this disaster, Columbus repaired to Lisbon, where he married a daughter of Bartholomew Perestrelo, one of the captains employed by Prince Henry in his early navigations, and who had discovered and planted the islands of Porto Santo and Madeira. Having got possession of the journals and charts of this experienced navigator, Columbus was seized with an irresistible desire of visiting unknown countries. In order to indulge it, he made a voyage to Madeira, and continued during several years to trade with that island, the Canaries, Azores, the settlements in Guinea, and all the other places which the Portuguese had discovered on the continent of Africa.

By the experience acquired in such a number of voyages, Columbus now became one of the most skillful navigators in Europe. At this time, the great object of discovery was a passage by sea to the East Indies. This was attempted, and at last accomplished by the Portuguese, by doubling the Cape of Good Hope. The danger and tediousness of the passage, however, supposing it to be really accomplished, which as yet it was not, set Columbus on considering whether a shorter and more direct passage to these regions might not be found out; and, after long consideration, he became thoroughly convinced, that, by sailing across the Atlantic Ocean, directly towards the west, new countries, which probably formed a part of the vast continent of India, must infallibly be discovered. His reasons for this were, in the first place, a knowledge he had acquired of the true figure of the earth. The continents of Europe, Asia, and Africa, as far as then known, form but a small part of the globe. It was suitable to our ideas, concerning the wisdom and beneficence of the Author of nature, to believe, that the vast space, still unexplored, was not entirely covered by a waste and barren ocean, but occupied by countries fit for the habitation of man. It appeared likewise extremely probable, that the continent on this side the globe was balanced by a proportional quantity of land in the other hemisphere. These conjectures were confirmed by the observations of modern navigators. A Portuguese pilot having stretched farther to the west than was usual at that time, took up a piece of timber, artificially carved, floating upon the sea; and as it was driven towards him by a westerly wind, he concluded that it came from some unknown land situated in that quarter. Columbus's brother-in-law had found to the west of the Madeira Isles a piece of timber fashioned in the same manner, and brought by the same wind; and had seen also canes of an enormous size floating upon the waves, which resembled those described by Ptolemy, as productions peculiar to the East Indies. After a course

of westerly winds, trees torn up by the roots were often driven upon the coast of the Azores; and at one time the dead bodies of two men, with singular features, which resembled neither the inhabitants of Europe nor Africa, were cast ashore there. The most cogent reason, however, was a mistaken notion of the ancient geographers concerning the immense extent of the continent of India. Though hardly any of them had penetrated beyond the river Ganges, some Greek writers had ventured to describe the provinces beyond that river, which they represented as regions of an immense extent. Ctesias affirmed that India was as large as all the rest of Asia. Onesicritus, whom Pliny the naturalist follows, contended that it was equal to a third part of the habitable earth. Nearchus asserted that it would take four months to march from one extremity of it to the other in a straight line. The journal of Marco Polo, who travelled into Asia in the 13th century, and who had proceeded towards the east far beyond the limits to which any European had ever advanced, seemed also so much to confirm these accounts, that Columbus was persuaded, that the distance from the most westerly part of Europe to the most easterly part of Asia was not very considerable; and that the shortest, as well as most direct course to the remote regions of the east, was to be found by sailing due west.

In 1474, Columbus communicated his ideas on this subject to one Paul a physician in Florence, a man eminent for his knowledge in cosmography. He approved of the plan, suggested several facts in confirmation of it, and warmly encouraged Columbus to persevere in an undertaking so laudable, and which must redound so much to the honour of his country and the benefit of Europe. Columbus, fully satisfied of the truth of his system, was impatient to set out on a voyage of discovery. The first step towards this was to secure the patronage of some of the considerable powers of Europe capable of undertaking such an enterprise. He applied first to the republic of Genoa; but his countrymen, strangers to his abilities, inconsiderately rejected his proposal as the dream of a chimerical projector, and thus lost for ever the opportunity of restoring their commonwealth to its ancient lustre. His next application was to the court of Portugal, where King John II. listened to him in the most gracious manner, and referred the consideration of his plan to Diego Ortiz, bishop of Ceuta, and two Jewish physicians, eminent cosmographers, whom he was accustomed to consult in matters of this kind. Unhappily these were the persons who had been the chief directors of the Portuguese navigations, and had advised to search for a passage to India by steering a course directly opposite to that which Columbus had recommended as shorter and more certain. They could not therefore approve of his proposal, without submitting to the double mortification of condemning their own theory, and of acknowledging his superiority. The result of their conferences was, that they advised the king to fit out a vessel privately, in order to attempt the proposed discovery, by following exactly the course which Columbus seemed to point out. John, forgetting on this occasion the sentiments of a monarch, meanly adopted this perfidious counsel. But the pilot chosen to execute Columbus's plan had neither the ge-

Columbus. *nius* nor fortitude of its author. Contrary winds arose; no sign of approaching land appeared; his courage failed; and he returned to Lisbon, execrating the project as equally extravagant and dangerous.

On discovering this dishonourable transaction, Columbus immediately quitted Portugal, and applied to the king of Spain; but lest he should be here again disappointed, he sent his brother Bartholomew into England, to whom he had fully communicated his ideas, in order that he might negociate at the same time with Henry VII. who was reckoned one of the most sagacious as well as opulent princes of Europe. Bartholomew was very unfortunate in his voyage: he fell into the hands of pirates, who stripped him of every thing, and detained him a prisoner for several years. At last he made his escape, and arrived in London, but in such extreme indigence, that he was obliged to employ himself, during a considerable time, in drawing and selling maps, in order to pick up as much money as would purchase a decent dress in which he might venture to appear at court. The proposals were received by Henry with more approbation than by any monarch to whom they had hitherto been presented.

Columbus himself made his proposals to the king of Spain, not without many doubts of success, which soon appeared to be well founded. True science had as yet made so little progress in the kingdom of Spain, that most of those to whom the consideration of his plan was referred were utterly ignorant of the first principles on which he founded his hopes. Some, from mistaken notions concerning the dimensions of the globe, contended that a voyage to those remote regions of the East which Columbus expected to discover, could not be performed in less than three years. Others concluded, that either he would find the ocean of infinite extent, according to the opinion of some ancient philosophers; or that if he should persist in steering westwards beyond a certain point, the convex figure of the globe must infallibly prevent his return, and he must perish in the vain attempt to unite the two opposite hemispheres, which nature had for ever disjoined. Even without deigning to enter into any particular discussion, some rejected the scheme in general, upon the credit of a maxim made use of by the ignorant in all ages, "That it is presumptuous in any person to suppose that he alone possesses knowledge superior to all the rest of mankind united." By continual disappointments and delays, he was at last wearied out, and resolved to repair to the court of England in person, in hopes of meeting with a favourable reception there. He had already made preparations for this purpose, and taken measures for the disposal of his children during his absence, when Juan Perez, the prior of the monastery of Rabida near Palos, in which they had been educated, earnestly solicited him to defer his journey for a short time. Perez was a man of considerable learning, and some credit with Queen Isabella. To her therefore he applied; and the consequence of his application was a gracious invitation of Columbus back to court, accompanied with the present of a small sum to equip him for the journey. Ferdinand, however, still regarded the project as chimerical; and had the address to employ, in this new negotiation with

him, some of the persons who had formerly pronounced his scheme to be impracticable. To their astonishment, Columbus appeared before them with the same confident hopes of success as formerly, and insisted on the same high recompence. He proposed that a small fleet should be fitted out, under his command, to attempt the discovery; and demanded to be appointed perpetual and hereditary admiral and viceroy of all the seas and lands which he should discover; and to have the tenth of the profits arising from them settled irrevocably upon him and his descendants for ever. At the same time he offered to advance the eighth part of the sum necessary for accomplishing his design, on condition that he should be intitled to a proportional share in the adventure. If the enterprise should totally miscarry, he made no stipulation for any reward or emolument whatever. These demands were thought unreasonable; Isabella broke off the treaty she had begun, and Columbus was once more disappointed. He now resolved finally to leave Spain; and had actually proceeded some leagues on his journey, when he was overtaken by a messenger from Isabella, who had been prevailed upon by the arguments of Quintanilla and Santangel, two of Columbus's patrons, again to favour his undertakings. The negotiation now went forward with all manner of facility and dispatch; and a treaty with Columbus was signed on the 17th of April 1492. The chief articles of it were, that Columbus should be constituted high admiral in all the seas, islands, and continents he should discover, with the same powers and prerogatives that belonged to the high admiral of Castile within the limits of his jurisdiction. He was also appointed viceroy in all those countries to be discovered; and a tenth of the products accruing from their productions and commerce was granted to him for ever. All controversies or law-suits with respect to mercantile transactions were to be determined by the sole authority of Columbus, or of judges to be appointed by him. He was also permitted to advance one eighth part of the expence of the expedition, and of carrying on commerce with the new countries; and was intitled, in return, to an eighth part of the profit. But, though the name of Ferdinand was joined with Isabella in this transaction, his distrust of Columbus was still so violent, that he refused to take any part in the enterprise as king of Arragon; and as the whole expence of the expedition was to be defrayed by the crown of Castile, Isabella reserved for her subjects of that kingdom an exclusive right to all the benefits which might accrue from its success.

At last our adventurer set sail with three small ships, the whole expence of which did not exceed L. 4000. During his voyage he met with many difficulties from the mutinous and timid disposition of his men. He was the first who observed the variation of the compass, which threw the sailors into the utmost terror. For this phenomenon Columbus was obliged to invent a reason, which, though it did not satisfy himself, yet served to dispel their fears, or silence their murmurs. At last, however, the sailors lost all patience; and the admiral was obliged to promise solemnly, that in case land was not discovered in three days he should return to Europe. That very night, however, the island of San Salvador was discovered, which quickly put

Columbus. put an end to all their fears. The sailors were then as extravagant in the praise of Columbus as they had before been insolent in reviling and threatening him. They threw themselves at his feet, implored his pardon, and pronounced him to be a person inspired by heaven with more than human sagacity and fortitude, in order to accomplish a design so far beyond the ideas and conception of all former ages. Having visited several of the West India islands, and settled a colony in Hispaniola*, he again set sail for Spain; and after escaping great dangers from violent tempests, arrived at the port of Palos on the 15th of March 1493.

See His-
paniola.

As soon as Columbus's ship was discovered approaching, all the inhabitants of Palos ran eagerly to the shore, where they received the admiral with royal honours. The court was then at Barcelona, and Columbus took care immediately to acquaint the king and queen of his arrival. They were no less delighted than astonished with this unexpected event. They gave orders for conducting him into the city with all imaginable pomp. They received him clad in their royal robes, and seated on a throne under a magnificent canopy. When he approached, they stood up; and, raising him as he kneeled to kiss their hands, commanded him to take his seat upon a chair prepared for him, and to give a circumstantial account of his voyage. When he had finished his oration, which he delivered with much modesty and simplicity, the king and queen, kneeling down, offered up solemn thanks to God for the discovery. Every possible mark of honour that could be suggested by gratitude or admiration was conferred on Columbus; the former capitulation was confirmed, his family was ennobled, and a fleet was ordered to be equipped, to enable him to go in quest of those more opulent countries which he still confidently expected to find.

Notwithstanding all this respect, however, Columbus was no longer regarded than he was successful. The colonists he carried over with him were to the last degree unreasonable and unmanageable; so that he was obliged to use some severities with them; and complaints were made to the court of Spain against him for cruelty. On this, Francis de Bovadilla, a knight of Calatrava, was appointed to inquire into the conduct of Columbus; with orders, in case he found the charge of maladministration proved, to supersede him, and assume the office of governor of Hispaniola. The consequence of this was, that Columbus was sent to Spain in chains. From these, however, he was freed immediately on his arrival, and had an opportunity granted him of vindicating his innocence. He was, however, deprived of all power; and notwithstanding his great services, and the solemnity of the agreement between him and Ferdinand, Columbus never could obtain the fulfilment of any part of that treaty. At last, disgusted with the ingratitude of a monarch whom he had served with such fidelity and success, and exhausted with fatigues, he ended his life on the 29th of May 1506.

COLUMBUS (Bartholomew), brother to Christopher, famous for his marine charts and spheres, which he presented to Henry VII. of England. He died in 1514.

COLUMBUS (Don Ferdinand), son of Christopher, and writer of his life. He entered into the ecclesiasti-

cal state; and founded a library, which he bequeathed to the church of Seville, to this day called the *Columbine library*. He died in 1560.

COLUMELLA (Lucius Junius Moderatus), a Roman philosopher, was a native of Cadiz, and lived under the emperor Claudius about the year 42. He wrote a book on agriculture intitled *De Re rustica*, and another *De Arboribus*.

COLUMEY, a town of Red Russia in Poland, seated on the river Pruth, towards the confines of Moldavia, about 38 miles from Haliez, and 63 south of Leopold. This town has been very ill treated by the Cossacks, inasmuch that it is now inconsiderable, tho' there are several mines of salt in its district. E. Long. 16. 25. N. Lat. 48. 45.

COLUMN, in architecture, a round pillar made to support and adorn a building, and composed of a base, a shaft, and capital. See ARCHITECTURE, n^o 33.

COLUMNS, denominated from their use.—Astronomical column is a kind of observatory, in form of a very high tower built hollow, and with a spiral ascent to an armillary sphere placed a-top for observing the motions of the heavenly bodies. Such is that of the Doric order erected at the Hotel de Soissons at Paris by Catharine de Medicis for the observations of Orontius Fineus, a celebrated astronomer of that time.

Chronological COLUMN, that which bears some historical inscription digested according to the order of time; as by lustres, olympiads, fasti, epochas, annals, &c. At Athens, there were columns of this kind, whereon were inscribed the whole history of Greece digested into olympiads.

Funeral COLUMN, that which bears an urn, wherein are supposed to be inclosed the ashes of some deceased hero; and whose shaft is sometimes overspread with tears and flames, which are symbols of grief and of immortality.

Gnomonic COLUMN, a cylinder whereon the hour of the day is represented by the shadow of a stile. See DIAL.

Historical COLUMN, is that whose shaft is adorned with a basso-relievo, running in a spiral line its whole length, and containing the history of some great personage: such are the Trajan and Antonine columns at Rome.

Hollow COLUMN, that which has a spiral stair-case within for the convenience of ascending to the top; as the Trajan column, the stair-case whereof consists of 185 steps, and is illuminated by 43 little windows, each of which is divided by tambours of white marble. The monument, or fire-column, at London, has also a stair-case; but it does not reach to the top. These kinds of columns are also called *columnæ coelidæ*, or *cochlidæ*.

Indicative COLUMN, that which serves to show the tides, &c. along the sea-coasts. Of this kind there is one at Grand Cairo of marble, whereon the overflowings of the Nile are expressed: by this they form a judgment of the succeeding season; when the water, for instance, ascends to 23 feet, it is a sign of great fertility in Egypt. See NILOMETER.

Instructive COLUMN, that raised, according to Josephus, lib. i. cap. 3. by the sons of Adam, whereon were engraven the principles of arts and sciences.

Bau-

Column.

Baudelot tells us, that the son of Pisistratus raised another of this kind, of stone, containing the rules and precepts of agriculture.

Itinerary COLUMN, a column with several faces, placed in the cross ways in large roads; serving to show the different routs by inscriptions thereon.

Lactary COLUMN, at Rome, according to Festus, was a column erected in the herb-market, now the place *Montanara*, which had a cavity in its pedestal, wherein young children abandoned by their parents, out of poverty or inhumanity, were exposed, to be brought up at the public expence.

Legal COLUMN. Among the Lacedemonians there were columns raised in public places, whereon were engraven the fundamental laws of the state.

Limitrophous or Boundary COLUMN, that which shows the limits of a kingdom or country conquered. Such was that which Pliny says Alexander the Great erected at the extremity of the Indies.

Manubary COLUMN, from the Latin *manubiæ*, "spoils of the enemy;" a column adorned with trophies built in imitation of trees, whereon the spoils of enemies were anciently hung. See *TROPHY*.

Memorial COLUMN, that raised on occasion of any remarkable event; as the monument of London, built to perpetuate the memory of the burning of that city in 1666. It is of the Doric order, fluted, hollow, with a winding stair-case; and terminated a-top with waving flames. There is also another of the kind, in form of an obelisk, on the banks of the Rhine in the Palatinate, in memory of the famous passage of that river by the great Gustavus Adolphus and his army.

Menian COLUMN, any column which supports a balcony or meniana. The origin of this kind of column, Suetonius and Ascanius refer to one Menias; who having sold his house to Cato and Flaccus, consuls, to be converted into a public edifice, reserved to himself the right of raising a column withoutside, to bear a balcony, whence he might see the shews.

Milliary COLUMN, was a column of marble raised by order of Augustus in the middle of the Roman forum; from whence, as a centre, the distances of the several cities, &c. of the empire were reckoned, by other milliary columns disposed at equal distances on all the grand roads. This column was of white marble, the same with that which is now seen on the balustrade of the perron of the capital at Rome. Its proportion is massive, being a short cylinder, the symbol of the globe of the earth. It was called *milliarium aureum*, as having been gilt, at least the ball, by order of Augustus. It was restored by the emperors Vespasian and Adrian, as appears by the inscriptions.

Military COLUMN, among the Romans, a column whereon was engraven a list of the forces in the Roman army, ranged by legions, in their proper order; with design to preserve the memory of the number of soldiers, and of the order preserved in any military expedition. They had another kind of military column, which they called *columna bellica*, standing before the temple of Janus; at the foot whereof the consul declared war, by throwing a javelin towards the enemies countries.

Sepulchral COLUMN, anciently was a column erected on a tomb or sepulchre, with an inscription on its base.

Those over the tombs of persons of distinction were very large; those for the common people small: these last are called *stela* and *zippi*.

Statuary COLUMN, that which supports a statue. Such was that erected by Pope Paul V. on a pedestal before the church of St Maria at Rome; to support a statue of the Virgin, which is of gilt brass. This column was dug up in the temple of peace; its shaft is a single block of white marble 49½ feet high, and five feet eight inches diameter, of the Corinthian order.

The term *statuary column* may likewise be applied to Caryatides, persians, termini, and other human figures, which do the office of columns; and which Vitruvius calls *telomones* and *atlantes*. See *ARCHITECTURE*, n° 54.

Triumphal COLUMN, a column erected among the ancients in honour of an hero; the joints of the stones, or courses whereof, were covered with as many crowns as he had made different military expeditions. Each crown had its particular name, as *vallis*, which was beset with spikes, in memory of having forced a palisade. *Muralis*, adorned with little turrets or battlements, for having mounted an assault. *Navalis*, of prows and beaks of vessels; for having overcome at sea. *Obsidionales*, or *graminales*, of grass; for having raised a siege. *Ovans*, of myrtle; which expressed an ovation, or little triumph; and *triumphalis*, of laurel, for a grand triumph. See *CROWN*.

COLUMNARIUM, in Roman antiquity, a heavy tribute, demanded for every pillar of a house. It was first laid on by Julius Cæsar, in order to put a stop to the extravagant expences laid out on sumptuous buildings.

COLUMNÆA, in botany: A genus of the angiospermia order, belonging to the didynamia class of plants; and in the natural method ranking under the 40th order, *Personatæ*. The calyx is quinquepartite; the upper lip of the corolla arched and entire; gibbous above the base; the antheræ convex; the capsule bilocular. There is but one species, a native of Martincto, of which we have no particular description.

COLUMNIFERI, in botany, an order of plants in the *fragmenta methodi naturalis* of Linnæus, in which are the following genera, *viz.* bixa, corchorus, heliocarpus, kiggelaria, microcos, muntingia, thea, tilea, turnera, triumfetta, ayenia, grevia, helicteres, kleinovia, adanifonia, alcæa, althæa, bombax, camellia, gofypium, hermannia, hibiscus, lavatera, malope, malva, melochia, napæa, pentapetes, sida, stewartia, theobroma, urena, waltharia.

COLURES, in astronomy and geography, two great circles supposed to intersect each other at right angles in the poles of the world, and to pass through the solstitial and equinoctial points of the ecliptic. See *GEOGRAPHY*.

COLURI, a little island in the gulph of Engia, in the Archipelago, formerly called *Salamis*. The principal town is of the same name, and seated on the south side, at the bottom of the harbour, which is one of the finest in the world. The famous Grecian hero, Ajax, who makes such a figure in Homer's Iliad, was king of this island. It is now, however, but a poor place; its commodities consist of wheat, barley, tar, rosin, pit-coal, sponges, and pot-ashes, which they carry to Athens.

Column
Coluri.

Colutea
||
Colymbus
} Athens. It is seven miles south from Athens, and is separated from the continent by a strait about a mile over.

COLUTEA, BASTARD-SENA, in botany: A genus of the decandria order, belonging to the diadelphia class of plants; and in the natural method ranking under the 32d order, *Papilionaceæ*. The calyx is quinquefid; the legumen inflated, opening at the upper part of the base. There are three species, all of them deciduous flowering shrubs, adorned with many-lobed leaves, and butterfly-shaped flowers, of a deep yellow or red colour. They are propagated both by seeds and layers, and are hardy enough, though they sometimes require a little shelter when the weather is very cold.

COLYBA, or COLYBUS; a term in the Greek liturgy, signifying an offering of corn and boiled pulse, made in honour of the saints, and for the sake of the dead.

Balsamon, P. Goar, Leo, Allatius, and others, have written on the subject of *colyba*: the substance of what they have said is as follows: 'The Greeks boil a quantity of wheat, and lay it in little heaps on a plate; adding beaten peas, nuts cut small, and grape-stones, which they divide into several compartments, separated from each other by leaves of parsley. A little heap of wheat, thus seasoned, they call *κολυβα*. They have a particular formula for the benediction of the *colyba*: wherein, praying that the children of Babylon may be fed with pulse, and that they may be in better condition than other people, they desire God to bless those fruits, and those who eat them, because offered to his glory, to the honour of such a saint, and in memory of the faithful deceased. Balsamon refers the institution of this ceremony to St Athanasius; but the Greek Synaxary to the time of Julian the apostate.

COLYMBUS, in ornithology, a genus belonging to the order of anseres. The bill has no teeth, is subulated, straight, and sharp-pointed; the teeth are in the throat; the nostrils are linear, and at the base of the bill; and the legs are unfit for walking. This genus includes the divers, guillemots, and grebes; of which the following are the most remarkable species.

1. The grylle, or black guillemot, is in length 14 inches, in breadth 22; the bill is an inch and an half long, straight, slender, and black; the inside of the mouth red; on each wing is a large bed of white, which in young birds is spotted; the tips of the lesser quill-feathers, and the coverts of the wings, are white: except those, the whole plumage is black. In winter it is said to change to white; and a variety spotted with black and white is not uncommon in Scotland. The tail consists of 12 feathers; the legs are red. These birds are found on the Bass isle in Scotland; in the island of St Kilda; and, as Mr Ray imagines, in the Farm Islands off the coast of Northumberland. It has also been seen on the rocks of Llandidno, in Caernarvonshire, in Wales. Except in breeding-time it keeps always at sea; and is very difficult to be shot, diving at the flash of the pan. The Welsh call this bird *casfan longur*, or "the sailor's hatred," from a notion that its appearance forebodes a storm. It visits St Kilda's in March; makes its nest far under ground; and lays a grey egg, or, as

Steller says, whitish and spotted with rust, and speckled with ash-colour. *Colymbus*.

2. The troile, or foolish guillemot, weighs 24 ounces: its length is 17 inches, the breadth $27\frac{1}{2}$; the bill is three inches long, black, straight, and sharp-pointed; near the end of the lower mandible is a small process; the inside of the mouth yellow; the feathers on the upper part of the bill are short and soft like velvet; from the eye to the hind part of the head is a small division of the feathers. The head, neck, back, wings, and tail, are of a deep mouse-colour; the tips of the lesser quill-feathers white; the whole under part of the body is of a pure white; the sides under the wings marked with dusky lines. Immediately above the thighs are some long feathers that curl over them. The legs are dusky. They are found in amazing numbers on the high cliffs of several of the British coasts, and appear at the same time with the auk. They are very simple birds: for notwithstanding they are shot at, and see their companions killed by them, they will not quit the rock. Like the auk they lay only one egg, which is very large: some are of a fine pale blue; others white, spotted, or most elegantly streaked with lines crossing each other in all directions. They continue about the Orkneys the whole winter. The chief places they are known to breed in are the uninhabited isle of Priestholm, near the isle of Anglesey; on a rock called *Godrove*, not far from St Ives in Cornwall; the Farn isles, near the coast of Northumberland; and the cliffs about Scarborough in Yorkshire. They are also found in most of the northern parts of Europe, to Spitzbergen, the coast of Lapmark, and along the white and icy sea quite to Kamtschatka. Is frequently met with on the coasts of Italy in the winter. It is also known in Newfoundland, and in a few parts of the continent of North America, but has not hitherto been talked of as common. Our last voyagers met with it on the coast north of Nootka Sound. It is known by several names; by the Welch, *guillem*; at Northumberland and Durham, *guillemot* or *sea-hen*; in Yorkshire, *a scout*; by the Cornish, *kiddab*; in the southern parts, *willock*; and in Kamtschatka, *aru* or *kara*. The inhabitants of the last kill them in numbers for the sake of their flesh, though it is certainly very tough and ill tasted; but more especially for their skins, of which, as of other fowls, they make garments: the eggs are also accounted a great delicacy.

3. The septentrionalis, or red-throated diver, is more elegantly shaped than the others. It weighs three pounds. The length to the end of the tail is two feet; to the toes two feet four inches: the breadth three feet five inches. The head is small and taper, the bill straight; the head and chin are of a fine uniform grey; the hind part of the neck marked with dusky and white lines pointing downwards; the throat is of a dull red; the whole upper part of the body, tail, and wings, of a deep grey, almost dusky; but the coverts of the wings and the back are marked with a few white spots; the under side of the body is white; the legs dusky. This species breeds in the northern parts of Scotland, on the borders of the lakes. It is found also in Russia, Siberia, and Kamtschatka; but does not haunt the inland lakes. It is common in Ice-

Colymbus. land and Greenland, where it breeds in June, and lays two ash-coloured eggs, marked with a few black spots; it makes its nest in the grass on the shores, composed of moss and grass, and placed contiguous to the water. It swims and dives well, and flies admirably, and while flying is very noisy. It feeds on small fish, crabs, and sea insects. In the summer, it inhabits the rivers of Hudson's bay, appearing as soon as the rivers are open. Here it lays in June, and lines the nest with a little down from its own breast; the young fly before the end of August, and they all depart in September. They are called by the natives *asse-moqua*. They prey much on the fish entangled in the nets; but are often thereby caught themselves.

4. The arcticus, or black-throated diver, is somewhat larger than the last: the bill is black, and also the front; the hind part of the head and neck cinereous; the sides of the neck marked with black and white lines pointing downwards; the fore-part of a glossy variable black, purple, and green. The back, scapulars, and coverts of the wings, are black, marked, the two first with square, the last with round spots of white; the quill-feathers dusky; the breast and belly white; the tail short and black; legs partly dusky, and partly reddish. This species is now and then found in England, but is not common. It is sufficiently plenty in the northern parts of Europe, Norway, Sweden, and Denmark. Frequent in the inland lakes of Siberia, especially those of the arctic regions; in Iceland, Greenland, and the Ferroe Isles; and in America at Hudson's bay. It is supposed to cry and be very restless before rain, making a great noise: hence the Norwegians think it impious to destroy this species; but the Swedes, less superstitious, dress their skins, which, like all of this genus, are exceedingly tough, and use them for gun-cases and facings for winter caps.

5. The glacialis, or northern diver, is three feet five inches in length; the breadth four feet eight; the bill to the corners of the mouth four inches long, black and strongly made. The head and neck are of a deep black; the hind part of the latter is marked with a large femilunar white band; immediately under the throat is another; both marked with black oblong strokes pointing down: the lower part of the neck is of a deep black, glossed with a rich purple; the whole under side of the body is white; the sides of the breast marked with black lines; the back, coverts of the wings, and scapulars, are black marked with white spots; those on the scapulars are very large, and of a square shape; two at the end of each feather. The tail is very short, and almost concealed by the coverts, which are dusky, spotted with white; the legs are black. This species inhabits several parts of the north of Europe, but is not very frequent on our shores; nor ever seen southward except in very severe winters. It is seldom met with on land, being for the most part on the open sea, where it is continually diving for fish, which it does with great agility, and flies high and well. It is common in Iceland and Greenland, where it breeds, and at that time frequents the fresh waters. It is sufficiently plentiful in Norway, and all along the arctic coasts, as far as the river Ob, in the Russian dominions. The Barabintzians, a nation situated between that river and the Irtisch, tan the breasts of this and other water-fowl; whose skins they prepare in such a manner as to pre-

serve the down upon them; and sewing a number of them together, their husbands sell them, to make pellices, caps, &c. Garments made of these are very warm, never imbibing the least moisture; and are more lasting than could be imagined. It is also met with among the lakes of Hudson's bay. The natives of Greenland use the skins for cloathing; and the Indians about Hudson's bay adorn their heads with circles of their feathers. At the last place it is known by the name of *athinue-moqua*. As they are seldom seen on the sea-coasts, but chiefly among the lakes, they are called by the Indians *inland loons*.

6. The immer, or ember-goose, is superior in size to a common goose. The head is dusky; the back, coverts of the wings, and tail, clouded with lighter and darker shades of the same. The primaries and tail are black; the under side of the neck spotted with dusky; the breast and belly silvery: the legs black. They inhabit the seas about the Orkney Islands; but in severe winters visit the southern parts of Great Britain. They are found also in Iceland, and most parts of northern Europe; likewise in Kamtschatka; but not in any parts of Siberia or Russia. It likewise inhabits Switzerland, particularly on the lake Constance, where it is known by the name of *fluder*. It is said to dive wonderfully well, and to rise at an amazing distance from the place where it plunged. The female makes its nest among the reeds and flags, and places it in the water; so that it is continually wet, as in some of the grebe genus. It is difficult to be taken, either on land or swimming on the water; but is not unfrequently caught under the water by a hook baited with a small fish, its usual food.

7. The Chinese diver, described by Mr Latham; the size uncertain, but in the drawing the length was 14 inches. The bill dusky: irides ash-colour: the upper parts of the head, neck, body, wings, and tail, dusky greenish brown; the middle of the feathers much darker: the fore part of the neck the same, but considerably paler: chin pale rufous: breast and under parts of the body pale rufous white, marked with dusky rufous spots: the quills and tail are plain brown, the last short: legs ash-colour. Supposed to inhabit China, as Mr Latham saw it among other well painted drawings at Sir Joseph Banks's; it was in the attitude of fishing, with a brass ring round the middle of the neck, in the manner of the figure, Plate CXXVI. From the various and uncertain accounts of authors, we are not clear what birds the Chinese use for catching fish; the custom, however, of doing it is manifest, from the relations of many travellers. The bird used for this purpose has a ring fastened round the middle of the neck, in order to prevent its swallowing; besides this it has a slender long string fastened to it; and, thus accoutred, is taken by its master into his fishing-boat, from the edge of which it is taught to plunge after the fish as they pass by; and as the ring prevents their passing further downwards, they are taken from the mouth of the bird as fast as they are caught. In this manner sometimes a great many are procured in the course of a few hours. When the keeper of the bird has taken sufficient for himself, the ring is taken off, and the poor slave suffered to satisfy its own hunger. We do not here give this bird as the one most commonly used for the above purpose; but have

Colymbus. have thought right to figure it, as a species, if not new, at least as not generally known; and probably, from the circumstance of its situation in the painting, may prove one of the birds used on this occasion.

8. The *stellatus*, or speckled diver, a species less than the former, weighs two pounds and a half: and is 27 inches in length and three feet nine in breadth. The bill is three inches long, bending a trifle upwards; and is of a pale horn-colour, the top of the upper mandible dusky; the head is dusky, dotted with grey; hind part of the neck plain dusky; the sides under the eye, the chin, and throat, white; fore part of the neck very pale ash-colour; back dusky, marked with oval spots of white; sides of the breast and body the same, but smaller; the spots on the rump and tail minute; breast and under parts white; quills dusky; legs brown; webs and claws pale. This bird is pretty frequent in England; sufficiently so on the river Thames, where it is called by the fishermen *sprat loon*, being often seen in vast numbers among the shoals of that fish, diving after them, and frequently approaching very near the boats while fishing. It is common about the Baltic and the White Sea, but not observed in other parts of Russia, yet is a native of Kamtschatka. It lays two eggs, in the grass, on the borders of lakes not far from the sea; they are exactly oval, the size of those of a goose, dusky, marked with a few black spots. These are also frequent about the fish ponds in France, except they are frozen, when they betake themselves to the rivers. This and the two last visit New York in winter, but return very far north to breed.

9. The *crystatus*, crested diver, or cargoose, weighs two pounds and an half. Its length is 21 inches, the breadth 30; the bill is two inches and a quarter long, red at the base, and black at the point; between the bill and the eyes is a stripe of black naked skin; the irides are of a fine pale red; the tongue is a third part shorter than the bill, slender, hard at the end, and a little divided; on the head is a large dusky crest, separated in the middle. The cheeks and throat are surrounded with a long pendent ruff, of a bright tawney colour, edged with black; the chin is white; from the bill to the eye is a black line, and above that a white one; the hind part of the neck and the back are of a footy hue; the rump, for it wants a tail, is covered with long soft down. The covert-feathers on the second and third joints of the wing, and the under coverts, are white; all the other wing-feathers, except the secondaries, are dusky, those being white; the breast and belly are of a most beautiful silvery white, glossy as fatten: the outside of the legs and the bottom of the feet are dusky; the inside of the legs and the toes of a pale green. These birds frequent the meres of Shropshire and Cheshire, where they breed; and the great fen of Lincolnshire, where they are called *gaunts*. Their skins are made into tippetts, and sold at as high a price as those which come from Geneva. This species lays four eggs of a white colour, and the same size with those of a pigeon. The nest is formed of the roots of bugbane, stalks of water-lily, pond-weed, and water-violet, floating independent among the reeds and flags; the water penetrates it, and the bird sits and hatches the eggs in that wet condition; the nest is sometimes blown from among the flags into the middle of the water: in these circumstances the fable

of the halcyon's nest may, in some measure, be vindicated. It is a careful nurse of its young; being observed to feed them most assiduously, commonly with small eels; and when the infant brood are tired, the parent will carry them either on its back or under its wings. It preys on fish, and is almost perpetually diving; it does not show much more than the head above water: and is very difficult to be shot, as it darts down on the least appearance of danger. It is never seen on land; and, though disturbed ever so often, will not fly farther than the end of the lake. Its skin is out of season about February, losing then its bright colour; and in the breeding time its breast is almost bare. The flesh is excessively rank.

10. The urinator, or tippet-grebe, thought by Mr Latham not to be a different species from the former, being only somewhat less, and wanting the crest and ruff. The sides of the neck are striped downwards from the head with narrow lines of black and white: in other respects the colours and marks agree with that bird. This species has been shot on Roftern Mere in Cheshire. It is rather scarce in England, but is common in the winter time on the lake of Geneva. They appear there in flocks of 10 or 12; and are killed for the sake of their beautiful skins. The under side of them being dressed with the feathers on, are made into muffs and tippetts: each bird sells for about 14 shillings.

11. The *auritus*, eared grebe, or dob-chick, is in length one foot to the rump; the extent is 22 inches; the bill black, slender, and slightly recurved; the irides crimson; the head and neck are black; the throat spotted with white; the whole upper side of a blackish brown, except the ridge of the wing about the first joint, and the secondary feathers, which are white; the breast, belly, and inner coverts of the wings are white; the subaxillary feathers, and some on the side of the rump, ferruginous. Behind the eyes, on each side, is a tuft of long, loose, rust coloured feathers hanging backwards; the legs are of a dusky green. They inhabit the fens near Spalding where they breed. No external difference is to be observed between the male and the female of this species. They make their nest not unlike that of the former; and lay four or five small eggs.

12. The horned grebe, is about the size of a teal; weight, one pound; length, one foot; breadth, 16 inches. Bill one inch, dusky; head very full of feathers, and of a glossy deep green, nearly black: thro' each eye is a streak of yellow feathers, elongated into a tuft as it passes to the hind head: the upper part of the neck and back is a dusky brown; the fore part of the neck and breast, dark orange red: the lesser wing coverts, cinerous; the greater and quills, black; middle ones, white: belly, glossy white; legs, cinerous blue before, pale behind.—It inhabits Hudson's bay; and first appears in May, about the fresh waters. It lays from two to four white eggs in June, among the aquatic plants; and is said to cover them when abroad. It retires south in autumn; appears then at New York, staying till spring, when it returns to the north. For its vast quickness in diving, it is called the *water-witch*. At Hudson's bay, it is known by the name of *seekeep*. See Plate CXLIII.

COM, a town of Asia in the empire of Persia, and province of Iracagemi. It is a large populous place,

Coma
||
Combina-
tion.

but has suffered greatly by the civil wars. E. Long.
49. 1 N. Lat. 34. 0.

COMA, or COMA-VIGIL, a preternatural propen-
sity to sleep, when, nevertheless, the patient does not
sleep, or if he does, awakes immediately without any
relief. See MEDICINE-Index.

COMA Berenices, Berenice's hair, in astronomy, a
modern constellation of the northern hemisphere, com-
posed of unformed stars between the Lion's tail and
Bootes. This constellation is said to have been form-
ed by Conon, an astronomer, in order to console the
queen of Ptolemy Evergetes for the loss of a lock of
her hair, which was stolen out of the temple of Venus,
where she had dedicated it on account of a victory ob-
tained by her husband. The stars of this constella-
tion, in Tycho's Catalogue, are fourteen; in Hevelius's,
twenty-one; and in the Britannic Catalogue, forty-three.

COMA Somnolentum, is when the patient continues in
a profound sleep; and, when awakened, immediately
relapses, without being able to keep open his eyes.

COMARUM, MARSH-CINQUEFOIL: A genus of
the polygynia order, belonging to the icofandria class
of plants; and in the natural method ranking under
the 35th order, *Senticosa*. The calyx is decemfid;
the petals five, less than the calyx; the receptacle
of the seeds ovate, spongy, and persisting: There
is but one species, a native of Britain. It rises about
two feet high, and bears fruit somewhat like that
of the strawberry. It grows naturally in bogs, so is
not easily preserved in gardens. The root dyes a
dirty red. The Irish rub their milking pails with it,
and it makes the milk appear thicker and richer.
Goats eat the herb; cows and sheep are not fond of
it; horses and swine refuse it.

COMB, an instrument to clean, untangle, and dress
flax, wool, hair, &c.

Combs for wool are prohibited to be imported into
England.

COMB is also the crest, or red fleshy tuft, growing
upon a cock's head.

COMBAT, in a general sense, denotes an engage-
ment, or a difference decided by arms. See BATTLE.

COMBAT, in our ancient law, was a formal trial of
some doubtful cause or quarrel, by the swords or
bastons of two champions. This form of proceeding
was very frequent, not only in criminal but in civil
causes; being built on a supposition that God would
never grant the victory but to him who had the best
right. The last trial of this kind in England was be-
tween Donald lord Ray appellat, and David Ram-
say, Esq; defendat, when, after many formalities, the
matter was referred to the King's pleasure. See the
article BATTLE.

COMBER, or CUMBER (Thomas), an eminent di-
vine born at Westram in Kent, in 1645, was educated
at Cambridge; created doctor of divinity; and, after
several preferments in the church, was made dean of
Durham. He was chaplain to Anne princess of Den-
mark, and to king William and queen Mary. He
was author of several works, viz. 1. A scholastical
history of the primitive and general use of Liturgies.
2. A Companion to the Altar. 3. A brief discourse
upon the offices of baptism, catechism, and confirma-
tion. He died in 1699, aged 55.

COMBINATION, properly denotes an assemblage
of several things, two by two.

Combina-
tion.

COMBINATION, in mathematics, is the variation or
alteration of any number of quantities, letters, or the
like, in all the different manners possible. See CHANGES.

Aphorisms. I. In all combinations, if from an arith-
metic decreasing series, whose first term is the number
out of which the combinations are to be formed, and
whose common difference is 1, there be taken as
many terms as there are quantities to be combined,
and these terms be multiplied into each other; and
from the series 1, 2, 3, 4, &c. there may be taken
the same number of terms, and they be multiplied in-
to each other, and the first product be divided by the
second; the quotient will be the number of combina-
tions required. Therefore, if you would know how
many ways four quantities can be combined in seven,
multiply the first four terms of the series, 7, 6, 5, 4,
&c. together, and divide the product, which will be
840, by the product of the first four terms of the se-
ries, 1, 2, 3, 4, &c. which is 24, and the quotient
35 will be the combinations of 4 in 7. II. In all
permutations, if the series 1, 2, 3, 4, &c. be con-
tinued to as many terms as there are quantities to be
changed, and those terms be multiplied into each o-
ther; the product will be the number of permutations
sought. Thus, if you would know how many permu-
tations can be formed with five quantities, multiply
the terms 1, 2, 3, 4, 5, together, and the product 120
will be the number of all the permutations.

Problems. I. To find the number of changes that
may be rung on 12 bells. It appears by the second
aphorism, that nothing is more necessary here than
to multiply the numbers from 1 to 12 continually into
each other, in the following manner, and the last pro-
duct will be the number sought.

1
2
2
3
6
4
24
5
120
6
720
7
5040
8
40320
9
362880
10
3628800
11
39916800
12
479,001,600

II. Suppose the letters of the alphabet to be wro-
te so small that no one of them shall take up more space
than the hundredth part of a square inch: to find how
many square yards it would require to write all the
permutations of the 24 letters in that size. By fol-
lowing the same method as in the last problem, the
number of permutations of the 24 letters will be found

Combi- nation. to be 62,044,840,173,323,943,936,000. Now the inches in a square yard being 1296, that number multiplied by 100 gives 129,600, which is the number of letters each square yard will contain; therefore if we divide 62,044,840,173,323,943,936,000 by 129600 the quotient, which is 478,741,050,720,092,160, will be the number of yards required, to contain the above mentioned number of permutations. But as all the 24 letters are contained in every permutation, it will require a space 24 times as large; that is, 11,489,785,217,282,211,840. Now the number of square yards contained on the surface of the whole earth is but 617,197,435,008,000, therefore it would require a surface 18620 times as large as that of the earth to write all the permutations of the 24 letters in the size above mentioned.

III. To find how many different ways the eldest hand at piquet may take in his five cards. The eldest hand having 12 cards dealt him, there remain 20 cards, any five of which may be in those he takes in; consequently we are here to find how many ways five cards may be taken out of 20. Therefore, by aphorism I. if we multiply 20, 19, 18, 17, 16, into each other, which will make 1860480, and that number be divided by 1, 2, 3, 4, 5, multiplied into each other, which make 120, the quotient, which is 15504, will be the number of ways five cards may be taken out of 20. From hence it follows, that it is 15503 to 1, that the eldest hand does not take in any five certain cards.

IV. To find the number of deals a person may play at the game of whist, without ever holding the same cards twice. The number of cards played with at whist being 52, and the number dealt to each person being 13, it follows, that by taking the same method as in the last experiment, that is, by multiplying 52 by 51, 50, &c. so on to 41, which will make 3,954,242,643,911,239,680,000, and then dividing that sum by 1, 2, 3, &c. to 13, which will make 6,227,020,800, the quotient, which is 635,013,559,600 will be the number of different ways 13 cards may be taken out of 52, and consequently the number sought.

The construction of this table is very simple. The line *A a* consists of the first 12 numbers. The line *A b* consists every where of units; and second term 3, of the line *B c*, is composed of the two terms 1 and 2 in the preceding rank: the third term 6, in that line, is formed of the two terms 3 and 3 in the preceding rank: and so of the rest; every term, after the first, being composed of the two next terms in the preceding rank: and by the same method it may be continued to any number of ranks. To find by this table how often any number of things can be combined in another number, under 13, as suppose 5 cards out of 8; in the eighth rank look for the fifth term, which is 56, and that is the number required.

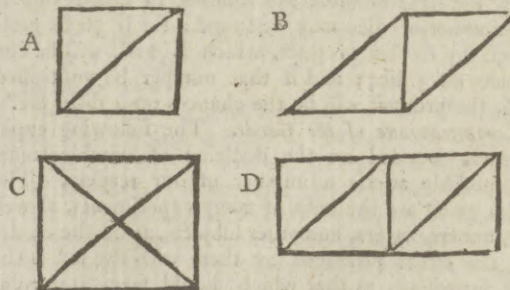
Though we have shown in the foregoing problems the manner of finding the combination of all numbers whatever, yet as this table answers the same purpose, for small numbers, by inspection only, it will be found useful on many occasions; as will appear by the following examples.

V. To find how many different sounds may be produced by striking on a harpsichord two or more of the seven natural notes at the same time. 1. The combinations of two in seven, by the foregoing triangle are

1. The combinations of 2 in 7, are	21
2. The combinations of 3 in 7, are	35
3. The combinations of 4 in 7, are	35
4. The combinations of 5, are	21
5. The combinations of 6, are	7
6. The seven notes all together once	1

Therefore the number of all the sounds will be 120

VI. Take four square pieces of pasteboard, of the same dimension, and divide them diagonally, that is by drawing a line from two opposite angles, as in the figures, into 8 triangles; paint 7 of these triangles with the primitive colours, red, orange, yellow, green, blue, indigo, violet, and let the eighth be white. To find how many chequers or regular four-sided figures, different either in form or colour, may be made out of those eight triangles. First, by combining two of these triangles, there may be formed either the triangular square *A*, or the inclined square *B* called a *rhomb*. Secondly, by combining four of the triangles, the large square *C* may be formed; or the long square *D*, called a *parallelogram*.



Now the first two squares, consisting of two parts out of 8, they may each of them, by the eighth rank of the triangle be taken 28 different ways, which makes 56. And the last two squares, consisting of four parts, may each be taken by the same rank of the triangle 70 times, which makes 140. To which add the foregoing number 56

And the number of the different squares that may be formed of the 8 triangles, will be 196

1 Rank	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12

A	1	1	1	1	1	1	1	1	1	1	1	1
B	2	3	6	10	15	21	28	36	45	55	66	78
	1	3	6	10	15	21	28	36	45	55	66	78
	1	4	10	20	35	56	84	120	165	220	286	364
	1	1	3	6	10	15	21	28	36	45	55	66
	1	1	4	10	20	35	56	84	120	165	220	286
	1	1	1	4	10	20	35	56	84	120	165	220
	1	1	1	1	4	10	20	35	56	84	120	165
	1	1	1	1	1	4	10	20	35	56	84	120
	1	1	1	1	1	1	4	10	20	35	56	84
	1	1	1	1	1	1	1	4	10	20	35	56
	1	1	1	1	1	1	1	1	4	10	20	35
	1	1	1	1	1	1	1	1	1	4	10	20
	1	1	1	1	1	1	1	1	1	1	4	10
	1	1	1	1	1	1	1	1	1	1	1	4
	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1	1	1	1

The ARITHMETIC TRIANGLE; OR TABLE FOR COMBINATIONS.

Combina-
tion.

VII. A man has 12 different sorts of flowers, and a large number of each sort. He is desirous of setting them in beds or flourishes in his parterre: Six flowers in some, 7 in others, and 8 in others; so as to have the greatest variety possible; the flowers in no two beds to be the same. To find how many beds he must have. 1. The combinations of 6 in 12 by the last rank of the triangle, are 924
2. The combinations of 7 in 12, are 792
3. The combinations of 8 in 12, are 495
Therefore the number of beds must be 2211

VIII. To find the number of chances that may be thrown on two dice. As each die has 6 faces, and as every face of one die may be combined with all the faces of the other, it follows, that 6 multiplied by 6, that is 36, will be the number of all the chances; as is also evident from the following table:

Points.		Numb. of chances.	Numb. of points.
2	1.1	1	2
3	2.1	2	6
4	2.2 3.1	3	12
5	4.1 1.4 3.2 2.3	4	20
6	3.3 5.1 1.5 4.2 2.4	5	30
7	6.1 1.6 5.2 2.5 4.3 3.4	6	42
8	4.4 6.2 2.6 5.3 3.5	5	40
9	6.3 3.6 5.4 4.5	4	36
10	5.5 6.4 4.6	3	30
11	6.5 5.6	2	22
12	6.6	1	12
		36	252

It appears by this table, 1. That the number of chances for each point continually increases to the point of seven, and then continually decreases till 12: therefore if two points are proposed to be thrown, the equality, or the advantage of one over the other, is clearly visible (A). 2. The whole number of chances on the dice being 252, if that number be divided by 36, the number of different throws on the dice, the quotient is 7: it follows therefore, that at every throw there is an equal chance of bringing seven points. 3. As there are 36 chances on the dice, and only 6 of them doublets, it is 5 to 1, at any one throw, against throwing a doublet.

By the same method the number of chances upon any number of dice may be found: for if 36 be multiplied by 6, that product, which is 216, will be the chances on 3 dice; and if that number be multiplied by 6, the product will be the chances on 4 dice, &c.

COMBINATIONS of the Cards. The following experiments, founded on the doctrine of combinations, may possibly amuse a number of our readers. The tables given are the basis of many experiments, as well on numbers, letters, and other subjects, as on the cards; but the effect produced by them with the last is the most surprising, as that which should seem to prevent any collusion, that is the shuffling of the cards, is on the contrary the cause from whence it proceeds.

Combina-
tion.

It is a matter of indifference what numbers are made use of in forming these tables. We shall here confine ourselves to such as are applicable to the subsequent experiments. Any one may construct them in such manner as is agreeable to the purposes he intends they shall answer.

To make them, for example, correspond to the nine digits and a cipher, there must be ten cards, and at the top of nine of them must be written one of the digits, and on the tenth a cipher. These cards must be placed upon each other in the regular order, the number 1 being on the first, and the cipher at bottom. You then take the cards in your left hand, as is commonly done in shuffling, and taking off the two top cards, 1 and 2, you place the two following, 3 and 4, upon them; and under those four cards the three following 5, 6, and 7: at the top you put the cards 8 and 9, and at the bottom the card marked 0; constantly placing in succession 2 at top and 3 at bottom: And they will then be in the following order:

8.9.3.4.1.2...5.6.7.0

If you shuffle them a second time, in the same manner, they will then stand in this order:

6.7.3.4.8.9.1.2.5.0

Thus, at every new shuffle, they will have a different order, as is expressed in the following lines:

1 shuffle 8.9.3.4.1.2.5.6.7.0
2 6.7.3.4.8.9.1.2.5.0
3 2.5.3.4.6.7.8.9.1.0
4 9.1.3.4.2.5.6.7.8.0
5 7.8.3.4.9.1.2.5.6.0
6 5.6.3.4.7.8.9.1.2.0
7 1.2.3.4.5.6.7.8.9.0

It is a remarkable property of this number, that the cards return to the order in which they were first placed, after a number of shuffles, which added to the number of columns that never change the order, is equal to the number of cards. Thus the number of shuffles is 7, and the number of columns in which the cards marked 3, 4, &c. never change their places is 3, which are equal to 10, the number of the cards. This property is not common to all numbers; the cards sometimes returning to the first order in a less number, and sometimes in a greater number of shuffles than that of the cards.

TABLES of COMBINATIONS,
Constructed on the foregoing principles.

I. For ten numbers.

Order before dealing.	After 1st deal.	After the 2d.	After the 3d.
1	8	6	2
2	9	7	5
3	3	3	3
4	4	4	4
5	1	8	6
6	2	9	7
7	5	1	8
8	6	2	9
9	7	5	1
0	0	0	0

These

(A) It is easy from hence to determiné whether a bett proposed at hazard, or any other game with the dice, be advantageous or not; if the dice be true (which, by the way, is rarely the case for any long time together, as it is so easy for those that are possessed of a dexterity of hand to change the true dice for false).

These tables, and the following examples at piquet except the 36th, appear to have been composed by M. Guyot.

II. For twenty-four numbers.

Order before dealing.	After 1st deal.	After the 2d.	After the 3d.
1	23	21	17
2	24	22	20
3	18	12	2
4	19	15	7
5	13	5	13
6	14	6	14
7	8	9	3
8	9	3	18
9	3	18	12
10	4	19	15
11	1	23	21
12	2	24	22
13	5	13	5
14	6	14	6
15	7	8	9
16	10	4	19
17	11	1	23
18	12	2	24
19	15	7	8
20	16	10	4
21	17	11	1
22	20	16	10
23	21	17	11
24	22	20	16

III. For twenty-seven numbers.

Order before dealing.	After 1st deal.	After the 2d.	After the 3d.
1	23	21	17
2	24	22	20
3	18	12	2
4	19	15	7
5	13	5	13
6	14	6	14
7	8	9	3
8	9	3	18
9	3	18	12
10	4	19	16
11	1	23	21
12	2	24	22
13	5	13	5
14	6	14	6
15	7	8	9
16	10	4	19
17	11	1	23
18	12	2	24
19	15	7	8
20	16	10	4
21	17	11	1
22	20	16	10
23	21	17	11
24	22	20	16
25	25	25	25
26	26	26	26
27	27	27	27

IV. For thirty-two numbers.

Order before dealing.	After 1st deal.	After the 2d.	After the 3d.
1	28	26	22
2	29	27	25
3	23	17	7
4	24	20	12
5	18	10	9
6	19	11	3
7	13	1	28
8	14	2	29
9	8	14	2
10	9	8	14
11	3	23	17
12	4	24	20
13	1	28	26
14	2	29	27
15	5	18	10
16	6	19	11
17	7	13	1
18	10	9	8
19	11	3	23
20	12	4	24
21	15	5	18
22	16	6	19
23	17	7	13
24	20	12	4
25	21	15	5
26	22	16	6
27	25	21	15
28	26	22	16
29	27	25	21
30	30	30	30
31	31	31	31
32	32	32	32

Combina-
tion.

I. "Several letters that contain no meaning, being written upon cards, to make them, after they have been twice shuffled, give an answer to a question that shall be proposed; as, for example, *What is love?*" Let 24 letters be written on as many cards which, after they have been twice shuffled, shall give the following answer:

A dream of joy that soon is o'er.

First, write one of the letters in that line on each of the cards (B). Then write the answer on a paper, and assign one of the 24 first numbers to each card, in the following order:

A D R E A M O F J O Y T H A T S O O N
 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
 I S O ' E R .
 20 21 22 23 24

Next, write on another paper a line of numbers, from 1 to 24, and looking in the table for 24 combinations, you will see that the first number after the second shuffle is 21; therefore the card that has the first letter of the answer, which is A, must be placed against that number, in the line of numbers you have just made (C). In like manner the number 22 being the second of the same column, indicates that the card which

(B) These letters should be written in capitals on one of the corners of each card, that the words may be easily legible when the cards are spread open.

(C) For the same reason, if you would have the answer after one shuffle, the cards must be placed according to the first column of the table; or if after three shuffles, according to the third column.

Combin-
tion.

which answers to the second letter D of the answer, must be placed against that number: and so of the rest. The cards will then stand in the following order:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
O O F S A M N T O I S R H A E O ' E J O
20 21 22 23 24
R A D Y T

From whence it follows, that after these cards have been twice shuffled, they must infallibly stand in the order of the letters in the answer.

Observe 1. You should have several questions, with their answers, consisting of 24 letters, written on cards: these cards should be put in cases, and numbered, that you may know to which question each answer belongs. You then present the questions; and when any one of them is chosen, you pull out the case that contains the answer, and showing that the letters written on them make no sense, you then shuffle them, and the answer becomes obvious.

2. To make this experiment the more extraordinary, you may have three cards, on each of which an answer is written; one of which cards must be a little wider, and another a little longer, than the others. You give these three cards to any one, and when he has privately chosen one, of them, he gives you the other two, which you put in your pocket without looking at them, having discovered by feeling which he has chosen. You then pull out the case that contains the cards that answer to his question, and perform as before.

3. You may also contrive to have a long card at the bottom, after the second shuffle. The cards may be then cut several times, till you perceive by the touch that the long card is at bottom, and then give the answer; for the repeated cuttings, however often, will make no alteration in the order of the cards.

The second of these observations is applicable to some of the subsequent experiments, and the third may be practised in almost all experiments with the cards. You should take care to put up the cards as soon as the answer has been shown; so that if any one should desire the experiment to be repeated, you may offer another question, and pull out those cards that contain the answer.

Though this experiment cannot fail of exciting at all times pleasure and surprise, yet it must be owned that a great part of the applause it receives arises from the address with which it is performed.

II. "The 24 letters of the alphabet being written upon so many cards, to shuffle them, and pronounce the letters shall then be in their natural order; but that not succeeding, to shuffle them a second time, and then show them in proper order." Write the 24 letters on the cards in the following order:

1 2 3 4 5 6 7 8 9 10 11 12
R S H Q E F T P G U X C
13 14 15 16 17 18 19 20 21 22 23 24
N O D Y Z I K & A B L M

The cards being disposed in this manner, show them upon the table, that it may appear they are promiscuously marked. Then shuffle and lay them again on the table, pronouncing that they will be then in alphabetical order. Appear to be surprised that you have failed; take them up again and give them a second shuffle, and then counting them down on the table they will all be in their natural order.

Combin-
tion.

III. "Several letters being written promiscuously upon 32 cards, after they have been once shuffled, to find in a part of them a question; and then shuffling the remainder a second time, to show the answer. Suppose the question to be, *What is each Briton's boast?* and the answer, *His liberty*; which taken together contain 32 letters."

After you have written those letters on 32 cards, write on a paper the words, *his liberty*, and annex to the letters the first ten numbers thus:

H I S L I B E R T Y
1 2 3 4 5 6 7 8 9 10

Then have recourse to the table of combinations for ten numbers, and apply the respective numbers to them in the same manner as in experiment I. taking the first column, as these are to be shuffled only once, according to that order.

1 2 3 4 5 6 7 8 9 10
I B S L E R T H I Y

This is the order in which these cards must stand after the whole number 32 has been once shuffled, so that after a second shuffle they may stand in their proper order. Next dispose the whole number of letters according to the first column for 32 letters: the last ten are to be here placed in the order above; as follows,

W H A T I S E A C H B R I T O N ' S
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
B O A S T ?
18 19 20 21 22

I B S L E R T H I Y
23 24 25 26 27 28 29 30 31 32

Therefore, by the first column of the table, they will next stand thus:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
I T B R O N S C H B O A E A S T long card.
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
I I S B S L I B E R T W H H I Y

You must observe, that the card here placed the 16th in order, being the last of the question, is a long card; that you may cut them, or have them cut, after the first shuffle, at that part, and by that means separate them from the other ten cards that contain the answer.

Your cards being thus disposed, you show that they make no meaning; then shuffle them once, and cutting them at the long card, you give the first part to any one, who reads the question, but can find no answer in the others, which you open before him; you then shuffle them a second time, and show the answer as above.

IV. "To write 32 letters on so many cards, then shuffle and deal them by twos to two persons, in such manner, that the cards of one shall contain a question, and those of the other an answer. Suppose the question to be, *Is nothing certain?* and the answer, *Yes, disappointment.*"

Over the letters of this question and answer, write the following numbers, which correspond to the order in which the cards are to be dealt by two and two.

I S N O T H I N G C E R T A I N ?
31 32 27 28 23 24 19 20 15 16 11 12 7 8 3 4
Y E S , D I S A P O I N T M E N T .
29 30 25 26 21 22 17 18 13 14 9 10 5 6 1 2

Then have recourse to the first column of the table

for 32 numbers, and dispose these 32 cards in the following order, by that column.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
 O I E R G C A N T P I N T A I S
 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
 T M E H S D I N N O Y N T E I S

The cards being thus disposed, shuffle them once, and deal them two and two; when one of the parties will necessarily have the question, and the other the answer.

Instead of letters you may write words upon the 32 cards, 16 of which may contain a question, and the remainder the answer; or what other matter you please. If there be found difficulty in accommodating the words to the number of cards, there may be two or more letters or syllables written upon one card.

V. "The five beatitudes." The five blessings we will suppose to be, 1. Science, 2. Courage, 3. Health, 4. Riches, and 5. Virtue. These are to be found upon cards that you deal, one by one, to five persons. First write the letters of these words successively, in the order they stand, and then add the numbers here annexed to them.

SCIENCE COURAGE
 31 26 21 16 11 6 1 32 27 22 17 12 7 2
 HEALTH RICHES
 28 23 18 13 8 3 29 24 19 14 9 4
 VIRTUE
 30 25 20 15 10 5

Then range them in order agreeable to the first column of the table for 32 numbers, as in the last experiment. Thus,

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
 L H N A T E R E U A C R G T I U
 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
 E E C I I C H S O H R E E V S C

Next, take a pack of cards, and write on the four first the word Science; on the four next the word Courage; and so of the rest.

Matters being thus prepared, you show that the cards on which the letters are written convey no meaning. Then take the pack on which the words are written, and spreading open the first four cards, with their backs upward, you desire the first person to choose one. Then close those cards and spread the next four to the second person; and so to all the five; telling them to hold up their cards left you should have a confederate in the room.

You then shuffle the cards, and deal them one by one, in the common order, beginning with the person who chose the first card, and each one will find in his hand the same word as is written on his card. You will observe, that after the sixth round of dealing, there will be two cards left, which you give to the first and second persons, as their words contain a letter more than the others.

VI. "The cards of the game of piquet being mixed together, after shuffling them, to bring, by cutting them, all the cards of each suit together." The order in which the cards must be placed to produce the effect desired being established on the same principle as that explained in the experiment II. except that the shuf-

fling is here to be repeated three times, we think it will be sufficient to give the order in which they are to be placed before the first shuffle. Combin-
tion.

Order of the Cards.

- | | | |
|----------------|------------|------------------|
| 1 Ace | } clubs | 17 King clubs |
| 2 Knave | | 18 Ten |
| 3 Eight | } diamonds | 19 Nine |
| 4 Seven | | 20 Seven clubs |
| wide card | | |
| 5 Ten clubs | | 21 Ace diamonds |
| 6 Eight | } spades | 22 Knave spades |
| 7 Seven | | 23 Queen hearts |
| wide card | | |
| 8 Ten | | 24 Knave hearts |
| 9 Nine | } diamonds | 25 Ace spades |
| 10 Queen | | 26 King diamonds |
| 11 Knave | | 27 Nine clubs |
| 12 Queen clubs | | 28 Ace |
| 13 Eight | } hearts | 29 King |
| 14 Seven | | 30 Eight clubs |
| wide card | | |
| 15 Ten | } spades | 31 King |
| 16 Nine | | 32 Queen |

You then shuffle the cards, and cutting at the wide card, which will be the seven of hearts, you lay the eight cards that are cut, which will be the suit of hearts, down on the table. Then shuffling the remaining cards a second time, you cut at the second wide card, which will be the seven of spades, and lay, in like manner, the eight spades down on the table. You shuffle the cards a third time, and offering them to any one to cut, he will naturally cut them at the wide card (D), which is the seven of diamonds, and consequently divide the remaining cards into two equal parts, one of which will be diamonds and the other clubs.

VII. "The cards at piquet being all mixed together, to divide the pack into two unequal parts, and name the number of points contained in each part." You are first to agree that each king, queen, and knave shall count, as usual, 10, the ace 1, and the other cards according to the number of the points. Then dispose the cards, by the table for 32 numbers, in the following order, and observe that the last card of the first division must be a wide card.

Order of the cards before shuffling.

- | | |
|-----------------|------------------|
| 1 Seven hearts | 17 Nine diamonds |
| 2 Nine clubs | 18 Ace spades |
| 3 Eight hearts | 19 Ten clubs |
| 4 Eight | } diamonds |
| 5 Knave | |
| 6 Ten | } clubs |
| 7 Queen | |
| 8 Ace | 23 Seven spades |
| 9 Ace hearts | } diamonds |
| wide card | |
| 10 Nine hearts | 26 Knave hearts |
| 11 Queen spades | 27 King clubs |
| 12 Knave clubs | } spades |
| 13 Ten diamonds | |

(D) You must take particular notice whether they be cut at the wide card, and if they are not, you must have them cut, or cut them again yourself.

Combina-
tion.

14 Ten }
15 King } hearts
16 Queen }

30 Ace diamonds
31 Seven } clubs
32 Eight }

13 Seven } clubs
14 Eight }
15 Knave hearts
16 King clubs

28 King } spades
29 Ace }
30 Ten clubs
31 Ten diamonds
32 Ace hearts (wide card)

Combina-
tion.

You then shuffle them carefully, according to the method before described, and they will stand in the following order.

The cards being thus disposed, you ask your adversary in what suit you shall repique him? If he say in clubs or diamonds, you must deal the cards by threes, and the hands will be as follows,

Cards.	Numbers.	Cards.	Numbers.
			brought up 34
1 Nine } spades	9	6 Ten clubs	10
2 King } spades	10	7 Ten diamonds	10
3 Seven } hearts	7	8 Ten hearts	10
4 Seven diamonds	7	9 Ace clubs	1
5 Ace spades	1	10 Ace hearts (wide card)	1
carried up	34		total 66
			Brought up 101
11 Eight hearts	8	22 Queen hearts	10
12 Eight spades	8	23 Nine } hearts	9
13 Seven hearts	7	24 Knave } hearts	10
14 Nine clubs	9	25 Eight diamonds	8
15 Knave } spades	10	26 King } diamonds	10
16 Ten } spades	10	27 Queen } diamonds	10
17 Queen clubs	10	28 Knave hearts	10
18 Nine hearts	9	29 King clubs	10
19 Queen spades	10	30 Ace diamonds	1
20 Knave clubs	10	31 Seven } clubs	7
21 King hearts	10	32 Eight } clubs	8
carried up	101		total 194

Elder	Younger.
Hearts, king	Clubs, ace
queen	king
knave	queen
nine	knave
eight	nine
seven	Diamonds, ace
Spades queen	king
knave	queen
eight	knave
Diamonds, eight	nine
Clubs, eight	Spades, ten
seven	Hearts, ten
Rentrée, or take in of the elder.	Rentrée of the younger.
Seven spades	Ten clubs
Seven diamonds	Ten diamonds
Nine } spades	Ace hearts
King } spades	
Ace }	

When the cards are by shuffling disposed in this order, you cut them at the wide card, and pronounce that the cards you have cut off contain 66 points, and consequently the remaining part 194.

VIII. "The Inconceivable Repique (E)." When you would perform this experiment with the cards used in the last, you must observe not to disorder the first 10 cards in laying them down on the table. Putting those cards together, in their proper order, therefore, you shuffle them a second time in the same manner, and offer them to any one to cut, observing carefully if he cut them at the wide card, which will be the ace of hearts, and will then be at top; if not, you must make him, under some pretence or other, cut them till it is; and the cards will then be ranged in such order that you will repique the person against whom you play, though you let him choose (even after he has cut) in what suit you shall make the repique.

Order of the cards after they have been shuffled and cut.

1 Eight hearts	17 Nine } diamonds
2 Eight } spades	18 Knave } diamonds
3 Knave } spades	19 Nine hearts
4 Ten } hearts	20 Queen spades
5 Queen } clubs	21 Seven hearts
6 Knave } clubs	22 Nine clubs
7 King } hearts	23 Ten hearts
8 Queen } hearts	24 Ace clubs
9 Eight } diamonds	25 Seven spades
10 King } diamonds	26 Seven diamonds
11 Queen } diamonds	27 Nine spades
12 Ace	
N° 85.	

Elder hand.	Younger hand.
King } diamonds	Ace } clubs
Knave } diamonds	King } clubs
Nine } diamonds	Ace } diamonds
Eight } diamonds	Queen } diamonds
Queen } hearts	Queen } spades
Knave } clubs	Knave } spades
Nine } clubs	Ten } spades
Eight } hearts	King } hearts
Seven } hearts	Queen } hearts
Eight } hearts	Knave } hearts
Seven } hearts	Ten } hearts
Eight spades	Nine } hearts
Rentrée.	Rentrée.

Seven

(E) This manœuvre of piquet was invented by the countess of L. — (a French lady), and communicated by her to M. Guyot.

Combina-
tion. Seven spades
Seven diamonds
Nine }
King } spades
Ace }

Ten clubs
Ten diamonds
Ace hearts

16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32

Yellow Flower
White Orange
Yellow Butterfly
Yellow Butterfly
White Bird
Red Orange
Red Orange
Green Orange
Green Orange
Green Bird
Green Bird
Yellow Flower
Red Bird
Red Bird
Yellow Orange
White Butterfly
White Butterfly

Combina-
tion. Enchanting
Ardour
My
Phyllis
Birds
Sing
Dear
and sweetness
The
Of
Present
As
Changes
Bosom
Me
Your
I long

If he require to be repiqued in hearts, you keep the quint to a king in hearts, and the ten of spades, and lay out which of the rest you please: then, even if he should leave two cards, you will have a fixiem major in hearts, and quatorze tens, which will make a repique.

But if he demand to be repiqued in spades; at the end of the deal you must dexterously pass the three cards that are at the bottom of the stock (that is, the ten of clubs, ten of diamonds, and ace of hearts) to the top (F), and by that means you reserve the nine, king, and ace of spades for yourself: so that by keeping the quint in hearts, though you should be obliged to lay out four cards, you will have a fixiem to a king in spades, with which and the quint in hearts you must make a repique.

Observe here likewise, that if the adversary lay out only three cards, you will not make the repique: but that he will never do, unless he be quite ignorant of the game, or has some knowledge of your intention.

This last stroke of piquet has gained great applause, when those that have publicly performed it have known how to conduct it dexterously. Many persons who understand the nature of combining the cards, have gone as far as the passing the three cards from the bottom of the stock, and have then been forced to confess their ignorance of the manner in which it was performed.

IX. "The Metamorphosed Cards." Provide 32 cards that are differently coloured; on which several different words are written, and different objects painted. These cards are to be dealt two and two, to four persons, and at three different times, shuffling them each time. After the first deal, every one's cards are to be of the same colour; after the second deal, they are all to have objects that are similar; and after the third, words that convey a sentiment.

Dispose of the cards in the following order.

Cards.	Colours	Objects.	Words.
1	Yellow	Bird	I find
2	Yellow	Bird	In you
3	Green	Flower	Charming
4	Green	Flower	Flowers
5	White	Bird	To hear
6	White	Orange	Beauty
7	Red	Butterfly	My
8	Red	Flower	Notes
9	Red	Flower	In
10	Red	Butterfly	Shepherdes
11	Green	Butterfly	Lover
12	Green	Butterfly	Your
13	White	Flower	Of
14	White	Flower	an inconstant
15	Yellow	Orange	Image

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The cards thus coloured, figured, and transcribed, are to be put in a case, in the order they here stand.

When you would perform this experiment you take the cards out of the case, and show, without changing the order in which they were put, that the colours, objects, and words are all placed promiscuously. You then shuffle them in the same manner as before, and deal them, two and two, to four persons, observing that they do not take up their cards till all are dealt, nor mix them together: and the eight cards dealt to each person will be found all of one colour. You then take each person's cards, and put those of the second person under those of the first, and those of the fourth person under those of the third. After which you shuffle them a second time, and having dealt them in the same manner, on the first person's cards will be painted all the birds; on the second person's cards, all the butterflies; on those of the third, the oranges; and on those of the fourth, the flowers. You take the cards a second time, and observing the same precautions, shuffle and deal them as before, and then the first person, who had the last time the birds in his hand, will have the words that compose this sentence:

Sing, dear birds; I long to hear your enchanting notes.

The second person, who the last deal had the butterflies, will now have these words:

Of an inconstant lover your changes present me the image.

The third, who had the oranges, will have this sentence:

As in my Phyllis, I find in you beauty and sweetness.

The fourth, who had the flowers, will have these words:

Charming flowers, adorn the bosom of my shepherdes.

It seems quite unnecessary to give any further detail, as they who understand the foregoing experiments will easily perform this.

Among the different purposes to which the doctrine of combinations may be applied, those of writing in cipher, and deciphering, hold a principal place. See the article CIPHER.

COMBINATION, in chemistry, signifies the union
A a of

(F) The manner of doing this is explained in the article LEGERDEMAIN.

Combust
||
Combu-
stion.

of two bodies of different natures, from which a new compound body results. For example, when an acid is united with an alkali, we say that a combination betwixt these two saline substances takes place; because from this union a neutral salt results, which is composed of an acid and an alkali.

COMBUST, in astronomy. When a planet is in conjunction with the sun, or not distant from it above half its disk; it is said to be combust, or in combustion.

According to Argol, a planet is combust, or in combustion, when not above eight degrees and thirty minutes distant from the sun, either before or after him.

COMBUSTIO PECUNIÆ, the ancient way of trying mixed and corrupt money, by melting it down, upon payments into the Exchequer. In the time of king Henry II. a constitution was made, called the trial by *combustion*; the practice of which differed little or nothing from the present method of assaying silver. But whether this examination of money by combustion was to reduce an equation of money only of Sterling, viz. a due proportion of alloy with copper, or to reduce it to pure fine silver, does not appear. On making the constitution of trial it was considered, that though the money did answer *numero et pondere*, it might be deficient in value; because mixed with copper or brass, &c.

COMBUSTION, a term denoting the operation of fire upon any inflammable substance, by which it smokes, flames, and is reduced to ashes.

There is not a phenomenon in nature by which the attention of philosophers has been more engaged, nor which has puzzled them more to account for, than this very common operation. To explain it, theories have been invented the most opposite and contradictory to one another that can be imagined; and, till very lately, the state of science did not afford data sufficient to explain it in a rational manner.

I
Theories of
ancient che-
mists.

By former chemists it was supposed, that the parts of the combustible body itself were converted into fire. Accordingly Sir Isaac Newton proposes it as a query, whether gross bodies and light are not convertible into one another? and many chemists of a more modern date have determined this question in the affirmative, by maintaining that the light of the sun is or contains phlogiston. The interference of the air, however, in most cases of combustion known to us, proved a difficulty in this theory almost, if not totally, unsurmountable; for if the fire proceeds entirely from the combustible body, what occasion is there for any third substance distinct both from the fire and that body to produce combustion? This naturally excited a conjecture, that the fire by which the combustible body is consumed, proceeds in reality from the air, and not from the body itself. And hence we see that Mr Hutchinson's system of fire and air being convertible into one another, might have passed as a rational *human* theory, if he had not attempted to force it upon mankind as a divine revelation. The modern discoveries in aerology, however, have entirely disproved this hypothesis with regard to our atmosphere considered as a whole, at the same time that they point out the true method, as far as our faculties seem capable of comprehending it, by which this mysterious

2
True prin-
ciple on
which com-
bustion may
be explain-
ed.

operation is performed. It is now almost universally known, that the air we breathe is composed of two kinds of elastic fluids, only one of which (called *dephlogisticated, pure, empyreal, or vital air*) contributes to the support of flame, as well as of animal life; and this part is found to be by far the least in quantity of the atmosphere we breathe. It is computed from good observations, that, among the various component parts of our atmosphere, there is about one-fourth, $\frac{1}{4}$ according to Mr Scheele, or one-fifth according to Mr Cavendish, contained in it; and to this small part alone is owing the combustion of inflammable bodies.

Combu-
stion.

Since the establishment of this important fact, several theories of combustion have been formed. According to M. Lavoisier, dephlogisticated air is a compound of two substances intimately combined; one is called by him the *oxygenous principle*, and the other *specific elementary fire*. During the combustion of sulphur, phosphorus, inflammable air, or any other substance of that kind, the oxygenous principle of the dephlogisticated air, according to him, combines with these bodies, to which it has a strong attraction, and forms new compounds of salts and other bodies; at the same time that the elementary fire contained in these is set loose, and becomes sensible, producing heat and flame, according to circumstances. Thus the fire produced in combustion does not proceed from the burned body, but from the decomposition of the dephlogisticated air, in which it is contained in a latent and insensible state; while its oxygenous principle combines with the sulphur, phosphorus, or inflammable air, and forms vitriolic and phosphoric acids, or pure water. In like manner it is also supposed by this theory, 1. That metals are substances absolutely simple. 2. That metallic calces are true compounds formed by the oxygenous part of pure air with the metallic particles; and, 3. That pure water is a similar compound of the same principle with inflammable air.

3
M Lavoisier's theo-
ry.

According to Fourcroy, combustible bodies are those which have a strong attraction to combine or unite with pure or dephlogisticated air; and combustion is nothing else but the act of that combination. This assertion is founded on the following facts: 1. That no substance can be burnt without air; 2. That the purer this air is, the more rapid is the combustion; 3. That in combustion, an absorption or waste of air always takes place; and, 4. That the residuum contains often a very sensible quantity of that pure air which it absorbed, and which may sometimes be extracted from it.

4
Fourcroy's
theory.

In Mr Scheele's new theory of heat, fire, light, and phlogiston, he considers heat and light themselves as compound substances. The former, according to him, consists of phlogiston and empyreal air. The calces of gold, reducible by heat alone, in a retort, show that phlogiston is contained in heat; because it combines with the calces to revive them, and the dephlogisticated air is found in the receiver. The precipitate *per se* of mercury, if revived in this manner, affords, according to our author, another instance of the truth of his doctrine: "If phlogiston alone (says he) could pass through the retort, there would not be found the empyreal air in the receiver, and the ignoble metals might be revived in the same manner."

5
Scheele's
Theory.

Light, according to Mr Scheele, is a compound containing

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containing phlogiston and heat, from which both may separate themselves in proper circumstances. A solution of silver in nitrous acid mixed with chalk, and exposed to the sunshine, is revived into a metallic form by the phlogiston of light. Nitrous acid also in a glass vessel, receives phlogiston from light, and becomes of an orange colour: but if the glass be painted black, the acid receives the heat, not the phlogiston. Even the various coloured rays of light, according to our author, contain unequal shares of phlogiston; since the violet rays part more easily with their phlogiston to revive metals than any other. When light is not stopped in its passage, no heat is perceived; but if stopped in its course, the opposing body receives heat, and sometimes phlogiston. Light seems therefore to be the matter of heat, loaded with a superabundant quantity of phlogiston. That which comes out from a furnace, produces heat on the surrounding bodies, which ascends with the rarefied air; proceeds forward in straight lines; and may be reflected from polished surfaces, with this peculiarity, that a concave glass mirror retains the heat, whilst it reflects the light; for although its focus is bright, yet it is not warm. A pane of glass also put before a burning mirror, retains the heat, and allows the light to pass through it.

Fire is the more or less heated, or more or less luminous state of bodies, by which they are resolved into their constituent parts, and entirely destroyed. It requires, that they be previously heated in contact with air: for to every combustible body a certain quantity of heat must be communicated, in order to set it in the fiery commotion.

Combustion is the action of heat penetrating the pores of bodies, and destroying their cohesion: in this case the body parts with its phlogiston, provided there be a substance present which has a strong attraction for the inflammable principle. If the heating be performed in open air, the empyreal part, on account of its stronger attraction, unites with the inflammable principle, which is thus set at liberty; from which union the heat is compounded; and scarcely is this heat generated, when the combustible body is still more expanded by it than in the beginning, and its phlogiston more laid open. The more the heat is increased, the more minute are the particles into which the combustible body is dissolved. The empyreal air meets more surfaces; consequently comes in contact with more phlogiston; and, according to its nature, forms an union with a greater quantity of it, which produces a radiant heat. At this moment the constituent parts of the combustible body are so much disunited by the still increasing heat, that the empyreal air, continuing to pour in upon it in streams, attracts the phlogiston in still greater quantities; and hence the most elastic substance, light, is composed; which, according to the quantity of combustible matter, shows various colours.

The last theory we shall here take notice of is that of Dr Crawford.—He has by a great number of experiments endeavoured to show, that bodies which contain a large portion of phlogiston, possess but a small share of specific heat or fire; on the contrary, that those with a great share of this last, contain but little phlogiston; and lastly, those which are deprived of

phlogiston, increase their capacity for specific fire. Thus, when regulus of antimony is deprived of its phlogiston, by calcination, which is then called *diaphoretic antimony*, it nearly triples its specific fire. The same change takes place in *crocus martis* and in iron. This fact is generally true, whatever be the nature of the substance: and even the aeriform ones are in the same case, for phlogisticated air has very little specific fire, common air has more of it, and dephlogisticated air shows a most prodigious quantity. From these facts it is clear, that phlogiston and fire are distinct, and incompatible substances; so that when one enters into the composition of any body, the other of course is expelled from it. Thus metals are calcined in consequence of a double attraction, by which the metal imparts its phlogiston to the air, while the air communicates its fire to the metallic calces; which is further confirmed by the air that is found in metallic calces, whose increased weight by calcination corresponds to the air that is expelled from them by their reduction to a metallic state.

All combustible bodies are absolutely in the same case. By these are meant such bodies as contain a large quantity of phlogiston in their composition, but loosely adherent to them. Dephlogisticated air, which is greatly loaded with specific fire, has at the same time a strong attraction for phlogiston; and, in the act of combustion, communicates its fire to the combustible body, whilst the air becomes phlogisticated or loaded with phlogiston. Thus we find, that sulphur contaminates the air, when burned, by the phlogiston it throws into it, and the produced vitriolic acid, if any, becomes impregnated with the same.

In some cases the most intense heat or sensible fire is produced in the combustion; but in others it is very moderate. This variation generally depends on the quantity and quality of the vapours produced during the combustion: when these are very inconsiderable, and the residuum cannot absorb the fire which is emitted by the air, the remainder is precipitated, or diffused all around, and produces a very sensible heat. On the contrary, if the vapours are capable of absorbing it, very little heat is produced. We know, by the most certain experiments, that, for instance, the vapour of water absorbs about 800 degrees of heat beyond that of its boiling state; from whence it follows, that, whenever there is a quantity of watery vapours produced by combustion, very little sensible fire must be felt. So when spirits of wine are fired, the heat then produced by the combustion is very inconsiderable, the greater part being absorbed by the watery vapours that are then produced: but when the phosphorus of Kunkel is set on fire, the heat is very strong; there being but a small quantity of acid to carry off the specific fire that is set loose.

These are the principal theories of combustion that M. Magellan⁹ have appeared. M. Magellan, from whose notes on Cronstedt's Mineralogy the above account is taken, objects to M. Lavoisier's opinion, that the oxygenous principle cannot be shown to our senses, nor is it better demonstrated than the *phlogiston* supposed by the great Stahl and his followers. M. Fourcroy's system he supposes to be less objectionable: but to Scheele he objects from Mr Kirwan, 1. That in no instance it appears that phlogiston penetrates glass, much less a

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compound of pure air and phlogiston; and, 2dly, That if Mr Scheele's notions were true, then other metallic calces, or at least black manganese, would be reduced by heat alone: for this calx dephlogisticates nitrous acid, and has a stronger affinity with phlogiston than it; and therefore ought to decompose the heat with as great facility as the nitrous acid, or even with greater on account of its greater attraction. The former objection M. Magellan does not suppose to be altogether conclusive, as there are many combinations (he says) of two or more substances that pass through bodies, each of which would be stopped before they were combined; and what Mr Scheele has said on light seems to prove that glass is not always quite impervious to phlogiston; but the latter he deems altogether unanswerable.

Having thus rejected three of these theories, he acquiesces in that of Dr Crawford, which, he tells us, "is the most satisfactory concerning the nature and process of combustible bodies and of their combustion, so far as the present state of our knowledge has opened the field of our views into the operations of nature." Before such a full assent, however, is given to any theory, it is altogether necessary that it should be consistent with every known fact, as far as that fact can be investigated by us in our present state of knowledge; and that this is not the case with the theories either of Fourcroy, Scheele, or Crawford, will appear from the following considerations.

8
Objections
to M. Four-
croy's theo-
ry.

I. With regard to that of Fourcroy, it is evidently deficient in one of the essential requisites to produce combustion, even *fire* itself; for if combustion depends only on the *attraction* between combustible bodies and pure air, then it ought to take place on all occasions wherever pure air and combustible bodies are presented to each other. But this is not the case; for though we put a piece of unlighted charcoal into a jar full of dephlogisticated air, no combustion will ensue. To produce this it is necessary that the charcoal be already, in part at least, in a state of combustion, or that fire be applied to it from without. This theory therefore, instead of explaining the matter, gives not the smallest insight into it; since we are perpetually left to seek for the cause of the fire which produced that in question: for the combination of a combustible body with air is the *effect* of combustion, not the cause.

9
To Mr
Scheele's.

II. Mr Scheele's theory is so exceedingly contrary to the common notions of mankind, that it can scarce ever be seriously believed. The pure light of the sun can never be supposed by any mortal to consist principally of a substance as gross as the soot of our chimneys, without a degree of evidence of which the subject is quite incapable.

10
To Mr
Craw-
ford's.

III. Under the article CHEMISTRY, Dr Crawford's theory of heat is fully considered, and found to be insufficient. It is there shown that the degree of *specific heat* contained in bodies cannot be measured by

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any method yet known to us; that the phrase, *quantity of heat*, so frequently made use of by Dr Crawford and others, is vague, inaccurate, and improper; as expressing only the degree of sensible-heat *extricated, produced, generated*, or which becomes perceptible in certain circumstances by us, without regard to the real quantity contained in the body itself, either originally, or after it has parted with that in question. Thus all experiments founded on the *quantities* of specific heat contained in different bodies must be fallacious and inconclusive. Not to insist, however, on these general arguments, it is contrary to fact, that "bodies which contain a large portion of phlogiston contain but a small share of specific heat," and *vice versa*, as the Doctor asserts; which will appear from the following considerations.

1. The only methods by which we can measure the *quantity* of any material substance is either by its bulk or weight.

2. Whatever occupies space, and resists the touch, we have a right to call a material substance, whether we can see it and weigh it or not. Thus air, which is invisible, and not very easily ponderable, is universally allowed to be a *substance* and not a *quality*.

3. In cases where we cannot conveniently measure the weight of any substance, its quantity must always be judged of by its bulk. Thus the quantity of air contained in a bladder, or in a bellows, is always judged of by the degree of expansion of either.

4. Heat, which is still more subtle than air, is measured in this way, as Dr Crawford himself acknowledges; for the expansions of mercury are in an arithmetical progression expressive of the real degrees of heat.

5. Applying this rule to bodies in general, we must conclude, that the expansions of all bodies will be in proportion to the degrees of heat which they contain. Thus, if a body is expanded by heat to double its bulk, and in this state remains even when the heating cause is withdrawn, we may then say with justice, that this body contains double the quantity of *latent* or specific heat that it did before, and so on (A).

6. As the vapour of water is found to absorb a vast quantity of heat, and likewise to become prodigiously expanded in comparison with the water from whence it is produced, we may justly conclude, that the quantity of heat absorbed, or of *specific heat* contained in the steam, is to the specific heat contained in the water as the bulk of the steam is to that of the water. It is difficult indeed to determine how much steam exceeds in bulk the water from which it is derived: but from some experiments, Dr Black concludes, that it is augmented in bulk between 1600 and 1700 times; and from the great quantity of heat emitted by steam during its condensation, which in some cases exceeds 1000 degrees of Fahrenheit, we have reason to believe

(A) This is not contradictory to the observation that the expansions of all bodies are not in proportion to the degree with which they are heated, nor equal at different times. It is the degree of heat *absorbed* and entangled among the particles of the body which expands it, not that which flows out from it, and affects our senses or the thermometer. Thus, though a body is heated to 100 degrees, it may absorb only 10; and after it has done so, it may require 300 or 400 degrees more to cause it absorb other ten.

believe that the quantity of its expansion is proportionable to that of the heat absorbed.

7. As we thus are ascertained, by the great expansion of aqueous vapour, that it has absorbed a vast quantity of heat, it will evidently follow, that from the expansion of other substances we ought also to know the quantity of heat absorbed by them. To apply this then to the present case. In Dr Priestley's experiments on the conversion of charcoal into inflammable air, he found, that one grain of charcoal, dispersed by the heat of the sun *in vacuo*, gave six ounce measures of inflammable air. In another experiment, he found that $2\frac{1}{2}$ grains of charcoal gave $15\frac{1}{2}$ ounce measures of the same kind of air. But from a computation of the weight of the air so produced, it appears, that at least an equal quantity of water with that of the charcoal goes to the composition of the aerial fluid. In measuring this expansion, therefore, we may allow one-half for that of the water requisite to form the inflammable air; and hence the grain of charcoal, properly speaking, absorbs only three ounce measures of fire. That this expansion was the effect of fire is very evident: for there was nothing else present but fire, or the concentrated light of the sun; the experiment being performed by means of a burning glass *in vacuo*. It cannot be a fact then, as Dr Crawford asserts, that a phlogistic body contains but a small quantity of specific heat; for here so small a quantity as one grain of charcoal was made to contain as much specific fire as is equivalent in bulk to three ounce measures. It appears therefore, that the quantity of specific fire contained in bodies is not determined by their being combustible or not, or by their containing phlogiston or not: much less can we believe that heat and phlogiston are so incompatible with one another, that where "one enters into the composition of any body the other is of course expelled from it;" since here we find the purest fire we know united in vast quantity with the purest phlogiston we know, and both together constituting one of the most inflammable substances in nature, viz. inflammable air.

8. In like manner must the last part of the Doctor's theory be erroneous, viz. that "in the act of combustion the dephlogisticated air communicates its fire to the combustible body." In the instance just now adduced, the combustible substance, inflammable air, contains already as much fire as it can hold; and according to the general rule in these cases, if it was to absorb more fire, it ought to become still more expanded. But instead of this, when dephlogisticated and inflammable air mixed together in due proportion, are set on fire, they shrink in a manner into nothing; so that it is plain, instead of one communicating its fire to the other, both of them throw out almost all the fire they contain; so that they are no longer air, but *water*, or some other substance about which philosophers are not yet agreed.

9. Dr Crawford's theory of combustion is liable to the very same objection with that of Fourcroy, viz. that it sets aside the necessity of any external cause to set on fire the combustible bodies. If dephlogisticated air attracts the phlogiston of the combustible body, and the phlogiston in the latter attracts the fire of the dephlogisticated air, the consequence of which is combustion; then, wherever dephlogisticated and inflammable air are

mixed, combustion ought immediately to ensue. But this is not the case. A candle, a spark of electricity, or, in a word, some body *already in a state of combustion*, must be applied before we can produce the effect in question. We must therefore seek for the cause of combustion in the burning body applied, which will be found equally inexplicable: and thus we cannot proceed a single step in real knowledge, though assisted by all that Dr Crawford has advanced.

10. The theory of M. Lavoisier, notwithstanding M. Magellan's criticism, seems to come much nearer the truth than that of Dr Crawford. With regard to the existence of what Lavoisier calls the oxygenous principle, it is certainly established on as sure grounds as that of any invisible substance can be. M. Magellan complains, without reason, that it "cannot be shown to our senses." It has not yet indeed been made *visible, per se*; but it is found to increase the weight of bodies very sensibly. Perhaps, indeed, it may not be an *oxygenous* or acidifying principle; perhaps it may be water, or some other substance; but still it is *something* which, by being combined with elementary fire, is expanded into a vast bulk, and which, by being deprived of this fire, shrinks into its former dimensions. Thus it manifests itself to be a real substance; and not only so, but a terrestrial gravitating substance; and which, even when lightened by a mixture of charcoal so as to constitute the solid part of fixed air, has been shown nearly to equal the density of gold. In this respect, therefore, M. Lavoisier's theory is faultless, as well as in that which affirms that in the act of combustion the dephlogisticated air parts with its fire: but it is imperfect in this respect, that he does not consider the quantity of fire contained in the inflammable body, which is thrown out at the same time, nor the occasion there is for some body in a state of actual inflammation to begin the combustion. That the combinations mentioned by him do actually take place is not denied; but they are undoubtedly *consequences* of the combustion, not causes of it, as they are generally supposed. To understand this subject fully, therefore, it will still be necessary to consider farther,

11. Under the article CHEMISTRY, already quoted, it is shown that heat and cold are not essentially distinct from one another, but that heat consists in the motion of a certain subtle and invisible fluid from a centre towards a circumference, and that cold consists in the action of the same fluid from a circumference to a centre. In other words, when elementary fire acts from any body outwards, we say that body is *hot*, because it heats other bodies; but when it flows from others into any particular body, we call the latter *cold*, as depriving the neighbouring bodies of part of their relative quantity of heat. We may farther illustrate this by the example of electricity, where the fluid rushing out from any body produces a kind of electricity called *positive*; but, when entering into it, produces another, opposite in many respects to the former, called *negative* electricity. In like manner all bodies in the act of throwing out elementary fire are hot, and in the act of absorbing it cold. Vapours of all kinds, therefore, ought to be naturally cold: and experience shows that they really are so; for, by means of evaporation, very intense degrees of cold may be produced. See COLD and EVAPORATION.

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11 Lavoisier's theory preferable to the former.

12 Another theory.

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12. In most terrestrial bodies the heat easily flows out from one to another, and therefore they are in a manner indifferent as to the state of being either *hot* or *cold*: but in vapours, the heat, having once flowed into them, continues to have a tendency to do so without regard to the external temperature of bodies. Hence these fluids are naturally cold to the touch; and those who have been immersed in clouds on the tops of high mountains or otherwise, have uniformly related that they found the vapour excessively cold; and thus our atmosphere, unless supplied by the powerful influence of the sun-beams, not only becomes extremely cold itself, but likewise cools to an extreme degree the surface of the earth and every thing upon it.

13. In all cases therefore, where a quantity of vapour, whether inflammable or not, is collected into one place, there is a constant influx, or at least a constant pressure inwards of the elementary fire existing invisibly all around: which pressure must continue until by some means or other the flow or pressure of ethereal fluid be reversed, and instead of tending from without inwards, is made to tend from within outwards.

14. One method of reversing this influx is by external pressure, or by any other means bringing the particles of vapour nearer to one another. On this subject, a treatise has been written by Dr Webster of Edinburgh, in which he endeavours to establish the doctrine, that condensation is in all cases the cause of heat. That it really is the immediate cause, in a great many cases, is very certain; but it is equally evident that, even in these cases, the cause of *condensation* must be the ultimate cause of heat. Thus, if a quantity of air be violently compressed in an air-gun, it is found to become hot; but though the compression be the immediate cause, the force by which the compression is occasioned must be the ultimate cause of the heat. The immediate agent, however, by which the heat is produced, is neither the compressing cause nor the condensation, but the efflux of elementary fire from the air, by bringing the particles of the latter nearer to each other. In like manner, when iron is hammered until it becomes hot, the metal may probably be supposed to be condensed, and the elementary fire to be squeezed out of it as water from a sponge: but it is neither the action of the hammer, nor the approximation of the particles to each other, that is the cause of heat; but the flux of elementary fire directed from the iron every where from within outwards.

15. Thus we may now at once explain the action of combustion; to do which, we shall take the example of a mixture of inflammable and dephlogisticated air already mentioned. When these are mixed together, there is a constant pressure of the elementary fluid inwards from all quarters into the aerial vapours, by which their elasticity and form as airs are preserved; and this pressure will continue as long as we let them remain undisturbed. But when a burning body is brought into contact with them, the influx of the elementary fire is not only prevented but reversed in that part which comes in contact with the burning body. Thus the whole constitution of both inflammable and dephlogisticated airs is destroyed in a moment; for the subtle fluid, feeling (if we may use the expression) that the pressure is lessened in one place, instantly directs its whole force thither; and the pressure inwards being

thus reversed in this part instantly becomes so in every other, and the whole fluid contained in both is discharged with a bright flash and loud explosion.

16. In a similar manner may we explain the combustion of solid bodies. None of these can be ignited without the assistance of external fire. This in the first place rarefies some part of them into vapour; which by means of dephlogisticated air is decomposed in the manner already mentioned; while, by means of the heat thrown out, a fresh quantity of vapour is raised, at the same time that the fire is augmented, and would continue to be so *in infinitum*, as long as fuel could be supplied. When no more inflammable vapour can be raised, the combustion ceases of course; and the remainder becomes charcoal, ashes, slag, &c. according to its different nature, or the combinations it is capable of assuming with the terrestrial or gravitating part of the pure air by which the fire was supplied.

17. It may now be asked, If the cause of combustion be merely the reversing of the influx of elementary fire, why cannot inflammable vapours be fired *in vacuo*, by means of heat applied to some part of them externally? Thus, as inflammable air has a constant influx of elementary fire into it, why may not this influx be reversed, and a flame produced, not so violent indeed as with dephlogisticated air, but sufficient to authorise us to say that such a body was actually in the state of combustion? But this, we know, cannot be the case unless some pure air be admitted; for a stream of inflammable air, if nothing else be admitted, will as effectually put out a fire as a stream of water. Here, however, we may reply, that this would suppose inflammable air to be destroyed by the very power by which it was produced. It seems to be the nature of all vapours to absorb heat without any limitation, as is evident by the increase of elasticity in them by an increase of heat. Elementary fire is one of the component parts of vapour, and no substance can be decomposed merely by the action of one of its component parts. Something heterogeneous must therefore be added, on which one or both of the component parts may act; and then the vapour will be decomposed *in vacuo* as well as in the open air, though with less obvious circumstances. Thus charcoal once dispersed by heat into inflammable air cannot be decomposed merely by heat, because its tendency is always to absorb this element: But if into a jar full of inflammable air we introduce a quantity of calx of lead, and then heat it, the pressure of the fluid is interrupted in that part where the calx is, and presently becomes reversed by means of the additional heat there, which, at the same time that it furnishes no more charcoal, affords a substance with which the charcoal in the inflammable air may unite. The air is therefore decomposed, though too slowly to produce actual flame. For combustion, therefore, it is necessary that the following circumstances should concur: 1. The mixture of two vapours containing a great quantity of specific fire each. 2. That the terrestrial bases of these vapours should be capable of acting upon one another; but no third substance capable of immediately absorbing the fire should be present. 3. The presence of actual fire in some part, to lessen the pressure of the elementary fluid, set it in motion, and reverse it. This is the case when inflammable and dephlogisticated

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phlogisticated airs are mixed together. Both these contain specific fire in great quantity. The basis of the one, known to be charcoal, is capable of being united by means of heat to the basis of dephlogisticated air, and of forming with it in some cases fixed air, in others water, or some other substance, according to their various proportions; and after this union is formed, there is no third substance by which the elementary fire may be absorbed. The inflamed body by which they are set on fire first lessens the inward pressure of the elementary fire on one part, by which the bases are allowed to approach nearer each other, and to form a chemical union according to the general observation: But this union cannot be effected without the emission of part of the elementary fire, which being contained in the mixture in great quantity, produces a bright flame. This lessens the pressure still more; a new chemical union and a new flame are produced; and so on as long as any of the materials remain.

When all these circumstances concur, it is not a property peculiar to dephlogisticated air to support flame, though it seems to be so to preserve animal life. It is well known that pyrophorus will burn in common nitrous air, and a candle will burn with an enlarged flame in that kind called *dephlogisticated nitrous air*. But where any of the concurrent circumstances above mentioned is wanting, no combustion will be produced. Thus, though the steam of water contains a vast quantity of specific fire, and though it is decomposed by passing over red-hot iron, yet no combustion is produced; because, in the very moment of extrication, the elementary fire finds a quantity of phlogiston either in the iron, the water itself, or both, with which it combines, and forms inflammable air, but without any flame.

With regard to the substances which have the property of taking fire spontaneously, as PHOSPHORUS and PYROPHORUS, see these articles.

COMEDY, a sort of dramatic poetry, which gives a view of common and private life, recommends virtue, and corrects the vices and follies of mankind by means of ridicule. See the article POETRY.

This last kind alone was received among the Romans, who nevertheless made a new subdivision of it into ancient, middle, and new, according to the various periods of the commonwealth. Among the ancient comedies were reckoned those of Livius Andronicus; among the middle those of Pacuvius; and among the new ones, those of Terence. They likewise distinguished comedy according to the quality of the persons represented, and the dress they wore, into togatæ, prætextatæ, trabeatæ, and tabernariæ, which last agrees pretty nearly with our farces. Among us, comedy is distinguished from farce, as the former represents nature as she is; the other distorts and overcharges her. They both paint from the life, but with different views: the one to make nature known, the other to make her ridiculous.

COMENIUS (John Amos), a grammarian and Protestant divine, born in Moravia in 1592. He was eminent for his design to introduce a new method of teaching languages; for which purpose he published some essays in 1616, and had prepared some others, when the Spaniards pillaged his library, after having

taken the city of Fulnek, where he was minister and master of the school. Comenius fled to Lesna, a city of Poland, and taught Latin there. The book he published in 1631, under the title of *Janua Linguarum reſerata*, gained him a prodigious reputation, inasmuch that he was offered a commission for regulating all the schools in Poland. The parliament of England desired his assistance to regulate the schools in that kingdom. He arrived at London in 1641; and would have been received by a committee to hear his plan had not the parliament been taken up with other matters. He therefore went to Sweden, being invited by a generous patron, who settled a stipend upon him that delivered him from the fatigues of teaching; and now he employed himself wholly in discovering general methods for those who instructed youth. In 1657 he published the different parts of his new method of teaching. He was not only taken up with the reformation of schools; but he also filled his brain with prophecies, the fall of Antichrist, Millennium, &c. At last Comenius took it into his head to address Louis XIV. of France, and to send him a copy of the prophecies of Drabicius; insinuating that it was to this monarch God promised the empire of the world. He became sensible at last of the vanity of his labours, and died in 1671.

COMET, an opaque, spherical, and solid body like a planet, performing revolutions about the sun in elliptical orbits, which have the sun in one of their foci.

There is a popular division of comets into *tailed*, *bearded*, and *hairy* comets: though this division rather relates to the different circumstances of the same comet, than to the phenomena of several. Thus when the light is westward of the sun, and sets after it, the comet is said to be *tailed*, because the train follows it in the manner of a tail: when the comet is eastward of the sun, and moves from it, the comet is said to be *bearded*, because the light marches before it in the manner of a beard. Lastly, when the comet and the sun are diametrically opposite (the earth between them), the train is hid behind the body of the comet, except a little that appears round it in form of a border of *hair*: and from this last appearance the word comet is derived; as κομητης, *cometa*, comes from κομη, *coma*, hair. But there have been comets whose disk was as clear, as round, and as well defined, as that of Jupiter, without either tail, beard, or coma. See ASTRONOMY-Index.

COMETARIUM, a curious machine, exhibiting an idea of the revolution of a comet about the sun. See ASTRONOMY-Index.

COMETEAN, a town of Bohemia in the circle of Saltz, with a handsome town-house. It was taken by storm in 1421, and all the inhabitants, men, women, and children, put to the sword. It is seated in a fertile plain, in E. Long. 13. 25. N. Lat. 50. 30.

COMETES, in botany: A genus of the monogynia order, belonging to the tetrandria class of plants. The involucre is tetraphyllous and triflorous; the calyx tetraphyllous; the capsule tricocous.

COMFREY. See SYMPHYTUM.

COMINES (Philip de), an excellent historian, born of a noble family in Flanders in 1446. He lived in a kind of intimacy with Charles the Bold, duke of Burgundy, for about eight years; but being seduced

Comet
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Comines.

Comines to the court of France by Louis XI. he was highly promoted by him, and executed several successful negotiations. After this king's death he experienced many troubles on account of being a foreigner, by the envy of other courtiers, and lay long in prison before he was discharged; he died in 1509. *Comines* was a man of more natural abilities than learning; he spoke several living, but knew nothing of the dead languages; he has left behind him some memoirs of his own times, that are admired by all true judges of history. Catherine de Medicis used to say, that *Comines* made as many heretics in politics as Luther had in religion.

COMINES, a town of French Flanders on the lines which the French have made to defend their country against the Austrian Netherlands. It is situated on the river Lis, in E. Long. 3. 1. N. Lat. 50. 30.

COMITATUS, in law, a county. *Inglulphus* tells us, that England was first divided into counties by king Alfred; and the counties into hundreds, and these again into tythings: and *Porteus* writes, that *regnum Anglia per comitatus, ut regnum Francie per ballivatus distinguitur*. Sometimes it is taken for a territory or jurisdiction of a particular place; as in *Mat. Paris*, anno 1234. See *COUNTY*.

COMITIA, in Roman antiquity, were general assemblies of the people, lawfully called by some magistrate for the enjoinder or prohibition of any thing by their votes.

The proper *comitia* were of three sorts; *curiata*, *centuriata*, and *tributa*; with reference to the three grand divisions of the city and people into *curie*, *centurie*, and *tribes*: For, by *comitia calata*, which we sometimes meet with in authors, in elder times were meant all the *comitia* in general; the word *calata* from *calata*, or *calo*, being their common epithet; though it was at last restrained to two sorts of assemblies, those for the creation of priests, and those for the regulation of last wills and testaments.

The *comitia curiata* owe their origin to the division which *Romulus* made of the people into 30 *curie*; ten being contained in every tribe. They answered in most respects to the parishes in our cities, being not only separated by proper bounds and limits, but distinguished too by their different places set apart for the celebration of divine service, which was performed by particular priests (one to every *curia*), with the name of *curiones*.

Before the institution of the *comitia centuriata*, all the grand concerns of the state were transacted in the assembly of the *curie*; as the election of kings and other chief officers, the making and abrogating of laws, and the judging of capital causes. After the expulsion of the kings, when the commons had obtained the privilege to have tribunes and *ediles*, they elected them for some time at these assemblies; but that ceremony being at length transferred to the *comitia tributa*, the *curie* were never convened to give their votes, except now and then upon account of making some particular law relating to adoptions, wills, and testaments, or the creation of officers for an expedition; or for electing some of the priests, as the *flamines*, and the *curio maximus*, or superintendant of the *curiones*, who were themselves chosen by every particular *curia*.

N° 85.

The power of calling these assemblies belonged at first only to the kings; but upon the establishment of the democracy, the same privilege was allowed to most of the chief magistrates, and sometimes to the pontifices.

The persons who had the liberty of voting here were such Roman citizens as belonged to the *curie*; or such as actually lived in the city, and conformed to the customs and rites of their proper *curie*; all those being excluded who dwelt without the bounds of the city, retaining the ceremonies of their own country, though they had been honoured with the *jus civitatis*, or admitted free citizens of Rome. The place where the *curie* met was the *comitium*, a part of the forum: No set time was appointed for the holding these, or any other of the *comitia*, but only as business required.

The people being met together, and confirmed by the report of good omens from the augurs (which was necessary in all the assemblies), the *rogatio*, or business to be proposed to them, was publicly read. After this (if none of the magistrates interposed), upon the order of him that presided in the *comitia*, the people divided into their proper *curias*, and consulted of the matter; and then the *curias* being called out, as it happened by lot, gave their votes man by man, in ancient times *viva voce*, and afterwards by tablets; the most votes in every *curia* going for the voice of the whole *curia*, and the most *curie* for the general consent of the people.

In the time of *Cicero*, the *comitia curiata* were so much out of fashion, that they were formed only by 30 *lictors* representing the 30 *curie*; whence, in his second oration against *Rullus*, he calls them *comitia adumbrata*.

The *comitia centuriata* were instituted by *Servius Tullius*: who, obliging every one to give a true account of what he was worth, according to those accounts, divided the people into six ranks or classes, which he subdivided into 193 *centuries*. The first class, containing the equites and richest citizens, consisted of 98 *centurie*. The second, taking in the tradesmen and mechanics, consisted of 22 *centurie*. The third, 20. The fourth, 22. The fifth, 30. The sixth, filled up with the poorer sort, but one *century*; and this, though it had the same name with the rest, yet was seldom regarded, or allowed any power in public matters. Hence it is a common thing with the Roman authors, when they speak of the classes, to reckon no more than five, the sixth not being worth their notice. This last class or order was divided into two parts, or orders; the *proletarii* and the *capite censi*. The former, as their name implies, were designed purely to stock the republic with men, since they could supply it with so little money; and the latter, who paid the lowest tax of all, were rather counted and marshalled by their heads than by their estates.

Persons of the first rank, by reason of their pre-eminence, had the name of *classici*; whence came the name of *classici auctores* for the most approved writers. All others, of what class soever, were said to be *infra classem*. The assembly of the people by *centuries* was held for the electing of consuls, censors, and praetors; as also for the judging of persons accused of what they called

Comitia. called *crimen perduellionis*, or actions by which the party had showed himself an enemy to the state, and for the confirmation of all such laws as were proposed by the chief magistrates, who had the privilege of calling these assemblies.

The place appointed for their meeting was the *campus martius*; because in the primitive times of the commonwealth, when they were under continual apprehensions of enemies, the people, to prevent any sudden assault, went armed, in martial order, to hold these assemblies; and were for that reason forbidden by the laws to meet in the city, because an army was upon no account to be marshalled within the walls: yet, in latter ages, it was thought sufficient to place a body of soldiers as a guard in the janiculum, where an imperial standard was erected, the taking down of which denoted the conclusion of the comitia.

Though the time of holding these comitia for other matters was undetermined; yet the magistrates, after the year of the city 601, when they began to enter on their place, on the kalends of January, were constantly *designed* about the end of July and the beginning of August.

All the time between their election and confirmation they continued as private persons, that inquisition might be made into the election, and the other candidates might have time to enter objections, if they met with any suspicion of foul dealing. Yet, at the election of the censors, this custom did not hold; but as soon as they were elected, they were immediately invested with the honour.

By the institution of these comitia, Servius Tullius secretly conveyed the whole of the power from the commons: for the centuries of the first and richest class being called out first, who were three more in number than all the rest put together, if they all agreed, as generally they did, the business was already decided, and the other classes were needless and insignificant. However, the three last scarce ever came to vote.

The commons, in the time of the free state, to remedy this disadvantage, obtained, that before they proceeded to voting any matter at these comitia, that century should give their suffrages first upon whom it fell by lot, with the name of *centuria prerogativa*; the rest being to follow according to the order of their classes. After the constitution of the 35 tribes into which the classes and their centuries were divided, in the first place, the tribes cast lots which should be the *prerogative tribe*; and then the centuries of the tribes for the honour of being a prerogative century. All the other tribes and centuries had the appellation of *jure vocata*, because they were called out according to their proper places.

The prerogative century being chosen by lot, the chief magistrate, sitting in a tent in the middle of the *campus martius*, ordered that century to come out and give their voices; upon which they presently separated from the rest of the multitude, and came into an inclosed apartment, which they termed *septa*, or *ovilia*, passing over the *pontes* or narrow boards laid there for the occasion; on which account, *de ponte dejici* signifies to be denied the privilege of voting, and persons thus dealt with are called *deponiani*.

At the hither end of the *pontes* stood the *diribitores*

(a sort of under officers so called from their marshalling the people), and delivered to every man, in the election of magistrates, as many tables as there appeared candidates, one of whose names was written upon every tablet. A proper number of great chests were set ready in the *septa*, and every body threw in which tablet he pleased.

By the chests were placed some of the public servants, who taking out the tablets of every century, for every tablet, made a prick or a point in another tablet which they kept by them. Thus, the business being decided by most points, gave occasion to the phrase *omne tulit punctum*, and the like.

The same method was observed in the judiciary processes at these comitia, and in the confirmation of laws; except that, in both these cases, only two tablets were offered to every person; on one of which was written U. R. and on the other A, in capital letters: the two first standing for *uti rogas*, "be it as you desire," relating to the magistrate who proposed the question; and the last for *antiquo*, or "I forbid it."

It is remarkable, that though in the election of magistrates, and in the ratification of laws, the votes of that century, whose tablets were equally divided, signified nothing; yet in trials of life and death, if the tablets *pro* and *con* were the same in number, the person was actually acquitted.

The division of people into *tribes* was an invention of Romulus, after he had admitted the Sabines into Rome; and though he constituted at that time only three, yet as the state increased in power, and the city in number of inhabitants, they rose by degrees to 35. For a long time after this institution, a *tribe* signified no more than such a space of ground with its inhabitants. But at last the matter was quite altered, and a tribe was no longer *pars urbis*, but *pars civitatis*; not a quarter of the city, but a company of citizens living where they pleased. This change was chiefly occasioned by the original difference between the tribes in point of honour. For Romulus having committed all fordid and mechanic arts to the care of strangers, slaves, and libertines; and reserved the more honest labour of agriculture to the freemen and citizens, who by this active course of life might be prepared for martial service; the *tribus rusticæ* were for this reason esteemed more honourable than the *tribus urbanae*. And now all persons being desirous of getting into the more creditable division; and there being several ways of accomplishing their wishes, as by adoption, by the power of censors, or the like; that rustic tribe which had the most worthy names in its roll, had the preference to all others, though of the same general denomination. Hence all of the same great family, bringing themselves by degrees into the same tribe, gave the name of their family to the tribe they honoured; whereas at first the generality of the tribes did not borrow their names from persons but from places.

The first assembly of the tribes we meet with is about the year of Rome 263, convened by Sp. Sici-nius, tribune of the commons, upon account of the trial of Coriolanus. Soon after, the tribunes of the commons were ordered to be elected here; and at last, all the inferior magistrates, and the collegiate priests. The same comitia served for the enacting of laws relating

Comitialis
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Comma.

lating to war and peace, and all others proposed by the tribunes and plebeian officers, though they had not properly the name of *leges*, but *plebiscita*. They were generally convened by the tribunes of the commons; but the same privilege was allowed to all the chief magistrates. They were confined to no place; and therefore sometimes we find them held in the comitium; sometimes in the campus martius, and now and then in the capitol. The proceedings were in most respects answerable to those already described in the account of the other comitia, and therefore need not be insisted on. Only we may farther observe of the comitia in general, that when any candidate was found to have most tablets for a magistracy, he was declared to be *designed* or elected by the president of the assembly; and this they termed *renunciari consul, prator*, or the like; and that the last sort of the comitia only could be held without the consent and approbation of the senate, which was necessary to the convening of the other two.

COMITIALIS MORBUS, an appellation given to the EPILEPSY, by reason the comitia of ancient Rome were dissolved if any person in the assembly happened to be taken with this distemper.

COMITIUM, in Roman antiquity, a large hall in the forum, where the COMITIA were ordinarily held.

COMMA, among grammarians, a point or character marked thus (,), serving to denote a short stop, and to divide the members of a period. Different authors define and use it differently. According to F. Buffier, the comma serves to distinguish the members of a period, in each of which is a verb and the nominative case of the verb: thus, "That so many people are pleased with trifles, is owing to a weakness of mind, which makes them love things easy to be comprehended." Besides this, the comma is used to distinguish, in the same member of a period, several nouns-substantive, or nouns-adjective, or verbs not united by a conjunction: thus, "Virtue, wit, knowledge, are the chief advantages of a man:" or, "A man never becomes learned without studying constantly, methodically, with a gust, application, &c." If those words are united in the same phrase with a conjunction, the comma is omitted: thus, "the imagination and the judgment do not always agree."

The ingenious author of the tract *De ratione interpungendi*, printed with Vossius's *Element. Rhetor.* Lond. 1724, lays down the use of a comma to be, to distinguish the simple members of a period or sentence; *i. e.* such as only consist of one subject, and one definite verb. But this rule does not go throughout; the same author instancing many particular cases not yet included herein, where yet the comma is advisable. See PUNCTUATION.

It is a general rule that a comma ought not to come between a nominative and a verb, or an adjective and substantive, when these are not otherwise disjoined: thus, in the sentence, *God ruleth with infinite wisdom*, a comma between *God* and *ruleth*, or between *infinite* and *wisdom*, would be absurd. But to this exceptions may occur; as when not a single word, but a sentence, happens to be the nominative: thus, in the example first above given, where the sentence *that so many people are pleased with trifles*, forms the nominative to the verb *is*, a comma at *trifles* is proper, both for the sake

of perspicuity, and as coinciding with a slight natural pause.

COMMA, in music. See INTERVAL.

COMMANDINUS (Frederic), born at Urbino in Italy, and descended from a very noble family, in the 16th century. To a vast skill in the mathematics, he had added a great knowledge in the Greek tongue, by which he was well qualified to translate the Greek mathematicians into Latin: accordingly he translated and published several, which no writer till then had attempted; as Archimedes, Apollonius, Euclid, &c.

COMMANDRY, a kind of benefice or fixed revenue belonging to a military order, and conferred on ancient knights who had done considerable services to the order.

There are strict or regular commandries, obtained in order, and by merit; there are others of grace and favour, conferred at the pleasure of the grand master; there are also commandries for the religious, in the orders of St Bernard and St Anthony. The kings of France have converted several of the hospitals for lepers into commandries of the order of St Lazarus.

The commandries of Malta are of different kinds; for as the order consists of knights, chaplains, and brothers-servitors, there are peculiar commandries or revenues attached to each. The knight to whom one of these benefices or commandries is given is called *commander*: which agrees pretty nearly with the prepositus set over the monks in places at a distance from the monastery, whose administration was called *obediencia*; because depending entirely upon the abbot who gave him his commission. Thus it is with the simple commanders of Malta, who are rather farmers of the order than beneficiaries; paying a certain tribute or rent, called *responsio*, to the common treasure of the order.

COMMELINA, in botany: A genus of the monogynia order, belonging to the triandria class of plants; and in the natural method ranking under the 6th order, *Enfate*. The corolla is hexapetalous; there are three nectaria, of a cruciform figure, and inserted into their proper filaments. There are ten species, all of them natives of warm climates. They are herbaceous plants, rising from two to four feet high, and adorned with blue or yellow flowers. Their culture differs in nothing from that of the common exotics.

COMMEMORATION, in a general sense, the remembrance of any person or thing, or the doing any thing to the honour of a person's memory, or in remembrance of any past event. Thus, the eucharist is a commemoration of the sufferings of Jesus Christ.

COMMENDAM, in the ecclesiastical law, the trust or administration of the revenues of a benefice, given either to a layman, to hold by way of depositum for six months, in order to repairs, &c. or to an ecclesiastic or beneficed person, to perform the pastoral duties thereof, till once the benefice is provided with a regular incumbent.

Anciently the administration of vacant bishoprics belonged to the nearest neighbouring bishop; which is still practised between the archbishopric of Lyons and the bishopric of Autun: on this account they were called *commendatory bishops*.

This custom appears to be very ancient. S. Athanasius

Comman-
dinus
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Commend-
dam.

Commendam,
Commendatus.

natus says of himself, according to Nicephorus, that there had been given him *in commendam*, i. e. in administration, another church besides that of Alexandria whereof he was slated bishop.

The care of churches, it seems, which had no pastor, was committed to a bishop, till they were provided of an ordinary: the register of Pope Gregory I. is full of these commissions, or commendams, granted during the absence or sickness of a bishop, or the vacancy of the see.

Some say, that Pope Leo IV. first set the modern commendams on foot, in favour of ecclesiastics who had been expelled their benefices by the Saracens; to whom the administration of the vacant churches was committed for a time, in expectation of their being restored: though S. Gregory is said to have used the same, while the Lombards desolated Italy.

In a little time the practice of commendams was exceedingly abused; and the revenues of monasteries given to laymen for their subsistence. The bishops also procured several benefices, or even bishoprics, *in commendam*, which served as a pretext for holding them all without directly violating the canons. Part of the abuse has been retrenched; but the use of commendams is still retained as an expedient to take off the incompatibility of the person by the nature of the benefice.

When a parson is made bishop, his parsonage becomes vacant; but if the king give him power, he may still hold it *in commendam*.

COMMENDATUS, one who lives under the protection of a great man. *Commendati homines*, were persons who, by voluntary homage, put themselves under the protection of any superior lord: for ancient homage was either *predial*, due for some tenure; or *personal*, which was by compulsion, as a sign of neces-

sary subjection; or voluntary, with a desire of protection; and those who, by voluntary homage, put themselves under the protection of any man of power, were sometimes called *homines ejus commendati*, as often occurs in Doomsday. *Commendati dimidii* were those who depended on two several lords, and paid one-half of their homage to each; and *sub-commendati* were like under-tenants under the command of persons that were themselves under the command of some superior lord: also there were *dimidii sub-commendati*, who bore a double relation to such depending lords. This phrase seems to be still in use in the usual compliment "Comend me to such a friend," &c. which is to let him know, "I am his humble servant."

COMMENSURABLE, among geometricians, an appellation given to such quantities as are mensured by one and the same common measure.

COMMENSURABLE Numbers, whether integers or fractions, are such as can be measured or divided by some other number without any remainder: such are 12 and 18, as being measured by 6 and 3.

COMMENSURABLE in Power, is said of right lines, when their squares are measured by one and the same space or superficies.

COMMENSURABLE Surds, those that being reduced to their least terms, become true figurative quantities of their kind; and are therefore as a rational quantity to a rational one.

COMMENTARY, or COMMENT, in matters of literature, an illustration of the difficult or obscure passages of an author.

COMMENTARY, or *Commentaries*, likewise denotes a kind of history, or memoirs of certain transactions, wherein the author had a considerable hand: such are the Commentaries of Cæsar.

Commensurable
||
Commentary.

C O M M E R C E

IS an operation by which the wealth, or work, either of individuals or of societies, may be exchanged by a set of men called *merchants*, for an equivalent, proper for supplying every want, without any interruption to industry, or any check upon consumption.

CHAP. I. HISTORY of COMMERCE.

§ I. General History.

It is a point as yet undecided by the learned, to what nation the invention and first use of commerce belonged; some attribute it to one people, some to another, for reasons that are too long to be discussed here. But it seems most probable that the inhabitants of Arabia were those that first made long voyages. It must be allowed, that no country was so happily seated for this purpose as that which they inhabited, being a peninsula washed on three sides by three famous seas, the Arabian, Indian, and Persian. It is also certain, that it was very early inhabited; and the first notice we have of any considerable trade refers it to the Ishmaelites, who were settled in the hither part of Arabia. To them Joseph was sold by his brethren, when they were going down with their ca-

mels to Egypt with spicery, balm, and myrrh. It may seem strange to infer from hence, that commerce was already practised by this nation, since mention is here made of camels, or a caravan, which certainly implies an inland trade; and it must be likewise allowed, that balm and myrrh were the commodities of their country. But whence had they the spicery? Or how came Arabia to be so famous in ancient times for spices? Or whence proceeded that mistake of many great authors of antiquity, that spices actually grew there? Most certainly, because these people dealt in them; and that they dealt in them the first of any nation that we know of, appears from this very instance. Strabo and many other good authors assure us, that in succeeding times they were very great traders; they tell us particularly what ports they had; what prodigious magazines they kept of the richest kinds of goods, what wonderful wealth they obtained; in what prodigious magnificence they lived, and into what excesses they fell in respect to their expences for carving, building, and statues. All this shows that they were very great traders: and it also shows, that they traded to the East Indies; for from thence only they could have their spices, their rich gums, their sweet-scented woods, and their ivory, all which it is

expressly said that they had in the greatest abundance. This therefore proves, that they had an extensive and flourishing commerce; and that they had it earlier than any other nation, seems evident from their dealing at that time in spices. Besides, there is much less difficulty in supposing that they first discovered the route to the Indies, than if we ascribe that discovery to any other nation: for in the first place they lay nearest, and in the next they lay most conveniently; to which we may add, thirdly, that as the situation of their country naturally inclined them to navigation, so by the help of the monsoons they might make regular voyages to and from the Indies with great facility; nor is it at all unlikely that this discovery might be at first owing to chance, and to some of their vessels being blown by a strong gale to the opposite coast, from whence they might take the courage to return, by observing the regularity of the winds at certain seasons. All these reasons taken together seem to favour this opinion, that commerce flourished first among them; and as to its consequences in making them rich and happy, there is no dispute about them.

We find in the records of antiquity no nation celebrated more early for carrying all arts to perfection than the inhabitants of Egypt; and it is certain also, that no art was there cultivated more early, with more assiduity, or with greater success, than trade. It appears from the foregoing instance, that the richest commodities were carried there by land; and it is no less certain, that the most valuable manufactures were invented and brought to perfection there many ages before they were thought of in other countries: for, as the learned Dr Warburton very justly observes, at the time that Joseph came into Egypt, the people were not only possessed of all the conveniences of life, but were remarkable also for their magnificence, their politeness, and even for their luxury; which argues, that traffic had been of long standing amongst them. To say the truth, the great advantages derived from their country's lying along the Red Sea, and the many benefits that accrued to them from the Nile, which they very emphatically called *The River*, or *The River of Egypt*, and of which they knew how to make all the uses that can be imagined, gave them an opportunity of carrying their inland trade not only to a greater height than in any country at that time, but even higher than it has been carried any where, China only excepted; and some people have thought it no trivial argument to prove the descent of the Chinese from the Egyptians, that they have exactly the same sort of genius, and with wonderful industry and care have drawn so many cuts and canals, that their country is almost in every part of it navigable. It was by such methods, by a wise and well-regulated government, and by promoting a spirit of industry amongst the people, that the ancient Egyptians became so numerous, so rich, so powerful; and that their country, for large cities, magnificent structures, and perpetual abundance, became the glory and wonder of the old world.

The Phœnicians, though they possessed only a narrow slip of the coast of Asia, and were surrounded by nations so powerful and so warlike that they were never able to extend themselves on that side, became famous, by erecting the first naval power that makes

any figure in history, and for the raising of which they took the most prudent and effectual measures. In order to this, they not only availed themselves of all the creeks, harbours, and ports, which nature had bestowed very liberally on their narrow territory, but improved them in such a manner, that they were no less remarkable for their strength than considerable for their conveniency; and so attentive they were to whatever might contribute to the increase of their power, that they were not more admired for the vast advantages they derived from their commerce, than they were formidable by their fleets and armies. They were likewise celebrated by antiquity as the inventors of arithmetic and astronomy; and in the last mentioned science they must have been very considerable proficients, since they had the courage to undertake long voyages at a time when no other nation (the Arabians and Egyptians excepted) durst venture farther than their own coasts. By these arts Tyre and Sidon became the most famous marts in the universe, and were resorted to by all their neighbours, and even by people at a considerable distance, as the great storehouses of the world. We learn from the Scriptures how advantageous their friendship and alliance became to the two great kings of Israel, David and Solomon; and we see, by the application of the latter for architects and artists to Hiram king of Tyre, to what a prodigious height they had carried manufactures of every kind.

It is very certain that Solomon made use of their assistance in equipping his fleets at Elath and Eziongeber; and it is very probable that they put him upon acquiring those ports, and gave him the first hints of the amazing advantages that might be derived from the possession of them, and from the commerce he might from thence be able to carry on. These ports were most commodiously situated on the Arabian gulph; and from thence his vessels, manned chiefly by Phœnicians, sailed to Ophir and Tharsis, where-ever those places were. Some writers will needs have them to be Mexico and Peru, which is certainly a wild and extravagant supposition; others believe that we are to look for Ophir on the coast of Africa, and Tharsis in Spain; but the most probable opinion is, that they were both seated in the East Indies. By this adventurous navigation he brought into his country curiosities not only unseen, but unheard of before, and riches in such abundance, that, as the Scripture finely expresses it, "He made silver in Jerusalem as stones, and cedar-trees as fycamores that grow in the plains." The metaphor is very bold and emphatical; but when we consider that it is recorded in this History, that the return of one voyage only to Ophir produced 450 talents of gold, which makes 51,328 pounds of our Troy weight, we cannot doubt of the immense profit that accrued from this commerce. It is also observable that the queen of Sheba, or Saba, which lies in that part of Arabia before mentioned, surprised at the reports that were spread of the magnificence of this prince, made a journey to his court on purpose to satisfy herself, whether fame had not exaggerated the fact; and from the presents she made him of 120 talents of gold, of spices in great abundance, and precious stones, we may discern the true reason of her curiosity, which proceeded from an opi-
nion

nion that no country could be so rich as her own. And there is another circumstance very remarkable, and which seems strongly to fortify what we have advanced in the beginning of this section; it is added, "neither were there any such spices as the queen of Sheba gave to king Solomon;" which seems to intimate, that the Arabians had penetrated farther into the Indies than even the fleets of this famous prince, and brought from thence other spices (perhaps nutmegs and cloves) than had ever been seen before. It was by his wisdom, and by his steady application to the arts of peace, all of which mutually support each other, as they are all driven on by the wheel of commerce, which supplies every want, and converts every superfluity into merchandise, that this monarch raised his subjects to a condition much superior to that of any of their neighbours, and rendered the land of Israel, while he governed it, the glory and wonder of the East. He made great acquisitions without making wars; and his successor, by making wars, lost those acquisitions. It was his policy to keep all his people employed; and, by employing them, he provided equally for the extension of their happiness, and his own power: but the following kings pursued other measures, and other consequences attended them. The trade of Judea sunk almost as suddenly as it rose, and in process of time they lost those ports on the Red Sea, upon which their Indian commerce depended.

The whole trade of the universe became then, as it were, the patrimony of the Phœnicians and the Egyptians. The latter monopolized that of the Indies, and, together with her corn and manufactures, brought such a prodigious balance of wealth continually into the country, as enabled the ancient monarchs of Egypt to compass all those memorable works that in spite of time and barbarous conquerors remain the monuments of their wisdom and power, and are like to remain so as long as the world subsists. The Phœnicians drew from Egypt a great part of those rich commodities and valuable manufactures which they exported into all the countries between their own and the Mediterranean sea; they drew likewise a vast resort to their own cities, even from countries at a great distance; and we need only look into the prophets Isaiah and Ezekiel in order to be convinced that these governments, founded on trade, were infinitely more glorious and more stable than those that were erected by force. All this we find likewise confirmed by profane histories; and by comparing these, it is evident, that the industry of the inhabitants of this small country triumphed over all obstacles, procured the greatest plenty in a barren soil, and immense riches, where, without industry, there must have been the greatest indigence. It is true, that old Tyre was destroyed by Nebuchadnezzar, but not till she had flourished for ages; and even then she fell with dignity, and after a resistance that ruined the army of the Great Conqueror of Asia. Out of the ashes of this proud city the great spirit of its inhabitants produced a Phœnix, little, if at all, inferior in beauty to its parent. New Tyre was situated on an island; and though her bounds were very narrow, yet she became quickly the mistress of the sea, and held that supreme dominion till subdued by Alexander the Great, whom

no power could resist. The struggle she made, however, though unsuccessful, was great, and very much to the honour of her inhabitants: it must be owned, that the Greek hero found it more difficult to master this single place, than to overcome the whole power of Persia.

The views of the Macedonian prince were beyond comparison more extensive than his conquests; and whoever considers Alexander's plan of power, and enters into it thoroughly, will think him more a politician than he was a conqueror. He framed in his own mind an idea of universal monarchy, which it was indeed impossible to accomplish; but the very notion of it does him far greater honour than all his victories. He thought of placing his capital in Arabia; and of disposing things in such a manner, as to have commanded the most remote parts of the Indies, at the same time that he maintained a connection with the most distant countries in Europe. He was for making use of force to acquire, but he very well knew, that commerce only could preserve an empire, that was to have no other limits than those which nature had assigned the world. He desired to be master of all; but at the same time he was willing to be a wise and gracious master, and to place his happiness in that of his people, or rather in making all the nations of the earth but one people. A vast, an extravagant, an impracticable scheme it was, of which he lived not long enough to draw the outlines; but the sample he left in his new city of Alexandria sufficiently shows how just and how correct his notions were, and how true a judgement he had formed of what might be effected by those methods upon which he depended. That city, which he might be said to design with his own hand, and which was built, as it were, under his eye, became in succeeding times all that he expected, the glory of Egypt, and the centre of commerce for several ages.

While Tyre was in the height of her glory, and had no rival in the empire of the sea, she founded her noble colony of Carthage on the coast of Africa. The situation of the city was every where admirable; whether considered in the light of a capital, of a strong fortress, or of a commodious port. It was equally distant from all the extremities of the Mediterranean sea, had a very fine country behind it, and was not in the neighbourhood of any power capable of restraining its commerce or its growth. It is almost inexpressible how soon its inhabitants became not only numerous and wealthy, but potent and formidable. By degrees they extended themselves on all sides, conquered the best part of Spain, and erected there a new Carthage; the islands of Sicily and Sardinia, or at least the best part of them, submitted likewise to their yoke. Their conquests, however, were inconsiderable in extent, when compared with their navigation. On one side they stretched as far westward as Britain; and the Scilly islands, which are now so inconsiderable, were to them an Indies, the route to which they used the utmost industry to conceal. On the other hand, they discovered a great part of the coast of Africa, the Canary islands; and some there are who believe they first found the way to America. While they confined themselves to trade, and the arts which belonged thereto, their power was continually increasing;

sing; but when industry gave way to luxury, and a spirit of ambition banished their old maxims of frugality and labour, their acquisitions remained at a stand. The Romans began to grow jealous of their naval power, which it cost them two obstinate wars of 40 years continuance to humble. When she was at length destroyed, her very ruins were majestic; for at the beginning of the third fatal Punic war, this city contained 700,000 inhabitants alone, and had 300 cities in Africa under her dominion. Such was the empire of Carthage, raised entirely by commerce; and to which, if she had been content to have applied herself with the same steadiness in her highest prosperity as in her early beginnings, there is no doubt she had preserved her freedom much longer than she did; for as thrift, and diligence, and good faith, are the pillars of a commercial state; so when these are once shaken, it is not only natural that she should decline, but unavoidable also.

The Ptolemies, who were the successors of Alexander in Egypt, entered deeply into that hero's scheme, and reaped the benefit of his wife's establishment. Ptolemy Philadelphus, by encouraging trade, made his subjects immensely rich, and himself inexpressibly powerful. We are told by an ancient author, that he had 120 galleys of war of an enormous size, and upwards of 4000 other vessels, small and great. This would appear incredible, if other wonders were not related of him, which seem to explain and confirm these. He raised a new city on the coast of the Red Sea; he was at an immense expence in opening harbours, constructing quays, in raising inns at proper distances on the road, and in cutting a canal from sea to sea. A prince who comprehended the importance of commerce to a degree that induced him to dare such expences as these, might have what treasures, what armies, what fleets he pleased. In his time, Alexandria appeared in pomp and splendor. She owed her birth to Alexander; but it was Ptolemy, who caught a double portion of his master's spirit, which raised her to that magnificence that ages could not deface. We may guess at what she was in her glory, by what we are told was the produce of her customs, which fell little short of two millions of our money annually; and yet we cannot suppose that Ptolemy, who understood trade so well, would cramp it by high duties, or extravagant impositions. When the revenue of the prince from a single port was so great, what must have been the riches of his subjects!

But what shows us Alexandria in the highest point of light, is the credit she maintained after Egypt sunk from an empire into a province. The Romans themselves were struck with the majesty of her appearance; and though till then they had little regarded traffic, yet they were not long before they comprehended the advantages of such a port, and such a mart as Alexandria; they confirmed her privileges, they protected her inhabitants, they took every measure possible to preserve her commerce; and this with so good an effect, that she actually preserved it longer than Rome herself could preserve her power. She followed, indeed, the fortune of the empire; and became at last dependent upon Constantinople, when its founder removed thither the capital of the empire; and his

successor found means to transfer also a part of the trade of Alexandria to the same place. Yet this city continued still to hold up her head, and though she sunk under the barbarous power of the Arabs, yet they grew polished by degrees; by degrees she recovered somewhat of her ancient pre-eminence; and though she never rose to any thing like her former lustre, yet she remained the centre of what little trade there was in the world; which is more than can be said of almost any place that has fallen under the Mohammedan power.

When the Roman empire was over-run by barbarians, and arts and sciences sunk with that power which had cultivated and protected them, commerce also visibly declined; or, to speak with greater propriety, was overwhelmed and lost. When that irruption of various nations had driven the Roman policy out of the greatest part of Europe, some straggling people, either forced by necessity, or led by inclination, took shelter in a few straggling islands that lay near the coast of Italy, and which would never have been thought worth inhabiting in a time of peace. This was in the 6th century; and at their first fixing there they had certainly nothing more in view than living in a tolerable state of freedom, and acquiring a subsistence as well as they could. These islands being divided from each other by narrow channels, and those channels so encumbered by shallows that it was impossible for strangers to navigate them, these refugees found themselves tolerably safe; and uniting amongst themselves for the sake of improving their condition, and augmenting their security, they became in the 8th century a well-settled government, and assumed the form of a republic.

Simple and mean as this relation may appear, yet it is a plain and true account of the rise, progress, and establishment of the famous and potent republic of Venice. Her beginnings were indeed weak and slow; but when the foundation was once well laid, her growth was quick, and the increase of her power amazing. She extended her commerce on all sides; and taking advantage of the barbarous maxims of the Mohammedan monarchies, she drew to herself the profits of the Indian trade, and might, in some sense, be said to make Egypt a province, and the Saracens her subjects. By this means her traffic swelled beyond conception; she became the common mart of all nations; her naval power arrived at a prodigious height; and, making use of every favourable conjecture, she stretched her conquest not only over the adjacent Terra Firma of Italy, but through the islands of the Archipelago, so as to be at once mistress of the sea, of many fair and fruitful countries, and of part of the great city of Constantinople itself. But ambition, and the desire of lording it over her neighbours, brought upon her those evils which first produced a decay of trade, and then a declension of power. General histories indeed ascribe this to the league of Cambray, when all the great powers in Europe combined against this republic; and in truth, from that period the sinking of her power is truly dated; but the Venetian writers very justly observe, that though this effect followed the league, yet there was another more latent, but at the same time a more effectual cause, which was, the falling off of their commerce; and they

they have ever since been more indebted to their wisdom than their power; to the prudent concealing of their own weakness, and taking advantage of the errors of their enemies, than to any other cause, for their keeping up that part which they still bear, and which had been lost long ago by any other nation but themselves.

At the same time that Venice rose, as it were, out of the sea, another republic was erected on the coast of Italy. There could not well be a worse situation than the narrow, marshy, unprofitable, and unwholesome islands in the Adriatic, except the rocky, barren, and inhospitable shores of Liguria; and yet as commerce raised Venice the Rich on the one, so the erected Genoa the Proud on the other. In spite of ambitious and warlike neighbours, in spite of a confined and unproducing country, and, which were still greater impediments, in spite of perpetual factions and successive revolutions, the trade of Genoa made her rich and great. Her merchants traded to all countries, and thro' by carrying the commodities of the one to the other. Her fleets became formidable; and, besides the adjacent island of Corsica, she made larger and important conquests. She fixed a colony at Cassa, and was for some time in possession of the coasts on both sides of the Black Sea. That emulation which is natural to neighbouring nations, and that jealousy which rises from the pursuit of the same mistress, commerce, begat continual wars between these rival republics; which, after many obstinate and bloody battles, were at last terminated in favour of Venice, by that famous victory of Chiozza gained by her doge Andrew Contarini, from which time Genoa never pretended to be mistress of the sea. These quarrels were fatal to both; but what proved more immediately destructive to the Genoese, was their avarice, which induced them to abandon the fair profits of trade for the sake of that vile method of acquiring wealth by usury.

But we must now look to another part of the world. In the middle age of the German empire, that is, about the middle of the 13th century, there was formed a confederacy of many maritime cities, or at least of cities not far from the sea. This confederacy solely regarded commerce, which they endeavoured to promote and extend, by interesting therein a great number of persons, and endeavouring to profit by their different views and different lights. Though the cities of Germany held the principal rank in the Teutonic Hanse, they did not however forbear associating many other cities, as well in France as in England and in the low countries; the whole, however, without hurting the authority, without prejudice to the rights, of the sovereign on whom they depended. This confederacy had its laws, its ordinances, and its judgments, which were observed with the same respect as the maritime code of the Rhodians, who passing for the ablest seamen in all antiquity, their constitutions were observed by the Greeks and Romans. The Teutonic Hanse grew in a short time to so high a rank in power and authority by the immense riches it acquired, that princes themselves rendered it a sincere homage from principles of esteem and admiration. Those of the north principally had frequent occasion for their credit, and borrowed of them considerable sums. The

grand masters of the Teutonic order, who were at that time sovereigns of Livonia, declared themselves conservators of the rights and privileges of the Hanse: all succeeded, not only to, but beyond their wishes; and Germany, charmed with their progress, looked on them with the same eyes as a curious gardener does on certain rare plants, though not of his own raising and culture. The kings of France and England granted also various privileges to the Teutonic confederacy; they exempted their vessels in case of shipwreck from all demands whatsoever from the admiralty, or from private persons; they forbade any disturbance to their navigation at all times, and even when France was at war with the emperor, or the princes of the north. In fine, during the course of those unhappy wars which were styled *Croisades*, the Hanse was signally consulted, and gave always puissant succours in money and in ships to the Christians oppressed by infidels. It is astonishing, that cities at so great a distance from each other, subject to different kings, sometimes in open war, but always jealous of their rights, should be able to confederate and live together in so strict an union. But when this union had rendered them very rich and powerful, it cannot seem at all strange, that on the one hand they grew arrogant and overbearing, took upon them not only to treat with sovereigns on the foot of equality, but even to make war with them, and more than once with success. It will, on the other hand, appear still less strange, that such behaviour as this awakened various princes to a more particular view of the dangers that such a league might produce, and the advantages that would naturally flow to their respective states, by recovering their trade thus made over, at least in some part to others, entirely to themselves; and these, in few words, were the causes of the gradual declension of the Hanseatic alliance: which, however, is not totally dissolved at this day; the cities of Lubeck, Hamburg, and Bremen, maintaining sufficient marks of that splendor and dignity with which this confederacy was once adorned.

We must now turn our eyes to Portugal and Spain, where in the space of about 50 years there happened a train of events which gradually led on to such discoveries as changed the whole face of affairs in the commercial world, and gave to the knowledge of later ages what for some thousand years had been kept secret from all mankind, we mean a perfect and distinct notion of that terraqueous globe which they inhabit. The kingdom of Portugal was small, but well cultivated, very populous, and blessed with a variety of good ports; all which, however, had stood them in little stead, if they had not had a succession of wise princes, who, instead of involving themselves in war with their neighbours to gratify their ambition, endeavoured to extend the happiness and wealth of their subjects, and by so doing their own power, in the softer and more successful method of protecting arts and sciences, encouraging industry, and favouring trade. This, with the convenient situation of their country, in the beginning of the 15th century, prompted some lively spirits to attempt discoveries; and these, countenanced by an heroic young prince, pushed on their endeavours with such success, that step by step the coast of Africa was surveyed as far as the Cape of Good Hope, to which

they

they gave that name. The point they had in view was a new route to the East Indies, which Vasquez de Gama happily discovered; and in a short space of time Portugal, from one of the least considerable, grew to be one of the richest powers in Europe, gained prodigious dominions in Asia and Africa, and raised a naval power superior to any thing that had been seen for many ages before.

See Colum-
bus (Christo-
pher.)

But while this was doing, Christopher Columbus, a Genoese of great capacity, though of almost unknown original, who had been bred to the sea from his youth, and who had carefully studied what others made a trade, formed in his mind the amazing project of counteracting experience, and sailing to the Indies by a west course. He offered this project to the Portuguese, by whom it was considered and rejected as a chimera. He proposed it afterwards to other states, but with no better fortune; and at last owed the discovery of the New World to the high spirit of a heroine, the famous Isabella queen of Castile, who almost at her own expence, and with very little countenance from her husband, who yet was styled *Ferdinand the Wise*, furnished the adventurous Columbus with that poor squadron, with which at once, in spite of all the difficulties that the envy of his officers, and the obstinacy of his mutinous crew, threw in his way, he perfected his design, and laid open a new Indies, though in reality he aimed at the discovery of the old. Neither was this noble effort of his matchless understanding defeated; for after his decease, Ferdinand Magellan, a Portuguese, proposed to the emperor Charles V. the discovery of a passage to the spice islands by the South Seas, which was what Columbus aimed at; and though Magellan lived not to return, yet in one voyage the discovery was perfected. It is inconceivable almost how many and how great benefits accrued to Europe from these discoveries; of which, however, it is certain, that the Portuguese made a very indifferent, and the Spaniards much worse, use; the former making slaves of, and the latter rooting out, the natives. This, as it was a most ungrateful return to divine Providence for so high a blessing; so it might have been easily foreseen it would prove, as experience has shown it did prove, highly prejudicial to their own interests, by depopulating very fine countries, which have been thereby turned into deserts: and though on their first discovery infinite treasures were returned from them, which were coined in the mints of Spain; yet by an obstinate pursuit of this false policy, the Spanish islands in the West Indies are now brought so low as to be scarce worth keeping. The consequences that naturally followed on the discovery of a passage by the Cape of Good Hope, and of a fourth part of the globe in the western hemisphere, were, as it has been already hinted, the cause of an entire change in the state of Europe, and produced, not only in Portugal and Spain, but in most other nations, a desire of visiting these remote parts, of establishing colonies, of setting manufactures on foot, of exporting and importing commodities, and of raising, settling, and protecting new manufactures. By this means, as the reader cannot but perceive, not only particular nations brought about signal advantages to themselves, but Europe in general received a lasting

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and invaluable benefit: for its potentates made themselves formidable, and even terrible, in those distant parts of the earth, where their fame had hardly reached before. It is however true, that this has not been carried on as high as it might have been; for though there was room enough for every nation to have had its share, and though it might be demonstrated that the good of the whole would have contributed sufficiently to the profit of every state, the subjects of which had engaged in this traffic; yet, instead of prosecuting so natural and so equitable a measure, they have taken a quite contrary course; and by decrying, attacking, and destroying each other, have very much lessened that prodigious reverence which the Asiatics, Africans, and Americans, at first had for the inhabitants of Europe.

The naval power of the Portuguese received an incurable wound by falling under the power of the Spaniards: and though human policy would have suggested, that this alone must have raised the latter to the monopoly of commerce, and the universal dominion of the sea; yet the very pursuit of a design so visibly detrimental to the interest of mankind, proved very quickly their ruin also. For the Spaniards, from the natural haughtiness of their temper, misled by the boundless ambition of their princes, and endeavouring to become the lords of Europe, forced other nations in their own defence to make a much quicker progress in navigation than otherwise they could have done. For the English and Dutch, who till this time seemed blind to the advantages of their situation, had their eyes opened by the injuries they received; and by degrees the passion of revenge inspired them with designs that possibly public spirit had never excited. In short, the pains taken by Spain to keep all the riches that flowed from these discoveries to herself, and the dangerous, detestable, and destructive purposes to which she applied the immense wealth that flowed in upon her from them, produced effects directly opposite to those which she proposed, and made her enemies rich, great, powerful, and happy, in proportion as her commerce dwindled away, and as her naval power sunk and crumbled to pieces, merely by an improper display, an ill-managed exertion, and a wrong application of it.

It was from hence that the inhabitants of the Seven Provinces, whom her oppression had made poor, and her severities driven mad, became first free, then potent, and by degrees rich. Their distresses taught them the necessity of establishing a moderate and equal government; the mildness of that government, and the blessings which it procured to its subjects, raised their number, and elevated their hopes. The consequences became quickly visible, and in a short space of time amazing both to friends and enemies; every fishing village improved into a trading-town; their little towns grew up into large and magnificent cities; their inland boroughs were filled with manufactures; and in less than half a century the distressed States of Holland became high and mighty; nay, in spite of the danger and expences which attended a war made all that time against a superior force, these people, surrounded with enemies, loaded with taxes, exposed to personal service, and to a thousand other disadvantages, grew up to such a strength as not only made

the Spaniards despair of reducing them any more under their dominion, but inclined them to wish, and at last forced them to seek, their friendship.

This, at least as far as either ancient or modern histories inform us, was the quickest and strongest of all the productions of commerce that the world has ever seen. For it is out of dispute, that the republic of the United Provinces owes her freedom, her power, and her wealth, to industry and trade entirely. The greatest part of the country is far from being fertile; and what is so, produces not enough to suffice the tenth part of its inhabitants for the tenth part of the year: the climate is rather tolerable than wholesome; and its havens are rather advantageous from the difficulty of entering them, than from their commodiousness in any other respect. Native commodities they have few or none; timber and maritime stores are entirely wanting; their country cannot boast so much as of a coal-mine; and yet these provinces, upon which nature has bestowed so little, in consequence of an extensive trade, are enriched with all things. Their storehouses are full of corn, even when the harvest in corn-countries fails; there is no commodity, how bulky soever, or however scarce and hard to come at, which may not be had from their magazines. The shipping of Holland is prodigious; and to see the quantities of naval stores with which their yards and ports abound, astonishes those who are unacquainted with the vigour of that cause which produces this abundance. But above all, the populousness of this country is the greatest miracle. That men should resort to a Canaan, and desire to live in a land flowing with milk and honey, is nothing strange; but that they should make it their choice to force nature, to raise palaces, lay out gardens, dig canals, plant woods, and ransack all the quarters of the earth for fruit and flowers, to produce an artificial paradise in a dead plain, or upon an ingrateful heath in the midst of fogs and standing lakes, would, in so critical an age as this, pass for a fable, if the country did not lie so near us, as to put the truth of it out of question.

§ 2. *British History.*

WE may easily conceive, that foreign commerce by the natives of this island must have been a work of time; for men think first of necessaries, then of conveniences, and last of superfluities. Those who came originally from the continent might have better notions of things; but as it must be presumed that either fear or indigence drove them hither, so it is easy to apprehend that succeeding generations must for some time sink much below their ancestors, in their notions of the commodities of life; and, deriving their manners from their circumstances, become quite another sort of people. But those on the opposite continent, knowing that this island was inhabited, and having the use, though in ever so imperfect a degree, of vessels, and of foreign traffic, came over hither, and bartered their goods for the raw commodities of the Britons, till by degrees perhaps they taught the latter to make some improvement in those slight leather and wicker boats, which they used for passing their own rivers, and creeping along their coasts, till at last they ventured themselves over to Gaul, and entered upon some kind of correspondence with their neighbours. All this is so deducible from the laws of

nature, that we might have divined thus much by the light of reason, if we had not the commentaries of Cæsar to guide us, and to strengthen by the authority of history the facts that might have been found out by the force of rational conjecture.

Things were precisely in this situation when the Romans invaded Britain; and there is no doubt that our ancestors falling under the power of that empire, and under its power at a time when with respect to arts and sciences it was in a most flourishing condition, was a great advantage to them; and though from their love of civil liberty, which, when under the direction of reason, is the most natural and laudable of all passions, they made a long and vigorous, and in some sense a noble and glorious resistance; yet by degrees they caught the manners and customs of their conquerors, and grew content to be happy rather than free. With learning and politeness the Romans introduced foreign commerce; and according to the nature of their policy, as they made high roads through the island, established colonies in proper places, and fixed standing camps, which were a kind of fortresses, where they thought proper; so they were no less careful with regard to marts or emporiums for the conveniency of traders, and of which what they found is uncertain: but that they left many, is without question; and amongst the rest London, which is not more famous for her present extensive trade, than venerable for her unrecorded antiquity.

When the Romans unwillingly left Britain, and the Britons as unwillingly made way for the Saxons, a new deluge of barbarity overflowed this island: almost all the improvements of our civilized conquerors were defaced; and, upon the establishment as it were of a new people, things were all to begin again. This necessarily took up a great deal of time; and before they were in any tolerable posture, the Saxons found themselves distressed by fresh swarms of barbarians. Yet there still remains some evidences of their having been acquainted with, inclined to, and, if their circumstances would have permitted, most certainly would have entered upon and carried foreign commerce to a great height. We have authentic testimonies, that Alfred the Great formed projects of vast discoveries to the North, as he actually sent persons of great prudence and abilities into the East; and the curiosities which they brought home were for many ages preserved in the treasury of the church of Salisbury.

As for the Danes, they were not long our masters: but as they became so by a maritime force, and as their countrymen had established themselves not only on the opposite shore of France, but in other parts of Europe; so it is reasonable to believe that they held some correspondence with them from hence; and that, if their dominion had lasted longer, this might have been better regulated, and productive of many advantages. But they had soon to do with their brethren in another way: for the Normans, men of the same race, but better established in another country, dispossessed them here; and partly under colour of right, partly by force, elected that monarchy, which, not without various alterations and changes, subsists even to our times, and to the subsistence of which, with the help of those changes and alterations, we owe that happy constitution under which we live; that universal improvement which adorns the face of

our country; that domestic trade which nourishes so numerous a people, by plentifully rewarding their industry; and that extensive commerce which is at once the source of our wealth and the support of our liberty.

It cannot be expected, that, in a work like this, we should attempt to trace the progress of trade through every reign, show how it was encouraged and protected, or discountenanced and checked; what occasions were luckily seized, or what opportunities unfortunately lost. It may be sufficient for us, after what has been already said, to observe, that the opinion commonly entertained, of our having little or no trade before the reign of queen Elizabeth, is very far from being well founded.

In fact, the reign of that princess was great and glorious, in whatever light we consider it; but it was most so in this, that, under Providence, it became great and glorious by the wisdom and prudence of the queen and her ministers. The English nation never was in so desperate a condition as at her accession. The crown was in debt, the treasury empty, the nation involved in a foreign war directly against her own interests, her coasts naked; in a word, without credit abroad, and without concord at home, no settled religion, the great men split into factions, and the common people distracted and dejected. Sad circumstances these! and yet from hence arose the grandeur of that reign, and the establishment of our commerce. The queen found herself obliged to act with great caution, to derive assistance from every quarter, to employ it faithfully, and to promote to the utmost of her power the welfare of her subjects, whom nothing but the public-spiritedness of her government could enable to grow rich enough to support the necessary expences of the crown. It was this gave a popular turn to her councils. She encouraged her subjects to arm against the Spaniards, that they might be accustomed to the sea, and acquire that knowledge in navigation, with which, till then, they had been unacquainted. She passed many laws for the public good, erected several companies, and saw that those companies pursued the ends for which they were erected; in short, she did every thing that could be expected, during the whole course of her reign, to excite and encourage industry at home, and to enable us to make a proper figure abroad. In a word, she furnished us with stock and credit, put us upon improving our commodities and manufactures, brought the art of ship-building amongst us, filled our ports with able seamen, showed a just respect to English merchants, reduced Ireland so as to render it beneficial to Britain, and approved our sending colonies into America; and thus the seeds of British wealth were sown in her time, though the harvest was reaped in the days of her successors. See the articles COALERY, COLONY, FISHERIES, MANUFACTURES, SHIPPING, and TRADE.

CHAP. II. PRINCIPLES of COMMERCE.

§ I. *Origin of Trade.*

THE most simple of all trade is that which is carried on by bartering the necessary articles of subsistence. If we suppose the earth free to the first pos-

essor, this person who cultivates it will first draw from it his food, and the surplus will be the object of barter: he will give this in exchange to any one who will supply his other wants. This naturally supposes both a surplus quantity of food produced by labour, and also free hands; for he who makes a trade of agriculture cannot supply himself with all other necessaries, as well as food; and he who makes a trade of supplying the farmers with such necessaries, in exchange for his surplus of food, cannot be employed in producing that food. The more the necessities of man increase, the more free hands are required to supply them; and the more free hands are required, the more surplus food must be produced by additional labour, to supply their demand.

This is the least complex kind of trade, and may be carried on to a greater or less extent, in different countries, according to the different degrees of the wants to be supplied. In a country where there is no money, nor any thing equivalent to it, the wants of mankind will be confined to few objects; to wit, the removing the inconveniences of hunger, thirst, cold, heat, danger, and the like. A free man, who, by his industry, can procure all the comforts of a simple life, will enjoy his rest, and work no more: and, in general, all increase of work will cease, so soon as the demand for the purposes mentioned comes to be satisfied. There is a plain reason for this. When the free hands have procured, by their labour, wherewithal to supply their wants, their ambition is satisfied: so soon as the husbandmen have produced the necessary surplus for relieving theirs, they work no more. Here then is a natural stop put to industry, consequently to bartering.

The next thing to be examined is, how bartering grows into trade, properly so called and understood, according to the definition given of it above; how trade comes to be extended among men; how manufactures, more ornamental than useful, come to be established; and how men come to submit to labour, in order to acquire what is not absolutely necessary for them.

This, in a free society, is chiefly owing to the introduction of money, and a taste for superfluities in those who possess it.

In ancient times, money was not wanting; but the taste for superfluities not being in proportion to it, the specie was locked up. This was the case in Europe four hundred years ago. A new taste for superfluity has drawn, perhaps, more money into circulation, from our own treasures, than from the mines of the new world. The poor opinion we entertain of the riches of our forefathers, is founded upon the modern way of estimating wealth, by the quantity of coin in circulation, from which we conclude, that the greatest part of the specie now in our hands must have come from America.

It is more, therefore, through the taste of superfluity, than in consequence of the quantity of coin, that trade comes to be established; and it is only in consequence of trade that we see industry carry things in our days to so high a pitch of refinement and delicacy. Let us illustrate this, by comparing together the different operations of barter, sale, and commerce.

When

When reciprocal wants are supplied by barter, there is not the smallest occasion for money: this is the most simple of all combinations.

When wants are multiplied, bartering becomes more difficult: upon this money is introduced. This is the common price of all things: it is a proper equivalent in the hands of those who want, perfectly calculated to supply the occasions of those who, by industry, can relieve them. This operation of buying and selling is a little more complex than the former; but still we have here no idea of trade, because we have not introduced the merchant, by whose industry it is carried on.

Let this third person be brought into play, and the whole operation becomes clear. What before we called *wants*, is here represented by the consumer; what we called *industry*, by the manufacturer; what we called *money*, by the merchant. The merchant here represents the money, by substituting credit in its place; and as the money was invented to facilitate barter, so the merchant, with his credit, is a new refinement upon the use of money. This renders it still more effectual in performing the operations of buying and selling. This operation is trade: it relieves both parties of the whole trouble of transportation, and adjusting wants to wants, or wants to money; the merchant represents by turns both the consumer, the manufacturer, and the money. To the consumer he appears as the whole body of manufacturers; to the manufacturers as the whole body of consumers; and to the one and the other class his credit supplies the use of money. This is sufficient at present for an illustration. We now return to the simple operations of money in the hands of the two contracting parties, the buyer and the seller, in order to show how men come to submit to labour in order to acquire superfluities.

So soon as money is introduced into a country, it becomes an universal object of want to all the inhabitants.

The consequence is, that the free hands of the state, who before stooped working, because all their wants were provided for, having this new object of ambition before their eyes, endeavour, by refinements upon their labour, to remove the smaller inconveniences which result from a simplicity of manners. People, who formerly knew but one sort of clothing for all seasons, willingly part with a little money to procure for themselves different sorts of apparel properly adapted to summer and winter, which the ingenuity of manufacturers, and their desire of getting money, may have suggested to their invention.

Indeed these refinements seem more generally owing to the industry and invention of the manufacturers (who by their ingenuity daily contrive means of softening or relieving inconveniences, which mankind seldom perceive to be such, till the way of removing them is contrived), than to the taste of luxury in the rich, who, to indulge their ease, engage the poor to become industrious.

Let any man make an experiment of this nature upon himself, by entering into the first shop. He will no where so quickly discover his wants as there. Every thing he sees appears either necessary, or at least highly convenient; and he begins to wonder how he could

have been so long without that which the ingenuity of the workman alone had invented, in order that from the novelty it might excite his desire; for perhaps when it is bought, he will never once think of it more, nor ever apply it to the use for which it at first appeared so necessary.

Here then is a reason why mankind labour though not in want. They become desirous of possessing the very instruments of luxury, which their avarice or ambition prompted them to invent for the use of others.

What has been said represents trade in its infancy, or rather the materials with which that great fabric is built.

We have formed an idea of the wants of mankind multiplied even to luxury, and abundantly supplied by the employment of all the free hands set apart for that purpose. But if we suppose the workman himself disposing of his work, and purchasing with it food from the farmer, cloaths from the clothier; and, in general, seeking for the supply of every want from the hands of the person directly employed for the purpose of relieving it; this will not convey an idea of trade according to our definition.

Trade and commerce are an abbreviation of this long process: a scheme invented and set on foot by merchants, from a principle of gain, supported and extended among men, from a principle of general utility to every individual, rich or poor, to every society, great or small.

Instead of a pin-maker exchanging his pins with 50 different persons, for whose labour he has occasion, he sells all to the merchant for money or for credit; and, as occasion offers, he purchases all his wants, either directly from those who supply them, or from other merchants who deal with manufacturers in the same way his merchant dealt with him.

Another advantage of trade is, that industrious people in one part of the country, may supply customers in another, though distant. They may establish themselves in the most commodious places for their respective businesses, and help one another reciprocally, without making the distant parts of the country suffer for want of their labour. They are likewise exposed to no avocation from their work, by seeking for customers.

Trade produces many excellent advantages; it marks out to the manufacturers when their branch is under or overstocked with hands. If it is understocked, they will find more demand than they can answer: if it is overstocked, the sale will be slow.

Intelligent men, in every profession, will easily discover when these appearances are accidental, and when they proceed from the real principles of trade.

Posts, and correspondence by letters, are a consequence of trade; by the means of which merchants are regularly informed of every augmentation or diminution of industry in every branch, in every part of the country. From this knowledge they regulate the prices they offer; and as they are many, they serve as a check upon one another, from the principles of competition.

From the current prices, the manufacturers are as well informed, as if they kept the correspondence themselves: the statesman feels perfectly where hands

are wanting, and young people destined to industry, obey, in a manner, the call of the public, and fall naturally in to supply the demand.

Two great assistances to merchants, especially in the infancy of trade, are public markets for collecting the work of small dealers, and large undertakings in the manufacturing way by private hands. By these means the merchants come at the knowledge of the quantity of work in the market, as on the other hand the manufacturers learn, by the sale of the goods, the extent of the demand for them. These two things being justly known, the price of goods is easily fixed.

Public sales serve to correct the small inconveniences which proceed from the operations of trade. A set of manufacturers got all together into one town, and entirely taken up with their industry, are thereby as well informed of the rate of the market as if every one of them carried thither his work; and upon the arrival of the merchant, who readily takes it off their hands, he has not the least advantage over them from his knowledge of the state of demand. This man both buys and sells in what is called *wholesale*; and from him retailers purchase, who distribute the goods to every consumer throughout the country. These last buy from wholesale merchants in every branch, that proportion of every kind of merchandize which is suitable to the demand of their borough, city, or province.

Thus all inconveniences are prevented, at some additional cost to the consumer, who must naturally reimburse the whole expence. The distance of the manufacturer, the obscurity of his dwelling, the caprice in selling his work, are quite removed; the retailer has all in his shop, and the public buys at a current price.

§ 2. *How the prices of Goods are determined by Trade.*

IN the price of goods, two things must be considered as really existing, and quite different from one another; to wit, the real value of the commodity, and the profit upon alienation.

I. The first thing to be known of any manufacture, when it comes to be sold, is, how much of it a person can perform in a day, a week, a month, according to the nature of the work, which may require more or less time to bring it to perfection. In making such estimates, regard is to be had only to what, upon an average, a workman of the country in general may perform, without supposing him the best or the worst in his profession, or having any peculiar advantage or disadvantage as to the place where he works.

Hence the reason why some people thrive by their industry, and others not; why some manufactures flourish in one place, and not in another.

II. The second thing to be known is, the value of the workman's subsistence, and necessary expence, both for supplying his personal wants, and providing the instruments belonging to his profession, which must be taken upon an average as above; except when the nature of the work requires the presence of the workman in the place of consumption; for although some trades, and almost every manufacture, may be carried on in places at a distance, and therefore may fall under one general regulation as to prices; yet others there

are, which, by their nature, require the presence of the workman in the place of consumption; and in that case the prices must be regulated by circumstances relative to every particular place.

III. The third and last thing to be known, is the value of the materials, that is, the first matter employed by the workman; and if the object of his industry be the manufacture of another, the same process of inquiry must be gone through with regard to the first as with regard to the second: and thus the most complex manufactures may be at last reduced to the greatest simplicity.

These three articles being known, the price of manufacture is determined. It cannot be lower than the amount of all the three, that is, than the real value; whatever it is higher, is the manufacturer's profit. This will ever be in proportion to demand, and therefore will fluctuate according to circumstances.

Hence appears the necessity of a great demand, in order to promote flourishing manufactures.

By the extensive dealings of merchants, and their constant application to the study of the balance of work and demand, all the above circumstances are known to them, and are made known to the industrious, who regulate their living and expence according to their certain profit.

Employ a workman in a country where there is little trade or industry, he proportions his price always to the urgency of your want, or your capacity to pay; but seldom to his own labour. Employ another in a country of trade, he will not impose upon you, unless perhaps you be a stranger, which supposes your being ignorant of the value; but employ the same workman in a work not usual in the country, consequently not demanded, consequently not regulated as to the value, he will proportion his price as in the first supposition.

We may therefore conclude, from what has been said, that in a country where trade has been established, manufactures must flourish, from the ready sale, the regulated price of work, and the certain profit resulting from industry. Let us next inquire into the consequences of such a situation.

§ 3. *How foreign Trade opens to an industrious People, and the Consequences of it to the Merchants who set it on foot.*

THE first consequence of the situation described in the preceding section is, that wants are easily supplied for the adequate value of the thing wanted.

The next consequence is, the opening of foreign trade, under its two denominations of passive and active. Strangers and people of distant countries, finding the difficulty of having their wants supplied at home, and the ease of having them supplied from this country, immediately have recourse to it. This is passive trade. The active is when merchants, who have executed this plan at home with success, begin to transport the labour of their countrymen into other regions, which either produce, or are capable of producing such articles of consumption, proper to be manufactured, as are most demanded at home; and consequently will meet with the readiest sale, and fetch the largest profits.

Here

Here then is the opening of foreign trade, under its two denominations of active and passive.

What then are the consequences of this new commerce to our merchants, who have left their homes in quest of gain abroad?

The first is, that, arriving in any new country, they find themselves in the same situation, with regard to the inhabitants, as the workman in the country of no trade, with regard to those who employ him; that is, they proportion the price of their goods to the eagerness of acquiring, or the capacity of paying, in the inhabitants, but never to their real value.

The first profits then, upon this trade, must be very considerable; and the demand from such a country will be *high* or *low*, *great* or *small*, according to the spirit, not the real wants of the people: for these in all countries must first be supplied by the inhabitants themselves, before they cease to labour.

If the people of this not-trading country be abundantly furnished with commodities useful to the traders, they will easily part with them, at first, for the instruments of luxury and ease; but the great profit of the traders will insensibly increase the demand for the productions of their new correspondents; this will have the effect of producing a competition between themselves, and thereby throwing the demand on their side. This is perpetually a disadvantage in traffic; the most unpolished nations in the world quickly perceive the effects of it; and are taught to profit by the discovery, in spite of the address of those who are the most expert in commerce.

The traders will therefore be very fond of falling upon every method and contrivance to inspire this people with a taste of refinement and delicacy. Abundance of fine presents, consisting of every instrument of luxury and superfluity, the best adapted to the genius of the people, will be given to the prince and leading men among them. Workmen will even be employed at home, to study the taste of the strangers, and to captivate their desires by every possible means. The more eager they are of presents, the more lavish the traders will be in bestowing and diversifying them. It is an animal put up to fatten; the more he eats, the sooner he is fit for slaughter. When their taste for superfluity is fully formed, when the relish for their former simplicity is sophisticated, poisoned, and obliterated, then they are surely in the fetters of the traders, and the deeper they go, the less possibility there is of their getting out. The presents then will die away, having served their purpose: and if afterwards they are found to be continued, it will probably be to support the competition against other nations, who will incline to share of the profits.

If, on the contrary, this not-trading nation does not abound with commodities useful to the traders, these will make little account of trading with them, whatever their turn may be; but, if we suppose this country inhabited by a laborious people, who, having taken a taste for refinement from the traders, apply themselves to agriculture, in order to produce articles of subsistence, they will solicit the merchants to give them part of their manufactures in exchange for those; and this trade will undoubtedly have the effect of multiplying numbers in the trading nation. But if food cannot be

furnished, nor any other branch of production found out to support the correspondence, the taste for refinement will soon die away, and trade will stop in this quarter.

Had it not been for the furs in those countries adjacent to Hudson's Bay, and in Canada, the Europeans never would have thought of supplying instruments of luxury to those nations; and if the inhabitants of those regions had not taken a taste for the instruments of luxury furnished to them by the Europeans, they never would have become so indefatigable nor so dexterous hunters. At the same time we are not to suppose, that ever these Americans would have come to Europe in quest of our manufactures. It is, therefore, owing to our merchants, that these nations are become in any degree fond of refinement; and this taste, in all probability, will not soon exceed the proportion of the productions of their country. From these beginnings of foreign trade it is easy to trace its increase.

One step towards this, is the establishing correspondences in foreign countries; and these are more or less necessary in proportion as the country where they are established is more or less polished or acquainted with trade. They supply the want of ports, and point out to the merchants what proportion the productions of the country bear to the demand of the inhabitants for manufactures. This communicates an idea of commerce to the not-trading nation, and they insensibly begin to fix a determined value upon their own productions, which perhaps bore no determined value at all before.

Let us trace a little the progress of this refinement in the savages, in order to show how it has the effect of throwing the demand upon the traders, and of creating a competition among them, for the productions of the new country.

Experience shows, that, in a new discovered country, merchants constantly find some article or other of its productions, which runs out to a great account in commerce; and we see that the longer such a trade subsists, and the more the inhabitants take a taste for European manufactures, the more their own productions rise in their value, and the less profit is made by trading with them, even in cases where the trade is carried on by companies; which is a very wise institution for one reason, that it cuts off a competition between our merchants.

This is the best means of keeping prices low in favour of the nation; however it may work a contrary effect with respect to individuals who must buy from these monopolies.

When companies are not established, and when trade is open, our merchants, by their eagerness to profit by the new trade, betray the secrets of it; they enter into competition for the purchase of the foreign produce; and this raises prices, and favours the commerce of the most ignorant savages.

§ 4. *Consequences of the Introduction of a passive foreign Trade among a People who live in Simplicity and Idleness.*

WE now suppose the arrival of traders, all in one interest, with instruments of luxury and refinement, at a port in a country of great simplicity of manners, abundantly

abundantly provided by nature with great advantages for commerce, and peopled by a nation capable of adopting a taste for superfluities.

The first thing the merchants do is, to expose their goods, and point out the advantages of many things, either agreeable or useful to mankind in general, such as wines, spirits, instruments of agriculture, arms and ammunition for hunting, nets for fishing, manufactures for clothing, and the like. The advantages of these are presently perceived, and such commodities are eagerly sought after.

The natives, on their side, produce what they most esteem, generally something superfluous or ornamental. The traders, after examining all circumstances, determine the object of their demand, giving the least quantity possible in return for this superfluity, in order to impress the inhabitants with a high notion of the value of their own commodities; but as this parsimony may do more hurt than good to their interest, they are very generous in making presents, from the principles mentioned above.

When the exchange is completed, and the traders depart, regret is commonly mutual; the one and the other are sorry that the superfluities of the country fall short. A return is promised by the traders, and assurances are given by the natives of a better provision another time.

What are the first consequences of this revolution?

It is evident, that, in order to supply an equivalent for this new want, more hands must be set to work than formerly. And it is evident also, that this augmentation of industry will not essentially increase numbers: Why? Because the produce of the industry is, in this case, intended to be exported. But, if we can find out any additional consumption at home, even implied by this new trade, it will have the effect of augmenting numbers. An example will make this plain.

Let us suppose the superfluity of this country to be the skins of wild beasts, not proper for food; the manufacture sought for, brandy. The brandy is sold for furs. He who has furs, or he who can spare time to hunt for them, will drink brandy in proportion: but there is no reason to conclude from this simple operation, that one man more in the country must necessarily be fed, or that any augmentation of agriculture must of consequence ensue from this new traffic.

But let us throw in a circumstance which may imply an additional consumption at home, and then examine the consequences.

A poor creature who has no equivalent to offer for food, who is miserable, and ready to perish for want of subsistence, goes a hunting, and kills a wolf; he comes to a farmer with the skin, and says, You are well fed, but you have no brandy; if you will give me a loaf, I will give you this skin, which the strangers are so fond of, and they will give you brandy. But, says the farmer, I have no more bread than what is sufficient for my own family. As for that, replies the other, I will come and dig in your ground, and you and I will settle our account as to the small quantity I desire of you. The bargain is made; the poor fellow gets his loaf, and lives at least; perhaps he marries, and the farmer gets a dram. But had it not been for this dram, that is, this new want, which was purchased by the industry of this poor fellow, by what

argument could he have induced the farmer to part with a loaf?

Here the sentiment of charity is excluded. This alone is a principle of multiplication; but as true it is, on the other hand, that could the poor fellow have got bread by begging, he would not probably have gone a hunting.

Here then it appears, that the very dawning of trade, in the most unpolished countries, implies a multiplication. This is enough to point out the first step, and to connect the subject of our present inquiries with what has been already discussed in relation to other circumstances.

So soon as all the furs are disposed of, and a taste for superfluity is introduced, both the traders and the natives will be equally interested in the advancement of industry in this country. Many new objects of profit for the first will be discovered, which the proper employment of the inhabitants, in reaping the natural advantages of their soil and climate, will make effectual. The traders will therefore endeavour to set on foot many branches of industry among the savages, and the allurements of brandy, arms, and clothing, will animate these in the pursuit of them.

When once this revolution is brought about; when those who formerly lived in simplicity become industrious; manners put on a new face.

That is to say, we now find two trading nations instead of one, with this difference, however, that as hitherto we have supposed the merchants all in one interest, the compound demand, that is, the competition of the buyers, has been, and must still continue on the side of the natives. This is a great prejudice to their interest: but as it is not supposed sufficient to check their industry, nor to restrain their consumption of the manufactures, let us here examine a little more particularly the consequences of the principle of demand in such a situation; for although we allow, that it can never change sides, yet it may admit of different modifications, and produce different effects, as we shall presently perceive.

The merchants we suppose all in one interest, consequently there can be no competition among them; consequently no check can be put upon their raising their prices, as long as the prices they demand are complied with. So soon as they are raised to the full extent of the abilities of the natives, or of their inclination to buy, the merchants have the choice of three things, which are all perfectly in their option; and the preference to be given to the one or the other, depends entirely upon themselves, and upon the circumstances we are going to point out.

First, they may support their *high* demand; that is, not lower their price; which will preserve a high estimation of the manufactures in the opinion of the inhabitants, and render the profits upon their trade the greatest possible. This part they may possibly take, if they perceive the natives doubling their diligence, in order to become able, in time, to purchase considerable cargoes at a high value; from which supposition is implied a strong disposition in the people to become luxurious, since nothing but want of ability prevents them from complying with the highest demand: but still another circumstance must concur, to engage the merchants not to lower their price. The

great

great proportion of the goods they seek for in return, must be found in the hands of a few. This will be the case if slavery be established; for then there must be many poor and few rich: and they are commonly the rich consumers who proportion the price they offer, rather to their desires, than to the value of the thing.

The second thing which may be done is, to open the door to a *great* demand; that is to lower their prices. This will sink the value of the manufactures in the opinion of the inhabitants, and render profits less in proportion, although indeed, upon the voyage, the profits may be greater.

This part they will take, if they perceive the inhabitants do not incline to consume great quantities of the merchandize at a high value, either for want of abilities or inclination; and also, if the profits upon the trade depend upon a large consumption, as is the case in merchandize of a low value, and suited chiefly to the occasions of the lower sort. Such motives of expediency will be sufficient to make them neglect a high demand, and prefer a great one; and the more, when there is a likelihood that the consumption of low-priced goods in the beginning may beget a taste for others of a higher value, and thus extend in general the taste of superfluity.

A third part to be taken, is the least politic, and perhaps the most familiar. It is to profit by the competition between the buyers, and encourage the rising of demand as long as possible; when this comes to a stop, to make a kind of auction, by first bringing down the prices to the level of the highest bidders, and so to descend by degrees, in proportion as demand sinks. Thus we may say with propriety, that demand commonly becomes great, in proportion as prices sink. By this operation, the traders will profit as much as possible, and sell off as much of their goods as the profits will permit.

But this plan, in a new discovered country, is not politic, as it both discovers a covetousness and a want of faith in the merchants, and also throws open the secrets of their trade to those who ought to be kept ignorant of them.

Let us next suppose, that the large profits of our merchants shall be discovered by others, who arrive at the same ports in a separate interest, and who enter into no combination which might prevent the natural effects of competition.

Let the states of demand among the natives be supposed the same as formerly, both as to height and greatness, in consequence of the operation of the different principles, which might have induced our merchants to follow one or other of the plans we have been describing; we must, however, still suppose, that they have been careful to preserve considerable profits upon every branch.

If we suppose the inhabitants to have increased in numbers, wealth, and taste for superfluity, since the last voyage, demand will be found rather on the rising hand. Upon the arrival of the merchants in competition with the former, both will offer to sale: but if both stand to the same prices, it is very natural to suppose, that the former dealers will obtain a preference; as, *ceteris paribus*, it is always an advantage to know and to be known. The last comers, therefore,

have no other way left to counterbalance this advantage, but to lower their prices.

This is a new phenomenon: here the fall of prices is not voluntary as formerly; nor contented to from expediency; not owing to a failure of demand, but to the influence of a new principle of commerce, to wit, a double competition, which we shall now examine.

§ 5. Of double Competition.

WHEN competition is much stronger on one side of the contract than on the other, it is called *simple*. This is the species of competition which is implied in the term *high demand*, or when it is said that *demand raises prices*.

Double competition is, when, in a certain degree, it takes place on both sides of the contract at once, or vibrates alternately from one to the other. This is what restrains prices to the adequate value of merchandize.

The great difficulty is to distinguish clearly between the principles of *demand* and those of *competition*: here then follows the principal differences between the two, relatively to the effects they produce severally in the mercantile contract of buying and selling, which we here express shortly by the word *contract*.

Simple demand is what brings the quantity of a commodity to market. Many demand, who do not buy; many offer, who do not sell. This demand is called *great* or *small*; it is said to increase, to augment, to swell; and is expressed by these and other synonymous terms, which mark an augmentation or diminution of quantity. In this species, two people never demand the same thing, but a part of the same thing, or things quite alike.

Compound demand is the principle which raises prices, and can never make them sink; because in this case more than one demands the very same thing. It is solely applicable to the buyers, in relation to the price they offer. This demand is called *high* or *low*, and is said to rise, to fall, to mount, to sink, and is expressed by these and other synonymous terms.

Simple competition, when between buyers, is the same as *compound* or *high demand*; but differs from it in so far, as this may equally take place among sellers, which *compound demand* cannot; and then it works a contrary effect: it makes prices sink, and is synonymous with *low demand*: it is this competition which overturns the balance of work and demand.

Double competition is what is understood to take place in almost every operation of trade; it is this which prevents their excessive rise of prices; it is this which prevents their excessive fall. While double competition prevails, the balance is perfect, trade and industry flourish.

The capital distinction, therefore, between the terms *demand* and *competition* is, that *demand* is constantly relative to the buyers; and when money is not the price, as in barter, then it is relative to that side upon which the greatest *competition* is found.

We therefore say, with regard to *prices*, demand is *high* or *low*. With regard to the *quantity of merchandize*, demand is *great* or *small*. With regard to *competition*, it is always called *great* or *small*, *strong* or *weak*.

Competition is, with equal propriety, applicable to both

both parties in the contract. A *competition* among buyers is a proper expression; a *competition* among sellers, who have the merchandize, is fully as easily understood, though it be not quite so striking, for reasons which an example will make plain.

You come to a fair, where you find a great variety of every kind of merchandize, in the possession of different merchants. These, by offering their goods to sale, constitute a tacit competition; every one of them wishes to sell in preference to another, and at the same time with the best advantage to himself.

The buyer begins, by cheapening at every shop. The first price asked marks the covetousness of the seller; the first price offered, the avarice of the buyer. From this operation competition begins to work its effects on both sides, and so becomes double. The principles which influence this operation are now to be deduced.

It is impossible to suppose the same degree of eagerness, either to buy or sell, among several merchants; because the degree of eagerness is exactly in proportion to their views of profit; and as these must necessarily be influenced and regulated by different circumstances, that buyer, who has the best prospect of selling again with profit, obliges him, whose prospect is not so good, to content himself with less; and that seller, who has bought to the best advantage, obliges him, who has paid dearer for the merchandize, to moderate his desire of gain.

It is from these principles, that competition among buyers and sellers must take place. This is what confines the fluctuation of prices within limits which are compatible with the reasonable profits of both buyers and sellers; for we must constantly suppose the whole operation of buying and selling to be performed by merchants; the buyer cannot be supposed to give so high a price as that which he expects to receive when he distributes to the consumers, nor can the seller be supposed to accept of a lower than that which he paid to the manufacturer. This competition is properly called *double*, because of the difficulty to determine upon which side it stands; the same merchant may have it in his favour upon certain articles, and against him upon others; it is continually in vibration, and the arrival of every post may less or more pull down the heavy scale.

In every transaction between merchants, the profit resulting from the sale must be exactly distinguished from the value of the merchandize. The first may vary, the last never can. It is this profit alone which can be influenced by competition; and it is for that reason we find such uniformity every where in the prices of goods of the same quality.

The competition between sellers does not appear so striking as that between buyers; because he who offers to sale, appears only passive in the first operation; whereas the buyers present themselves one after another; they make a demand when the merchandize is refused to one at a certain price; a second either offers more, or does not offer all: but so soon as another seller finds his account in accepting the price the first had refused, then the first enters into competition, providing his profits will admit his lowering the first price; and thus competition takes place among the

fellers, until the profits upon their trade prevent prices from falling lower.

In all markets this competition is varying, though insensibly, on many occasions; but in others the vibrations are very perceptible. Sometimes it is found strongest on the side of the buyers; and in proportion as this grows, the competition between the sellers diminishes. When the competition between the former has raised prices to a certain standard, it comes to a stop; then the competition changes sides, and takes place among the sellers, eager to profit of the highest price. This makes prices fall; and according as they fall, the competition among the buyers diminishes. They still wait for the lowest period. At last it comes; and then perhaps some new circumstance, by giving the balance a kick, disappoints their hopes. If therefore it ever happens, that there is but one interest upon one side of the contract, as in the example in the former section, where we supposed the sellers united, you perceive, that the rise of the price, occasioned by the competition of the buyers, and even its coming to a stop, could not possibly have the effect of producing any competition on the other side; and therefore, if prices come afterwards to sink, the fall must have proceeded from the prudential considerations of adapting the price to the faculties of those who, from the height of it, had withdrawn their demand.

From these principles of competition, the forestalling of markets is made a crime, because it diminishes the competition which ought to take place between different people, who have the same merchandize to offer to sale. The forestaller buys all up, with an intention to sell with more profit, as he has by that means taken other competitors out of the way, and appears with a single interest on one side of the contract, in the face of many competitors on the other. This person is punished by the state, because he has prevented the price of the merchandize from becoming justly proportioned to the real value; he has robbed the public and enriched himself; and in the punishment he makes restitution. Here occur two questions to be solved, for the sake of illustration.

Can competition among buyers possibly take place, when the provision made is more than sufficient to supply the quantity demanded? On the other hand, can competition take place among the sellers, when the quantity demanded exceeds the total provision made for it?

We think it may in both cases; because in the one and the other, there is a competition implied on one side of the contract, and the very nature of this competition implies a possibility of its coming on the other, provided separate interests be found upon both sides. But to be more particular:

1. Experience shows, that however justly the proportion between the demand and the supply may be determined in fact, it is still next to impossible to discover it exactly, and therefore the buyers can only regulate the prices they offer, by what they may reasonably expect to sell for again. The sellers, on the other hand, can only regulate the prices they expect, by what the merchandize has cost them when brought to market. We have already shown, how, under such circumstances, the several interests of individuals affect each other, and make the balance vibrate.

2. The proportion between the supply and the demand is seldom other than *relative* among merchants, who are supposed to buy and sell, not from necessity, but from a view to profit. What we mean by *relative* is, that their demand is *great* or *small* according to prices; there may be a great demand for grain at 35 s. *per* quarter, and no demand at all for it at 40 s.; that is, among merchants.

It is essential to attend to the smallest circumstance in matters of this kind. The circumstance we mean, is the difference we find in the effect of competition, when it takes place purely among merchants on both sides of the contract, and when it happens, that either the consumers mingle themselves with the merchant-buyers or the manufacturers, that is, the furnishers, mingle themselves with the merchant-sellers. This combination we shall illustrate by the solution of another question, and then conclude with a few reflections upon the whole.

Can there be no case formed, where the competition upon one side may subsist, without a possibility of its taking place on the other, although there should be separate interests upon both?

The case is hardly supposable among merchants, who buy and sell with a view to profit; but it is absolutely supposable, and that is all, when the direct consumers are the buyers; when the circumstances of one of the parties is perfectly known; and when the competition is so strong upon one side, as to prevent a possibility of its becoming double, before the whole provision is sold off, or the demand satisfied. Let us have recourse to examples.

Grain arriving in a small quantity, at a port where the inhabitants are starving, produces so great a competition among the consumers, who are the buyers, that their necessity becomes evident; all the grain is generally bought up before prices can rise so high as to come to a stop; because nothing but want of money, that is, an impossibility of complying with the prices demanded by the merchants, can restrain them: but if you suppose, even here, that prices come naturally to a stop; or that, after some time, they fall lower, from prudential considerations; then there is a possibility of a competition taking place among the sellers, from the principles above deduced. If, on the contrary, the stop is not natural, but occasioned by the interposition of the magistrate, from humanity, or the like, there will be no competition, because then the principles of commerce are suspended; the sellers are restrained on one side, and they restrain the buyers on the other. Or rather indeed, it is the magistrate, or compassion, who in a manner fixes the price, and performs the office of both buyer and seller.

A better example still may be found, in a competition among sellers; where it may be so strong as to render a commodity in a manner of no value at all, as in the case of an uncommon and unexpected draught of fish, in a place of small consumption, when no preparations have been made for salting them. There can be then no competition among the buyers; because the market cannot last, and they find themselves entirely masters, to give what price they please, being sure the sellers must accept of it, or lose their merchandize. In the first example, humanity commonly stops the activity of the principle of competition; in

the other, it is stopped by a certain degree of fair dealing, which forbids the accepting of a merchandize for nothing.

In proportion therefore as the rising of prices can stop demand, or the sinking of prices can increase it, in the same proportion will competition prevent either the rise or the fall from being carried beyond a certain length: and if such a case can be put, where the rising of prices cannot stop demand, nor the lowering of prices augment it, in such cases double competition has no effect; because these circumstances unite the most separate interests of buyers and sellers in the mercantile contract; and when upon one side there is no separate interest, there can then be no competition.

From what has been said, we may form a judgment of the various degrees of competition. A book not worth a shilling, a fish of a few pounds weight, are often sold for considerable sums. The buyers here are not merchants. When an ambassador leaves a court in a hurry, things are sold for less than the half of their value: he is no merchant, and his situation is known. When, at a public market, there are found consumers, who make their provision; or manufacturers, who dispose of their goods for present subsistence; the merchants, who are respectively upon the opposite side of the contract to these, profit of their competition; and those who are respectively upon the same side with them, stand by with patience until they have finished their business. Then matters come to be carried on between merchant and merchant, and then profits may rise and fall, in the proportion of quantity to demand; that is to say, if the provision is less than the demand, the competition among the demanders, or the rise of the price, will be in the compound proportion of the falling short of the commodity, and of the prospect of selling again with profit. It is this combination which regulates the competition, and keeps it within bounds. It can affect but the profits upon the transaction: the intrinsic value of the commodity stands immovable: nothing is ever sold below the real value; nothing is ever bought for more than it may probably bring. We mean in general. Whereas, so soon as consumers and needy manufacturers mingle in the operation, all proportion is lost. The competition between them is too strong for the merchants; the balance vibrates by jerks. In such markets merchants seldom appear: the principal objects there, are the fruits and productions of the earth, and articles of the first necessity for life, not manufactures strictly so called. A poor fellow often sells to purchase bread to eat; not to pay what he did eat while he was employed in the work he disposes of. The consumer often measures the value of what he is about to purchase, by the weight of his purse, and his desire to consume.

§ 6. Of what is called *Expence, Profit, and Loss.*

THE term *expence*, when simply expressed, without any particular relation, is always understood to be relative to money. This kind is distinguished under the three heads of *private*, *public*, and *national*.

1. *Private expence* is what a private person, or private society, lays out, either to provide articles of consumption, or something more permanent, which may be conducive to their ease, convenience, or advantage.

Thus we say, a *large domestic expence*, relative to one who spends a great income. We say, a merchant has been at *great expence* for magazines, for living, for clerks, &c. but never that he has been at any in buying goods. In the same way a manufacturer may expence for building, machines, horses, and carriages, but never for the matter he manufactures. When a thing is bought in order to be sold again, the sum employed is called money *advanced*; when it is bought not to be sold, it may be said to be *expended*.

2. *Public expence* is the employment of that money which has been contributed by individuals for the current service of the state. The contribution, or gathering it together, represents the effects of many articles of *private expence*; the laying it out when collected, is *public expence*.

3. *National expence* is what is expended out of the country; this is what diminishes national wealth. The principal distinction to be here attended to is between public expence, or the laying out of public money, and national expence, which is the alienating the nation's wealth in favour of strangers. Thus the greatest public expence imaginable may be no national expence; because the money may remain at home. On the other hand, the smallest public, or even private expence, may be a national expence; because the money may go abroad.

Profit and loss is divided into *positive, relative, and compound*. *Positive profit* implies no loss to any body; it results from an augmentation of labour, industry, or ingenuity, and has the effect of swelling or augmenting the public good.

Positive loss implies no profit to any body; it is what results from the cessation of the former, or of the effects resulting from it, and may be said to diminish the public good.

Relative profit is what implies a loss to somebody; it marks a vibration of the balance of wealth between parties, but implies no addition to the general stock.

Relative loss is what, on the contrary, implies a profit to somebody; it also marks a vibration of the balance, but takes nothing from the general stock.

The *compound* is easily understood; it is that species of profit and loss which is partly relative and partly positive.

§ 7. *The general consequences resulting to a trading Nation, upon the opening of an active foreign Commerce.*

A NATION which remains passive in her commerce is at the mercy of those who are active, and must be greatly favoured indeed by natural advantages, or by a constant flux of gold and silver from her mines, to be able to support a correspondence not entirely hurtful to the augmentation of her wealth.

When we look upon the wide field which here opens to our view, we are perplexed with too great a variety of objects. In one part, we see a decent and comely beginning of industry; wealth flowing gently in to recompence ingenuity; numbers both augmenting, and every one becoming daily more useful to another; agriculture proportionally extending itself; no violent revolutions; no exorbitant profits; no insolence among the rich; no excessive misery among the poor; multitudes employed in producing; great economy upon

consumption; and all the instruments of luxury, daily produced by the hands of the diligent, going out of the country for the service of strangers; not remaining at home for the gratification of sensuality. At last the augmentations come insensibly to a stop. Then these rivers of wealth, which were in brisk circulation through the whole world, and which returned to this trading nation as blood returns to the heart, only to be thrown out again by new pulsations, begin to be obstructed in their course; and flowing abroad more slowly than before, come to form stagnations at home. These, impatient of restraint, soon burst out into domestic circulation. Upon this cities swell in magnificence of buildings; the face of the country is adorned with palaces, and becomes covered with groves; luxury shines triumphant in every part; inequality becomes more striking to the eye; and want and misery appear more deformed, from the contrast: even fortune grows more whimsical in her inconstancy; the beggar of the other day now rides in his coach; and he who was born in a bed of state, is seen to die in a goal or in an alms-house. Such are the effects of great domestic circulation.

The statesman looks about with amazement; he who was wont to consider himself as the first man in the society in every respect, perceives himself, perhaps, eclipsed by the lustre of private wealth, which avoids his grasp when he attempts to seize it. This makes his government more complex and more difficult to be carried on; he must now avail himself of art and address, as well as of power and force. By the help of cajoling and intrigues, he gets a little into debt; this lays a foundation for public credit, which, growing by degrees, and in its progress assuming many new forms, becomes, from the most tender beginnings, a most formidable monster, striking terror into those who cherished it in its infancy. Upon this, as upon a triumphant war-horse, the statesman gets astride; he then appears formidable a-new; his head turns giddy; he is choaked with the dust he has raised; and at the moment he is ready to fall, to his utter astonishment and surprise, he finds a strong monied interest, of his own creating, which, instead of swallowing him up as he apprehended, flies to his support. Through this he gets the better of all opposition, he establishes taxes, multiplies them, mortgages his fund of subsistence; either becomes a bankrupt, and rises again from his ashes; or if he be less audacious, he stands trembling and tottering for a while on the brink of the political precipice. From one or the other of these perilous situations, he begins to discover an endless path, which, after a multitude of windings, still returns into itself, and continues an equal course through this vast labyrinth.

It is now full time to leave off rhapsody, and return to reasoning and cool enquiry, concerning the more immediate and more general effects and revolutions produced by the opening of a foreign trade in a nation of industry.

The first and most sensible alteration will be an increase of demand for manufacturers, because by supplying the wants of strangers, the number of consumers will now be considerably augmented. What again will follow upon this, must depend upon circumstances.

If this revolution in the state of demand should prove too violent, the consequence of it will be to raise demand; if it should prove gradual, it will increase it. This distinction is well understood, and the consequence appears just: for, if the supply do not increase in proportion to the demand, a competition will ensue among the demanders; which is the common effect of such sudden revolutions. If, on the other hand, a gentle increase of demand should be accompanied with a proportional supply, the whole industrious society will grow in vigour, and in wholesome stature, without being sensible of any great advantage or inconvenience; the change of their circumstances will even be imperceptible.

The immediate effects of the violent revolution will, in this example, be flattering to some and disagreeable to others. Wealth will be found daily to augment, from the rising of prices, in many branches of industry. This will encourage the industrious classes, and the idle consumers at home will complain. We have already dwelt abundantly long upon the effect resulting from this to the lower classes of the people, in providing them with a certain means of subsistence. Let us now examine in what respect even the higher classes will be made likewise to feel the good effects of this general change, although at first they may suffer a temporary inconvenience from it.

Farmers, as has been observed, will have a greater difficulty in finding servants, who, instead of labouring the ground, will chuse to turn themselves to manufactures. This we have considered in the light of purging the lands of superfluous mouths; but every consequence in this great chain of politics draws other consequences after it, and as they follow one another, things put on different faces, which affect classes differently. The purging of the land is but one of the first; here follows another.

The desertion of the lands employed in a trifling agriculture will at first, no doubt, embarrass the farmers; but in a little time every thing becomes balanced in a trading nation, because here every industrious man must advance in prosperity, in spite of all general combinations of circumstances.

In the case before us, the relative profits upon farming must soon become greater than formerly, because of this additional expence which must affect the whole class of farmers; consequently, this additional expence, instead of turning out to be a loss to either landlord or farmer, will, after some little time, turn out to the advantage of both; because the produce of the ground, being indispensably necessary to every body, must in every article increase in its value. Thus in a short time accounts will be nearly balanced on all hands; that is to say, the same proportion of wealth will, *ceteris paribus*, continue the same among the industrious. We say among the industrious; for those who are either idle, or even negligent, will be great losers.

A proprietor of land, inattentive to the causes of his farmer's additional expence, may very imprudently suffer his rents to fall, instead of assisting him on a proper occasion, in order to make them afterwards rise the higher.

Those who live upon a determined income in mo-

ney, and who are nowise employed in traffic, nor in any scheme of industry, will, by the augmentation of prices, be found in worse circumstances than before.

In a trading nation every man must turn his talents to account, or he will undoubtedly be left behind in this universal emulation, in which the most industrious, the most ingenious, and the most frugal, will constantly carry off the prize.

This consideration ought to be a spur to every body. The richest men in a trading nation have no security against poverty; we mean proportional poverty; for though they diminish nothing of their income, yet, by not increasing it in proportion to others, they lose their rank in wealth, and from the first class in which they stood they will slide insensibly down to a lower.

There is one consequence of an additional beneficial trade, which raises demand and increases wealth; but if we suppose no proportional augmentation of supply, it will prove at best but an airy dream which lasts for a moment; and when the gilded scene is passed away, numberless are the inconveniences which are seen to follow.

We shall now point out the natural consequences of this augmentation of wealth drawn from foreign nations, when the statesman remains inattentive to increase the supply both of food and manufactures, in proportion to the augmentation of mouths, and of the demand for the produce of industry.

In such a situation profits will daily swell, and every scheme for reducing them within the bounds of moderation, will be looked upon as a hurtful and unpopular measure: be it so; but let us examine the consequences.

We have said, that the rise of demand for manufactures naturally increases the value of work: now we must add, that under such circumstances, the augmentation of riches in a country, either not capable of improvement as to the soil, or where precautions have not been taken for facilitating a multiplication of inhabitants, by the importation of subsistence, will be productive of the most calamitous consequences.

On one side, this wealth will effectually diminish the mass of the food before produced; and on the other, will increase the number of useless consumers. The first of these circumstances will raise the demand for food; and the second will diminish the number of useful free hands, and consequently raise the price of manufactures: here are shortly the outlines of this progress.

The more rich and luxurious a people are, the more delicate they become in their manner of living; if they fed on bread formerly, they will now feed on meat; if they fed on meat, they will now feed on fowl. The same ground which feeds a hundred with bread, and a proportional quantity of animal food, will not maintain an equal number of delicate livers. Food must then become more scarce; demand for it rises; the rich are always the strongest in the market; they consume the food, and the poor are forced to starve. Here the wide door to modern distress opens; to wit, a hurtful competition for subsistence. Farther, when a people become rich, they think less

of economy; a number of useless servants are hired, to become an additional dead weight on consumption; and when their starving countrymen cannot supply the extravagance of the rich so cheaply as other nations, they either import instruments of foreign luxury, or seek to enjoy them out of their own country, and thereby make restitution of their gains.

Is it not therefore evident, that if, before things come to this pass, additional subsistence be not provided by one method or other, the number of inhabitants must diminish; although riches may daily increase by a balance of additional matter, supposed to be brought into the country in consequence of the hitherto beneficial foreign trade? This is not all. We say farther, that the beneficial trade will last for a time only. For the infallible consequence of the rise of prices at home will be, that those nations which at first consumed your manufactures, perceiving the gradual increase of their price, will begin to work for themselves; or finding out your rivals who can supply them cheaper, will open their doors to them. These again, perceiving the great advantages gained by your traders, will begin to supply the market; and since every thing must be cheaper in countries where we do not suppose the concurrence of all the circumstances mentioned above, these nations will supplant you, and be enriched in their turn.

Here comes a new revolution. Trade is come to a stop: what then becomes of all the hands which were formerly employed in supplying the foreign demands?

Were revolutions so sudden as we are obliged to represent them, all would go to wreck; in proportion as they happen by quicker or slower degrees, the inconveniences are greater or smaller.

Prices, we have said, are made to rise by competition. If the competition of the strangers was what raised them, the distress upon the manufacturers will be in proportion to the suddenness of their deserting the market. If the competition was divided between the strangers and the home-consumers, the inconveniences which ensue will be less; because the desertion of the strangers will be in some measure made up by an increase of home-consumption which will follow upon the fall of prices. And if, in the third case, the natives have been so imprudent, as not only to support a competition with the strangers, and thereby disgust them from coming any more to market, but even to continue the competition between themselves, the whole loss sustained by the revolution will be national. Wealth will cease to augment; but the inconveniences, in place of being felt by the manufacturers, will only affect the state; those will continue in affluence, extolling the generosity of their countrymen, and despising the poverty of the strangers who had enriched them.

Domestic luxury will here prove an expedient for preserving from ruin the industrious part of a people, who in subsisting themselves had enriched their country. No change will follow in their condition; they will go on with a painful assiduity to labour: and if the consequences of it become now hurtful to one part of the state, they must at least be allowed to be essentially necessary for the support of the other.

But that luxury is no necessary concomitant of fo-

reign trade, in a nation where the true principles of it are understood, will appear very plain, from a contrast we are now going to point out, in the example of a modern state, renowned for its commerce and frugality. The country is Holland.

A set of industrious and frugal people were assembled in a country by nature subject to many inconveniences, the removing of which necessarily employed abundance of hands. Their situation upon the continent, the power of their former masters, and the ambition of their neighbours, obliged them to keep great bodies of troops. These two articles added to the numbers of the community, without either enriching the state by their labour exported, or producing food for themselves or countrymen.

The scheme of a commonwealth was calculated to draw together the industrious; but it has been still more useful in subsisting them: the republican form of government being there greatly subdivided, vests authority sufficient in every part of it, to make suitable provision for their own subsistence; and the tie which unites them, regards only matters of public concern. Had the whole been governed by one sovereign, or by one council, this important matter never could have been effectuated.

It would be impossible for the most able minister that ever lived, to provide nourishment for a country so extended as France, or even as England, supposing these as fully peopled as Holland is; even although it should be admitted that a sufficient quantity of food might be found in other countries for their subsistence. The enterprise would be too great, abuses would multiply; the consequence would be, that the inhabitants would die for want. But in Holland the case is different: every little town takes care of its own inhabitants; and this care being the object of application and profit to so many persons, is accomplished with success.

When once it is laid down as a maxim in a country, that food must of necessity be got from abroad in order to feed the inhabitants at home, the corn-trade becomes considerable, and at the same time certain, regular, and permanent. This was the case in Holland: as the inhabitants were industrious, the necessary consequence has been, a very extraordinary multiplication; and at the same time such an abundance of grain, that, instead of being in want themselves, they often supply their neighbours. There are many examples of England's being supplied with grain from thence; and, which is still more extraordinary, from the re-exportation of the very produce of its own fruitful soil.

It is therefore evident, that the only way to support industry, is to provide a supply of subsistence, constantly proportional to the demand that may be made for it. This is a precaution indispensably necessary for preventing hurtful competition. This is the particular care of the Dutch: so long as it can be effectual, their state can fear no decline; but whenever they come to be distressed in the markets, upon which they depend for subsistence, they will sink into ruin. It is by mere dint of frugality, cheap and parsimonious living, that the navigation of this industrious people is supported. Constant employment, and an accumulation of almost imperceptible gains, fill their

their coffers with wealth, in spite of the large outgoings to which their own proper nourishment yearly forces them. The large profits upon industry in other countries, which are no proof of generosity, but a fatal effect of a scanty subsistence, is far from dazzling their eyes. They seldom are found in the list of competitors at any foreign port; if they have their cargo to dispose of, they wait with pleasure in their own vessels, consuming their own provisions, and at last accept of what others have left. It may be said, that many other circumstances concur in favour of the Dutch, besides the article of subsistence. Without disputing this matter, it may be observed, that if a computation be made of the hands employed in providing subsistence, and of those who are severally taken up in supplying every other want, their numbers will be found nearly to balance one another in the most luxurious countries. From this we may conclude, that the article of food, among the lower classes, must bear a very high proportion to all the other articles of their

consumption; and therefore a diminution upon the price of subsistence, must be of infinite consequence to manufacturers who are obliged to buy it. From this consideration, let us judge of the consequence of such augmentations upon the price of grain as are familiar to us; 30 or 40 *per cent.* seems nothing. Now this augmentation operates upon two-thirds, at least, of the whole expence of a labouring man: let any one who lives in tolerable affluence make the application of this to himself, and examine how he would manage his affairs, if, by accidents of rains or winds, his expences were to rise 30 *per cent.* without a possibility of restraining them; for this is unfortunately the case with all the lower classes. From whence it may be concluded, that the keeping food cheap, and still more the preserving it at all times at an equal standard, is the fountain of the wealth of Holland; and that any hurtful competition in this article must beget a disorder which will affect the whole of the manufacturers of a state.

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COMMERCE, a handsome town of France in the duchy of Bar, with the title of a principality, and a magnificent castle. It is seated on the river Menfe, in E. Long. 5. 24. N. Lat. 48. 20.

COMMERSONIA, in botany: A genus of the pentagynia order, belonging to the pentandria class of plants. The calyx is a monophyllous, five-parted, corolliferous perianthium, with sharp ovated segments; the corolla has five linear petals; the stamina are five very short filaments at the bases of the petals; the pericarpium a globular, hard, quinquelocular nut, with two ovated seeds in each division.

COMMINATION, an office in the liturgy of the church of England, appointed to be read on Ash-Wednesday, or the first day of Lent. It is substituted in the room of that *godly discipline in the primitive church*, by which (as the introduction to the office expresses it), "such persons, as stood convicted of notorious sins, were put to open penance, and punished in this world, that their souls might be saved in the day of the Lord; and that others, admonished by their example, might be the more afraid to offend." This discipline, in after ages, degenerated, in the church of Rome, into a formal confession of sins upon Ash-Wednesday, and the empty ceremony of sprinkling ashes upon the heads of the people. Our reformers wisely rejected this ceremony, as mere shadow and show; and substituted this office in its room, which is, *A denunciation of God's anger and judgment against sinners*; that the people, being apprized of God's wrath and indignation against sin, may not, through want of discipline in the church, be encouraged to follow and pursue them; but rather be moved to supply that discipline to themselves, and so to avoid being judged and condemned at the tribunal of God.

COMMINATORY, an appellation given to whatever threatens punishment, or some penalty. Thus, in France, when an exile is enjoined not to return under pain of death, it is deemed a *comminatory* penalty; since, if he do return, it is not strictly executed;

but a second injunction is laid on him, which is more than comminatory, and, from the day of the date thereof, imports death without remedy.

COMMINGES, a province of France, 45 miles in length, and 15 in breadth; bounded on the north by Gascony, on the south by Catalonia, on the east by Coufferans, and on the west by Bigorra. Its principal trade consists in cattle, mules, and corn. St Bertrand is the capital town.

COMMUNITION, denotes the breaking, or rather grinding, a body to very small particles.

COMMIRE (John), a celebrated Latin poet, born at Amboise in 1625, entered into the society of the Jesuits, and taught polite literature and divinity. He died at Paris in 1702. We have a volume of his Latin poems, and a collection of his posthumous works. His odes and fables are more particularly admired.

COMMISSARY, in the ecclesiastical law, an officer of the bishop, who exercises spiritual jurisdiction in places of a diocese so far from the Episcopal see, that the chancellor cannot call the people to the bishop's principal consistory court, without giving them too much inconveniency.

COMMISSARY-Court, in Scotland, a court originally constituted by the bishops for executing in their name an usurped jurisdiction; and was anciently called the *bishop's court*, *curia Christianitatis*, or *consistorial court*. This court was modelled by queen Mary at the Reformation, and continues till this day.

COMMISSARY, in a military sense, is of different sorts.

COMMISSARY-General of the *Musters*, an officer appointed to muster the army, as often as the general thinks proper, in order to know the strength of each regiment and company, to receive and inspect the muster-rolls, and to keep an exact state of the strength of the army.

COMMISSARY of *Horses*, an officer in the artillery, appointed to have the inspection of the artillery-horses, to see them mustered, and to send such orders as he receives

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receives from the commanding officer of the artillery, by some of the conductors of horses, of which he has a certain number for his assistants.

COMMISSARY of Provisions, an officer who has the charge of furnishing the army with provisions.

COMMISSARY of Stores, an officer in the artillery, who has the charge of all the stores, for which he is accountable to the office of ordnance.

COMMISSION, in common law, the warrant or letters patent, which all persons exercising jurisdiction have to empower them to hear or determine any cause or suit, as the commission of the judges, &c.

COMMISSION of Bankruptcy, is the commission that issues from the lord chancellor, on a person's becoming a bankrupt within any of the statutes, directed to certain commissioners appointed to examine into it, and to secure the bankrupt's lands and effects for the satisfaction of his creditors. See the article BANKRUPT.

The proceedings on a commission of bankrupt may be divided, 1. Into those which affect the bankrupt himself. 2. Into those which affect his property.

Blackstone's
Comment.

1. As to those of the former kind, there must in the first place be a petition to the lord chancellor by one creditor to the amount of L. 100, or by two to the amount of L. 150, or by three or more to the amount of L. 200; upon which he grants a commission to such discreet persons as to him shall seem good, who are then styled commissioners of bankrupt. The petitioners, to prevent malicious applications, must be bound in a security of L. 200, to make the party amends, in case they do not prove him a bankrupt. And if, on the other hand, they receive any money or effects from the bankrupt, as a recompense for suing out the commission, so as to receive more than their rateable dividends of the bankrupt's estate, they forfeit not only what they shall have so received, but their whole debt. When the commission is awarded and issued, the commissioners are to meet at their own expence, and to take an oath for the due execution of their commission, and to be allowed a sum not exceeding 20s. *per diem* each, at every sitting. And no commission of bankruptcy shall abate or be void on any demise of the crown.

When the commissioners have received their commission, they are first to receive proof of the person's being a trader, and having committed some act of bankruptcy; and then to declare him bankrupt, if proved so; and to give notice thereof in the gazette, and at the same time to appoint three meetings. At one of these meetings an election must be made of assignees, or persons to whom the bankrupt's estate shall be assigned, and in whom it shall be vested for the benefit of the creditors; which assignees are chosen by the major part, in value, of the creditors who shall then have proved their debts; but may be originally appointed by the commissioners, and afterwards approved or rejected by the creditors: but no creditor shall be admitted to vote in the choice of assignees, whose debt, on the balance of accounts, does not amount to L. 10. And at the third meeting at farthest, which must be on the 42d day after the advertisement in the gazette, the bankrupt, upon notice also personally served upon him, or left at his usual

place of abode, must surrender himself personally to the commissioners, and must thenceforth in all respects conform to the directions of the statutes of bankruptcy; or, in default thereof, shall be guilty of felony without benefit of clergy, and shall suffer death, and his goods and estate shall be divided among his creditors.

Commis-
sion.

In case the bankrupt absconds, or is likely to run away between the time of the commission issued and the last day of surrender, he may, by warrant from any judge or justice of the peace, be apprehended and committed to the county gaol, in order to be forthcoming to the commissioners, who are also empowered immediately to grant a warrant for seizing his goods and papers.

When the bankrupt appears, the commissioners are to examine him touching all matters relating to his trade and effects. They may also summon before them, and examine, the bankrupt's wife, and any other person whatsoever, as to all matters relating to the bankrupt's affairs: And in case any of them shall refuse to answer, or shall not answer fully, to any lawful question, or shall refuse to subscribe such their examination, the commissioners may commit them to prison without bail, till they make and sign a full answer; the commissioners specifying in their warrant of commitment the question so refused to be answered. And any gaoler, permitting such person to escape or go out of prison, shall forfeit L. 500 to the creditors.

The bankrupt, upon this examination, is bound, upon pain of death, to make a full discovery of all his estate and effects as well in expectancy as possession, and how he has disposed of the same; together with all books and writings relating thereto: and is to deliver up all in his power to the commissioners (except the necessary apparel of himself, his wife, and his children); or, in case he conceals or embezzles any effects to the amount of L. 20, or with-holds any book or writings, with intent to defraud his creditors, he shall be guilty of felony without benefit of clergy.

After the time allowed the bankrupt for such discovery is expired, any other person voluntarily discovering any part of his estate before unknown to the assignees, shall be intitled to five *per cent.* out of the effects so discovered, and such farther reward as the assignees and commissioners shall think proper. And any trustee wilfully concealing the estate of any bankrupt, after the expiration of 42 days, shall forfeit L. 100, and double the value of the estate concealed, to the creditors.

Hitherto every thing is in favour of the creditors; and the law seems to be pretty rigid and severe against the bankrupt; but, in case he proves honest, it makes him full amends for all this rigour and severity. For, if the bankrupt hath made an ingenuous discovery, hath conformed to the directions of the law, and hath acted in all points to the satisfaction of his creditors; and if they, or four parts in five of them in number and value (but none of them creditors for less than L. 20), will sign a certificate to that purport; the commissioners are then to authenticate such certificate under their hands and seals, and to transmit it to the lord chancellor: and he, or two judges whom he shall appoint, on oath made by the bankrupt that such certificate

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sion.

tificate was obtained without fraud, may allow the same; or disallow it, upon cause shown by any of the creditors of the bankrupt.

If no cause be shown to the contrary, the certificate is allowed of course; and then the bankrupt is intitled to a decent and reasonable allowance out of his effects, for his future support and maintenance, and to put him in a way of honest industry. This allowance is also in proportion to his former good behaviour, in the early discovery of the decline of his affairs, and thereby giving his creditors a larger dividend. For if his effects will not pay one half of his debts, or 10s. in the pound, he is left to the discretion of the commissioners and assignees, to have a competent sum allowed him, not exceeding 3 per cent.; but if they pay 10s. in the pound, he is to be allowed 5 per cent.; if 12s. and 6d. then $7\frac{1}{2}$ per cent.; and if 15s. in the pound, then the bankrupt shall be allowed 10 per cent.; provided that such allowance do not in the first case exceed L. 200, in the second L. 250, and in the third L. 300.

Besides this allowance, he has also an indemnity granted him, of being free and discharged for ever from all debts owing by him at the time he became a bankrupt; even though judgment shall have been obtained against him, and he lies in prison upon execution for such debts; and, for that among other purposes, all proceedings on commission of bankrupt, are, on petition, to be entered on record, as a perpetual bar against actions to be commenced upon this account: though, in general, the production of the certificate properly allowed shall be sufficient evidence of all previous proceedings. Thus the bankrupt becomes a clear man again; and, by the assistance of his allowance and his own industry, may become a useful member of the commonwealth: which is the rather to be expected, as he cannot be intitled to these benefits, but by the testimony of his creditors themselves of his honest and ingenuous disposition; and unless his failures have been owing to misfortunes, rather than to misconduct and extravagance.

2. As to the proceedings which affect the bankrupt's property.

By virtue of the statutes before mentioned, all the personal estate and effects of the bankrupt are considered as vested, by the act of bankruptcy, in the future assignees of his commissioners, whether they be goods in actual possession, or debts, contracts, and other choses in action; and the commissioners by their warrant may cause any house or tenement of the bankrupt to be broke open, in order to enter upon and seize the same. And when the assignees are chosen or approved by the creditors, the commissioners are to assign every thing over to them; and the property of every part of the estate is thereby as fully vested in them as it was in the bankrupt himself, and they have the same remedies to recover it.

The property vested in the assignees is the whole that the bankrupt had in himself, at the time he committed the first act of bankruptcy, or that has been vested in him since, before his debts are satisfied or agreed for. Therefore it is usually said, that once a bankrupt, and always a bankrupt: by which is meant, that a plain direct act of bankruptcy once committed, cannot be purged, or explained away, by any subse-

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sion.

quent conduct, as a dubious equivocal act may be; but that, if a commission is afterwards awarded, the commission and the property of the assignees shall have a relation, or reference, back to the first and original act of bankruptcy. Inasmuch that all transactions of the bankrupt are from that time absolutely null and void, either with regard to the alienation of his property, or the receipt of his debts from such as are privy to his bankruptcy; for they are no longer his property, or his debts, but those of the future assignees. And if an execution be sued out, but not served and executed on the bankrupt's effects till after the act of bankruptcy, it is void, as against the assignees. But the king is not bound by this fictitious relation, nor is within the statutes of bankrupts; for if, after the act of bankruptcy committed, and before the assignment of his effects, and extent issues for the debt of the crown, the goods are bound thereby. In France this doctrine of relation is carried to a very great length; for there, every act of a merchant, for 10 days precedent to the act of bankruptcy, is presumed to be fraudulent, and is therefore void. But with us the law stands upon a more reasonable footing: for as these acts of bankruptcy may sometimes be secret to all but a few, and it would be prejudicial to trade to carry this notion to its utmost length, it is provided by stat. 19 Geo. II. c. 32. that no money paid by a bankrupt to a *bona fide*, or real, creditor, in a course of trade, even after an act of bankruptcy done, shall be liable to be refunded. Nor by stat. 1 Jac. I. c. 15. shall any debtor of a bankrupt that pays him his debt without knowing of his bankruptcy, be liable to account for it again. The intention of this relative power being only to reach fraudulent transactions, and not to distress the fair trader.

The assignees may pursue any legal method of recovering this property so vested in them, by their own authority; but cannot commence a suit in equity, nor compound any debts owing to the bankrupt, nor refer any matters to arbitration, without the consent of the creditors, or the major part of them in value, at a meeting to be held in pursuance of notice in the gazette.

When they have got in all the effects they can reasonably hope for, and reduced them to ready money, the assignees must, within 12 months after the commission issued, give 21 days notice to the creditors of a meeting for a dividend or distribution; at which time they must produce their accounts, and verify them upon oath, if required. And then the commissioners shall direct a dividend to be made, at so much in the pound, to all creditors who have before proved, or shall then prove, their debts. This dividend must be made equally, and in a rateable proportion, to all the creditors, according to the quantity of their debts; no regard being had to the quality of them. Mortgages, indeed, for which the creditor has a real security in his own hands, are entirely safe; for the commission of bankrupt reaches only the equity of redemption. So are also personal debts, where the creditor has a chattel in his hands, or a pledge or pawn, for the payment, or has taken the debtor's lands or goods in execution. And, upon the equity of the stat. 8 An. c. 14 (which directs, that upon all executions of goods being on any premises demised to a ten-

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nant, one year's rent and no more shall, if due, be paid to the landlord) it hath also been held, that under a commission of bankrupt, which is in the nature of a statute execution, the landlord shall be allowed his arrears of rent to the same amount, in preference to other creditors, even though he hath neglected to distress while the goods remained on the premises: which he is otherwise intitled to do for his entire rent, be the quantum what it may. But otherwise judgments and recognizances (both which are debts of record, and therefore at other times have a priority), and also bonds and obligations by deed or special instrument (which are called debts by specialty, and are usually the next in order), these are all put on a level with debts by mere simple contract, and all paid *pari passu*. Nay, so far is this matter carried, that, by the express provision of the statutes, debts not due at the time of the dividend made, as bonds or notes of hand, payable at a future day, shall be paid equally with the rest, allowing a discount or drawback in proportion. And insurances, and obligations upon bottomry or respondentia, *bona fide*, made by the bankrupt, though forfeited after the commission is awarded, shall be looked upon in the same light as debts contracted before any act of bankruptcy.

Within 18 months after the commission issued, a second and final dividend shall be made, unless all the effects were exhausted by the first. And if any surplus remains, after paying every creditor his full debt, it shall be restored to the bankrupt. This is a case which sometimes happens to men in trade, who involuntarily, or at least unwarily, commit acts of bankruptcy, by absconding and the like, while their effects are more than sufficient to pay their creditors. And if any suspicious or malevolent creditor will take the advantage of such acts, and sue out a commission, the bankrupt has no remedy, but must quietly submit to the effects of his own imprudence: except that, upon satisfaction made to all the creditors, the commission may be superseeded. This case may also happen when a knave is desirous of defrauding his creditors, and is compelled, by a commission, to do them that justice which otherwise he wanted to evade. And therefore, though the usual rule is, that all interest on debts carrying interest shall cease from the time of issuing the commission, yet in case of a surplus left after payment of every debt, such interest shall again revive, and be chargeable on the bankrupt or his representatives.

Commission of Lunacy, issues out of the court of chancery, whether a person represented to be a lunatic, be so or not. See LUNACY.

Commission of Teinds, a court at Edinburgh, which came in place of a committee of the Scottish parliament, for erecting new parishes, and valuing teinds for the support of the clergy. It is vested in the Lords of session. See LAW, n^o clix. 11.

Commission-Officers. See OFFICERS.

Commission, in commerce. See FACTORAGE.

COMMISSIONER, a person authorized by commission, letters patent, or other lawful warrant, to examine any matters, or execute any lawful commis-

COMMISSIONER in the General Assembly of the church of Scotland. See ASSEMBLY (General).

COMMISSIONERS of the Customs. See CUSTOMS.

COMMISSIONERS of Excise. See EXCISE.

COMMISSIONERS of the Navy. See NAVY.

Lords COMMISSIONERS of the Treasury. See TREASURY and EXCHEQUER.

COMMISSURE, a term used by some authors, for the small meatuses or interstices of bodies; or the little clefts between the particles; especially when those particles are broadish and flat, and lie contiguous to one another, like thin plates or lamellæ. The word literally signifies a *joining*, or connecting of one thing to another.

COMMISSURE, in architecture, &c. denotes the joint of two stones, or the application of the surface of the one to that of the other. See MASONRY.

Among anatomists, commissure is sometimes also used for a future of the cranium or skull. See SUTURE.

COMMITMENT, in criminal law, is the sending to prison a person who hath been guilty of any crime. This takes place where the offence is not bailable, or the party cannot find BAIL; must be by proper warrant, containing the cause of the commitment; and continues till put an end to by the course of law (see TRIAL); imprisonment being intended only for safe custody, and not for punishment (See ARRESTMENT and BAIL). In this dubious interval between the commitment and trial, a prisoner ought to be used with the utmost humanity; and neither be loaded with needless fetters or subjected to other hardships than such as are absolutely requisite for the purpose of confinement only: though what are so requisite must too often be left to the discretion of the gaolers; who are frequently a merciless race of men, and, by being conversant in scenes of misery, stealed against any tender sensation.

COMMITTEE, one or more persons to whom the consideration or ordering of a matter is referred, either by some court, or by the consent of parties to whom it belongs.

Committee of Parliament, a certain number of members appointed by the house for the examination of a bill, making a report of an inquiry, process of the house, &c. See PARLIAMENT.

Sometimes the whole house is resolved into a committee, on which occasion each person has a right to speak and reply as much and as often as he pleases: an expedient they usually have recourse to in extraordinary cases, and where any thing is to be thoroughly canvassed. When the house is not in a committee, each gives his opinion regularly, and is only allowed to speak once, unless to explain himself.

The standing committees, appointed by every new parliament, are those of privileges and elections, of religion, of grievances, of courts of justice, and of trade; though only the former act.

COMMIXTION, in Scots law, is a method of acquiring property, by mixing or blending together different substances belonging to different proprietors. See LAW, Part III. N^o clxii. 8.

COMMODATE, COMMODATUM, in the civil jurisprudence, the loan or free concession of any thing moveable or immoveable, for a certain time, on con-

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**Commodi-
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Common.** dition of restoring again the same individual after a certain term. The commodate is a kind of loan: there is this difference, however, between a loan and a commodate, that the latter is gratis, and does not transfer the property: the thing must be returned in effence, and without impairment: so that things which consume by use or time cannot be objects of a commodate, but of a loan; in regard they may be returned in kind, though not in identity. See LAW, Part III. N^o clxxxiii. 8.

COMMODIANUS (Gazæus), a Christian author in the 4th century, who wrote a work in Latin verse, intitled Instructions; the moral of which is excellent, but the verse extremely heavy. M. Davies published a fine edition of it in 1711, at the end of Minucius Felix.

COMMODITY, in a general sense, denotes all sorts of wares and merchandizes whatsoever that a person deals or trades in.

Staple Commodities, such wares and merchandizes as are commonly and readily sold in a market or exported abroad; being for the most part the proper produce or manufacture of the country.

COMMODORE, a general officer in the British marine, invested with the command of a detachment of ships of war destined on any particular enterprise, during which time he bears the rank of brigadier-general in the army, and is distinguished from the inferior ships of his squadron by a broad red pendant tapering towards the outer end, and sometimes forked. The word is corrupted from the Spanish, *comendador*.

COMMODORE is also a name given to some select ship in a fleet of merchantmen, who leads the van in time of war, and carries a light in his top to conduct the rest, and keep them together. He is always the oldest captain in the fleet he commands.

COMMODUS (L. Aurelius Antoninus), son of M. Antoninus, succeeded his father in the Roman empire. He was naturally cruel and fond of indulging his licentious propensities. He wished to be called Hercules; and, like that hero, he adorned his shoulders with a lion's skin, and armed his hand with a knotted club. He publicly fought with the gladiators, and boasted of his dexterity in killing the wild beasts in the amphitheatre. He required divine honours from the senate, and they were granted. He was wont to put such an immense quantity of gold dust in his hair, that when he appeared bare-headed in the sunshine, his head glittered as if surrounded with sun-beams. Marcia, one of his concubines, whose death he had prepared, poisoned him; but as the poison did not quickly operate, he was strangled by a wrestler. He died in the 31st year of his age, and the 13th of his reign. It has been observed, that he never trusted himself to a barber; but always burnt his beard, in imitation of the tyrant Dionysius. A. D. 192.

COMMON, COMMUNIS, something that belongs to all alike; is owned or allowed by all; and not confined to this more than that. In which sense, *common* stands

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opposed to *proper, peculiar, &c.* Thus, the earth is said to be our *common* mother; in the first or golden age all things were in *common*, as well as the sun and elements: the name animal is *common* to man and beast; that of substance to body and spirit.

COMMON, Communia, (i. e. *quod ad omnes pertinet*), in law, signifies that soil, the use whereof is common to a particular town or lordship; or it is a profit that a man hath in the land of another person, usually in common with others; or a right which a person hath to put his cattle to pasture into ground that is not his own. And there is not only common of pasture, but also common of piscary, common of estovers, common of turbary, &c. And in all cases of common, the law doth much respect the custom of the place; for there the rule is, *consuetudo loci est observanda*. See **COMMONTY**.

COMMON Council. See **COUNCIL**.

COMMON Law, that body of law received as rules in these kingdoms, before any statute was enacted in parliament to alter the same. See **LAW**, Part II. n^o 36.

COMMON-PLACE Book, is a register of what things occur, worthy to be noted, in the course of a man's thinking or study, so disposed as that among a number of subjects any one may be easily found. The advantages of making a common-place book are many: it not only makes a man read with accuracy and attention, but induces him insensibly to think for himself, provided he considers it not so much as a register of sentiments that strike him in the course of reading, but as a register of his own thoughts upon various subjects. Many valuable thoughts occur even to men of no extraordinary genius. These, without the assistance of a common-place book, are generally lost both to himself and others. There are various methods of arranging common-place books; that of Mr Locke is as good as any that have hitherto been contrived.

The first page of the book you intend to take down their common-place in, is to serve as a kind of index to the whole, and to contain references to every place or matter therein: in the commodious contrivance of which index, so as it may admit of a sufficient copia or variety of materials, without any confusion, all the secret of the method consists.

In order to this, the first page, as already mentioned, or, for more room, the two first pages that front each other, are to be divided, by parallel lines, into 25 equal parts; whereof every fifth line is to be distinguished by its colour or other circumstance. These lines are to be cut perpendicularly by others, drawn from top to bottom; and in the several spaces thereof, the several letters of the alphabet, both capital and minuscule, are to be duly wrote.

The form of the lines and divisions, both horizontal and perpendicular, with the manner of writing the letters therein, will be conceived from the following specimen; wherein, what is to be done in the book for all the letters of the alphabet, is here shown in the first four, *A, B, C, and D*.

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Common.

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B	i
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C	i
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The index of the common-place book thus formed, matters are ready for the taking down any thing therein.

In order to this, consider to what head the thing you would enter is most naturally referred; and under which one would be led to look for such a thing: in this head, or word, regard is had to the initial letter, and the first vowel that follows it; which are the characteristic letters whereon all the use of the index depends.

Suppose (*e. gr.*) I would enter down a passage that refers to the head *beauty*. *B*, I consider, is the initial letter, and *e* the first vowel: then, looking upon the index for the partition *B*, and therein the line *e* (which is the place for all words whose first letter is *b*, and first vowel *e*; as *beauty*, *beneficence*, *bread*, *breeding*, *blemishes*), and finding no numbers already down to direct me to any page of the book where words of this characteristic have been entered, I turn forward to the first blank page I find (which, in a fresh book, as this is supposed to be, will be page 2d), and here write what I have occasion for on the head *beauty*; beginning the head in the margin, and indenting all the other subservient lines, that the head may stand out and show itself: this done, I enter the page where it is wrote, *viz.* 2, in the index in the space *Be*; from which time, the class *be* becomes wholly in possession of the 2d and 3d pages, which are assigned to letters of this characteristic.

Had I found any page or number already entered in the space *Be*, I must have turned to the page, and have wrote my matter in what room was left therein: so, if after entering the passage on *beauty*, I should have occasion for *benevolence*, or the like, finding the number 2 already possessed of the space of this characteristic, I begin the passage on *benevolence* in the remainder of the page, which not containing the whole, I carry it on to page 3d, which is also for *be*; and add the number 3 in the index.

COMMON Pleas is one of the king's courts now held constantly in Westminster-hall, but in former times was moveable.

All civil causes, as well real as personal, are, or were formerly, tried in this court, according to the strict law of the land. In personal and mixed actions it has a concurrent jurisdiction with the king's bench, but has no cognizance of pleas of the crown. The actions belonging to the court of common pleas come thither by original, as arrests and outlawries; or by privilege, or attachment for or against privileged persons; or out of inferior courts, not of record, by *pone*, *recordari*, *accedas ad curiam*, writ of false judgment, &c.

The chief judge of this court is called *lord chief justice of the common pleas*, who is assisted by three other judges. The other officers of the court are the *custos brevium*, who is the chief clerk; three prothonotaries, and their secondaries; the clerk of the warrants, clerk of the essoins, 14 filazers, 4 exigentors, a clerk of the juries, the chirographer, the clerk of the king's silver, clerk of the treasury, clerk of the seal, clerk of the outlawries, clerk of the enrolment of fines and recoveries, and clerk of the errors.

COMMON-Prayer is the liturgy in the church of England: (See *LITURGY*.) Clergymen are to use the public form of prayers prescribed by the Book of Common Prayer; and refusing to do so, or using any other public prayers, are punishable by stat. 1 Eliz. c. ii.

COMMON, in grammar, denotes the gender of nouns which are equally applicable to both sexes: thus, *parens*, "a parent," is of the common gender.

COMMON, in geometry, is applied to an angle, line, or the like, which belongs equally to two figures.

COMMON Divisor, a quantity or number which exactly divides two or more other quantities or numbers, without leaving any remainder.

COMMONALTY, the lower of the two divisions of the civil state. See *CIVIL State*.

The commonalty, like the nobility, are divided into several degrees: and as the lords, though different in rank, yet all of them are peers in respect of their nobility; so the commoners, though some are greatly superior to others, yet all are in law commonalty, in respect of their want of nobility.

1. The first name of dignity next beneath a peer was anciently that of *vidames*, *vice-domini*, or *valvassors*: who are mentioned by our ancient lawyers as *viri magne dignitatis*; and Sir Edward Coke speaks highly of them. Yet they are now quite out of use; and our legal antiquarians are not agreed upon even their original or ancient office.

2. Now, therefore, the first personal dignity after the nobility is a knight of the order of St George, or of the garter, first instituted by Edw. III. A. D. 1344.

3. Next (but not till after certain official dignities, as privy-counsellors, the chancellors of the exchequer and duchy of Lancaster, the chief justice of the king's bench, the master of the rolls, and the other English judges), follows a *knight banneret*; who indeed, by statutes 5 Richard II. stat. 2. c. 4. and 14 Richard II. c. 11. is ranked next after barons; and his precedence before the younger sons of viscounts was confirmed to him by order of King James I. in the tenth year of his reign. But in order to intitle him to this rank, he must have been created by the king in person, in the field,

Common-field, under the royal banners, in time of open war ;
 y, else he ranks after
 Commoner.

4. *Baronets*; who are the next in order: which title is a dignity of inheritance, created by letters patent, and usually descendible to the issue-male. See *BARONETS*.

5. Next follow *knights of the Bath*. See *BATH*.

6. The last of these inferior nobility are *knights bachelors*; the most ancient, though the lowest, order of knighthood amongst us. See *BACHELOR*.

7. The above, with those enumerated under the article *NOBILITY*, Sir Edward Coke says, are all the names of *dignity* in this kingdom; *esquires* and *gentlemen* being only names of *worship*. But before these last the heralds rank all colonels, serjeants at law, and doctors in the three learned professions.

8. *Esquires* and *gentlemen* are confounded together by Sir Edward Coke; who observes, that every esquire is a gentleman, and a gentleman is defined to be one *qui arma gerit*, "who bears coat-armour;" the grant of which adds gentility to a man's family: in like manner as civil nobility among the Romans was founded in the *jus imaginum*, or having the image of one ancestor at least who had borne some curule office. It is indeed a matter somewhat unsettled what constitutes the distinction, or who is a real esquire; for it is not an estate, however large, that confers this rank upon its owner. Camden, who was himself a herald, distinguishes them the most accurately; and he reckons up four sorts of them: 1st, The eldest sons of knights, and their eldest sons, in perpetual succession. 2dly, The eldest sons of younger sons of peers, and their eldest sons, in like perpetual succession: both which species of esquires Sir Henry Spelman intitles *armigeri natalitii*. 3dly, Esquires created by the king's letters patent, or other investiture; and their eldest sons. 4thly, Esquires by virtue of their office; as justices of the peace and others who bear any office of trust under the crown. To these may be added the esquires of the knights of the bath, each of whom constitutes three at his installation; and all foreign, nay, Irish peers; for not only these, but the eldest sons of peers of Great Britain, though frequently titular lords, are only esquires in the law, and must be so named in all legal proceedings.

9. As for *gentlemen*, says Sir Thomas Smith, they be made good cheap in this kingdom: for whosoever studieth the laws of the realm, who studieth in the universities, who professeth liberal sciences, and (to be short) who can live idly and without manual labour, and will bear the part, charge, and countenance of a gentleman, he shall be called master, and shall be taken for a gentleman.

10. A *yeoman* is he that hath free land of 40s. by the year; who is thereby qualified to serve on juries, vote for knights of the shire, and do any other act where the law requires one that is *probus et legalis homo*.

11. The rest of the commonalty are *tradesmen*, *artificers*, and *labourers*; who (as well as all others) must, in pursuance of the statute 1 Henry V. c. 5. be stiled by the name and addition of their estate, degree, or mystery, in all actions and other legal proceedings.

COMMONER, or *GENTLEMAN-COMMONER*, in the universities, a student entered in a certain rank.

COMMONS, or *HOUSE OF COMMONS*, a denomination given to the lower house of parliament. See *PARLIAMENT*. Commons,
Commonty.

The commons consist of all such men of any property in the kingdom as have not seats in the house of lords, every one of whom has a voice in parliament, either personally or by his representatives. In a free state, every man, who is supposed a free agent, ought to be in some measure his own governor; and therefore a branch at least of the legislative power should reside in the whole body of the people. And this power, when the territories of the state are small, and its citizens easily known, should be exercised by the people in their aggregate or collective capacity, as was wisely ordained in the petty republics of Greece, and the first rudiments of the Roman state. But this will be highly inconvenient when the public territory is extended to any considerable degree, and the number of citizens is increased. Thus when, after the social war, all the burghers of Italy were admitted free citizens of Rome, and each had a vote in the public assemblies, it became impossible to distinguish the spurious from the real voter, and from that time all elections and popular deliberations grew tumultuous and disorderly; which paved the way for Marius and Sylla, Pompey and Cæsar, to trample on the liberties of their country, and at last to dissolve the commonwealth. In so large a state as ours, therefore, it is very wisely contrived, that the people should do that by their representatives which it is impracticable to perform in person; representatives chosen by a number of minute and separate districts, wherein all the voters are or may be easily distinguished. The counties are therefore represented by knights, elected by the proprietors of lands; the cities and boroughs are represented by citizens and burghesses, chosen by the mercantile or supposed trading interest of the nation; much in the same manner as the burghers in the diet of Sweden are chosen by the corporate towns, Stockholm sending four, as London does with us, other cities two, and some only one. The number of English representatives is 513, of Scots 45; in all 558; and every member, though chosen by one particular district, when elected and returned, serves for the whole realm: for the end of his coming thither is not particular, but general; not barely to advantage his constituents, but the commonwealth; to advise his majesty, as appears from the writ of summons, "de communi consilio super negotiis quibusdam arduis et urgentibus, regem, statum, et defensionem regni Angliæ et ecclesiæ Anglicanæ concernentibus." And therefore he is not bound, like a deputy in the United Provinces, to consult with, or take the advice of, his constituents upon any particular point, unless he himself thinks it proper or prudent so to do.

The peculiar laws and customs of the house of commons relate principally to the raising of taxes, and the elections of members to serve in parliament. See *TAXES* and *ELECTIONS*.

Doctors COMMONS. See *COLLEGE of Civilians*.

Proctor of the COMMONS. See *PROCTOR*.

COMMONTY, in Scots law, sometimes signifies lands belonging to two or more common proprietors; sometimes a heath or muir though it should belong

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Communion.

long in property to one, if there has been a promiscuous possession upon it by pasturage; and the act 1695, mentions commonies belonging in property to the king and to royal boroughs. See LAW, Part III. N^o cxxxv. 16.

COMMONWEALTH. See REPUBLIC.

COMMOTE, an ancient term in Wales, denoting half a cantred, or hundred; containing 50 villages. See HUNDRED. Wales was anciently divided into three provinces; each of these subdivided into cantreds, and every cantred into two commotes or hundreds. Silvester Girald, however, tells us in his itinerary, that a commote is but a quarter of a hundred.

COMMUNES, in botany, the name of a class in Linnæus's *methodus Calycina*, consisting of two plants which, like teazel and dandelion, have a calyx or flower-cup common to many flowers or florets. These are the aggregate or compound flowers of other systems.

COMMUNIBUS LOCIS, a Latin term, in frequent use among philosophical, &c. writers; implying some medium, or mean relation, between several places. Dr Keil supposes the ocean to be one quarter of a mile deep, *communibus locis, q. d.* at a medium, or taking one place with another.

COMMUNIBUS ANNIS, has the same import with regard to years, that *communibus locis* has with regard to places. Mr Derham observes that the depth of rain, *communibus annis*, or one year with another, were it to stagnate on the earth, would amount in Townley in Lancashire, to 42½ inches; at Upminster in Essex, to 19½; at Zurich, 32½; at Pisa, 43½; and at Paris to 19 inches.

COMMUNICATING, in theology, the act of receiving the sacrament of the eucharist. Those of the reformed, and of the Greek church, communicate under both kinds; those of the Romish, under only one. The oriental communicants receive the species of wine by a spoon, and anciently they sucked it through a pipe, as has been observed by Beat. Rheanus on Tertullian.

COMMUNICATION, in a general sense, the act of imparting something to another.

COMMUNICATION is also used for the connection of one thing with another, or the passage from one place to another: thus a gallery is a communication between two apartments.

COMMUNICATION of motion, the act whereby a body at rest is put into motion by a moving body; or, it is the acceleration of motion in a body already moving.

Lines of COMMUNICATION, in military matters, trenches made to continue and preserve a safe correspondence between two forts or posts; or at a siege, between two approaches, that they may relieve one another.

Canal of COMMUNICATION. See CANAL.

COMMUNION, in matters of religion, the being united in doctrine and discipline; in which sense of the word, different churches are said to hold communion with each other.

In the primitive Christian church, every bishop was obliged, after his ordination, to send circular letters to foreign churches, to signify that he was in communion with them: The three grand communions into which the Christian church is at present divided, is

that of the church of Rome, the Greek church, and the Protestant church: but originally all Christians were in communion with each other, having one common faith and discipline.

Communion.

COMMUNION is also used for the act of communicating the sacrament of the eucharist, or the Lord's supper.

The fourth council of Lateran decrees, that every believer shall receive the communion, at least, at Easter; which seems to import a tacit desire, that they should do it oftener; as, in effect, they did it much oftener in the primitive days. Gratian, and the master of the sentences, prescribe it as a rule for the laity, to communicate three times a-year, at Easter, Whitsuntide, and Christmas. But in the 13th century, the practice was got on foot, never to approach the eucharist except at Easter; and the council thought fit to enjoin it then by a law, lest their coldness and remissness should go farther still. And the council of Trent renewed the same injunction, and recommended frequent communion without enforcing it by an express decree.

In the ninth century, the communion was still received by the laity in both kinds; or, rather, the species of bread was dipped in the wine, as is owned by the Romanists themselves. (Acta SS. Benedict. Sæc. III.) M. de Marca observes, that they received it at first in their hands, Hist. de Bearn. and believes the communion under one kind alone to have had its rise in the West under pope Urban II. in 1096, at the time of the conquest of the Holy Land. And it was more solemnly enjoined by the council of Constance in 1414. The twenty-eighth canon of the council of Clermont enjoins the communion to be received under both kinds, distinctly; adding, however, two exceptions; the one of necessity, the other of caution, *nisi per necessitatem & cautelam*; the first in favour of the sick, the second of the abstemious, or those who had an aversion for wine.

It was formerly a kind of canonical punishment, for clerks guilty of any crime, to be reduced to *lay communion*, i. e. only to receive it as the laity did, viz. under one kind.

They had another punishment of the same nature, though under a different name, called *foreign communion*; to which the canons frequently condemned their bishops and other clerks. This punishment was not any excommunication, or deposition; but a kind of suspension from the function of the order, and a degradation from the rank they held in the church. It had its name because the communion was only granted to the criminal on the foot of a foreign clerk, i. e. being reduced to the lowest of his order, he took place after all those of his rank, as all clerks, &c. did in the churches to which they did not belong. The second council of Agda orders every clerk that absents himself from the church to be reduced to foreign communion.

COMMUNION Service, in the liturgy of the church of England, the office for the administration of the holy sacrament, extracted from several ancient liturgies, as those of St Basil, St Ambrose, &c.

By the last rubric, part of this service is appointed to be read every Sunday and holyday, after the morning prayer, even though there be no communicants.

COMMUNITY, denotes a society of men living in the same place, under the same laws, the same regulations, and the same customs.

COMMUTATION, in law, the change of a penalty or punishment from a greater to a less; as when death is commuted for banishment, &c.

COMNENA (Ann) daughter of Alexus Comnenus emperor of the East; memorable for her great learning and virtue, and for her History of the life and actions of her father, which is highly esteemed. She flourished about the year 1117. The history, which is in 15 books, was first published very imperfectly by Heschelius in 1610; and afterwards printed in the collection of the Byzantine historians, with a diffuse and incorrect Latin version by the Jesuit Possinus, but with excellent notes by the learned Du Fresne.

COMO, a strong and populous town of Italy, in the duchy of Milan, and in the Comasco, with a bishop's see. It was taken by the Imperialists in 1706, and is seated on a lake of the same name in E. Long. 8. 57. N. Lat. 45. 45.

COMO, the lake so called, is the largest in Italy. It is situated in the duchy of Milan in the Comasco, on the confines of Swisserland and the Grisons. It is 88 miles in circumference, yet is not above 6 miles over in any part.

COMORA islands, lie between the north end of the island of Madagascar and the coast of Zanguebar, from 10 to 15 degrees south latitude. Authors differ greatly with regard to their number, some speaking of three, others of five, and some of eight of these islands. They all abound in horned cattle, sheep, hogs, and a variety of fruits common in warm countries. They are said also to produce a kind of rice which turns of a violet colour when boiled. The most remarkable of them, and which the Europeans are best acquainted with, is the island of Johanna. See that article.

COMORIN, or **CAPE COMORIN**, the most southerly promontory of the Hither India, lying north-west of the island of Ceylon.

COMORRA, a handsome and large town of Lower Hungary, and capital of a territory of the same name. It is so well fortified, that the Turks could never take it. The greatest part of the inhabitants are Hungarians or Russians, who are very rich, and are of the Greek religion. It is seated on the river Danube, in the island of Sihut. E. Long. 18. 25. N. Lat. 47. 50.

COMOSÆ, in botany, from *Coma*. An order of plants in the former editions of Linnæus's Fragments of a Natural Method, consisting of the spiked willow or spiræa frutex, dropwort, and greater meadow-sweet. These, though formerly distinct genera, are by Linnæus collected into one, under the name of *spiræa*. The flowers growing in a head, resemble a bush, or tuft of hair, which probably gave rise to the epithet *Comosæ*.

COMPACT, in philosophy, is said of bodies which are of a close, dense, and heavy texture, with few pores, and those very small.

COMPACT, in a legal sense, signifies an agreement, or contract stipulated between several parties.

COMPANION, one with whom a man frequently converses.

As the human mind cannot always be on the stretch, nor the hands always employed in labour, recreation becomes both agreeable and necessary. Of all recreations, that of the company of a few chosen companions must be allowed to be the most manly and most improving: but as in those hours of recreation we are most in danger of being misled, being generally at such seasons more off our guard than usual, the greatest care should be taken in making choice of which to associate with; for according to our choice of them, both our character and disposition will receive a tincture, as waters passing through minerals partake of their taste and efficacy. This is a truth so universally received, that it is become a proverb both in the natural and moral world, That a man is known by his company. As by chemistry we learn, that discordant mixtures produce nothing but broil and fermentation till one of them gets the ascendancy of the rest; so from scripture we learn, that two cannot walk together except they be agreed. From which we may see, how impossible it is for any one to be thought a person of real goodness and integrity, whilst he chooseth for his companions the abandoned and licentious.

By herding with such, he will not only lose his character, but his virtue; for whatever fallacious distinction he may be pleased to make between the men and their vices, in the end the first generally qualifies the last; and by ceasing to hate them he will soon learn both to love and practise them. In short, the society of sensual men is peculiarly ensnaring. The malignity of their contagion doth not appear all at once. Their frolics first appear harmless; then, when partaken of, they leave a longing relish behind them; and one appointment makes way for another, one expence leads on to a second; and so time and fortune are wasted away to very bad purpose. Then one appetite craves, and another must be gratified, till all become too impotent to be denied; which verifies what the wisest of men long since said, "That the beginning of sin is like the breaking forth of waters, which when it once maketh an entrance, carrieth all before it with rushing impetuosity." Some pangs of remorse may be felt by the infatuated creature on his first degeneracy, and some faint resolutions against being seduced any more; which will no sooner be discovered by those leaders to destruction, but all arts will be used to allure him back to bear them company in the broad beaten path to ruin. Of all which methods, none is more to be dreaded than raillery; for this is generally exercised with all its force, and too often proves fatal. Another method used to mislead the young novice not yet hackneyed in vice, and no less dangerous than the other, is to call evil good, and good evil. Lust and sensuality must pass for love and gallantry; revenge and malice, for heroism. But steadiness should be shown, by holding such pests of society in derision, and looking on them with contempt; by appearing unmoved by their ill founded banter, and unflung by their impious jests.

Upon the whole, in order to escape the danger which attends the keeping of evil company, let those you associate with be persons as carefully educated and as honestly disposed as yourself; of a good moral character, not given to any known vice; whose lives are temperate, and whose expences are moderate: with such

Company. such company as these, you will neither get discredit, nor degenerate into excess. You will be a mutual check to each other; and your reputation will be established, that it will be the ambition of others to be admitted members of your society. Select those for your companions who are men of good sense and understanding; and, if possible, who excel in some art, science, or accomplishment; that so, in the course of your acquaintance, your very hours of amusement may contribute to your improvement; and for the most part such are open and communicative, and take as much pleasure in being heard as you to be informed. By pursuing such a conduct, you will be an ornament and useful member of society.

COMPANY, a collective term, understood of several persons assembled together in the same place, or with the same design. The word is formed of the French *compagnie*, and that of *companion*, or *companies*, which, Chifflet observes, are found in the Salic law, tit. 66. and are properly military words, understood of soldiers, who, according to the modern phrase, are comrades or mess-mates, i. e. lodge together, eat together, &c. of the Latin *cum* "with", and *panis* "bread." It may be added, that in some Greek authors under the western empire, the word *κωμπανια* occurs in the sense of society.

COMPANY, in a familiar or fashionable sense, is used for an assemblage of persons met for the purpose of conversation, pastime, or festivity.

The love of company and of social pleasures is natural, and attended with some of the sweetest satisfactions of human life; but, like every other love, when it proceeds beyond the limits of moderation, it ceases to produce its natural effect, and terminates in disgustful satiety. The foundation-stone and the pillar on which we build the fabric of our felicity, must be laid in our own hearts. Amusement, mirth, agreeable variety, and even improvement, may be sometimes sought in the gaiety of mixed company, and in the usual diversions of the world; but if we found our general happiness on these, we shall do little more than raise castles in the air, or build houses on the sand.

To derive the proper pleasure and improvement from company, it ought to be select, and to consist of persons of character, respectable both for their morals and their understandings. Mixed and undistinguished society tends only to dissipate our ideas, and induce a laxity of principles and practice. The pleasure it affords is of a coarse, mixed, noisy, and rude kind. Indeed, it commonly ends in weariness and disgust, as even they are ready to confess who yet constantly pursue it, as if their chief good consisted in living in a crowd.

Among those, indeed, who are exempted by their circumstances from professional and official employments, and who professedly devote themselves to a life of pleasure, little else seems to constitute the idea of it, but an unceasing succession of company, public or private. The dress, and other circumstances preparatory to the enjoyment of this pleasure, scarcely leave a moment for reflection. Day after day is spent in the same toilsome round, till a habit is formed, which renders dissipation necessary to existence. One week without it would probably induce a lowness of spirits, which might termi-

nate in despair and suicide. When the mind has no anchor, it will suffer a kind of shipwreck; it will sink in whirlpools, and be dashed on rocks. What, indeed, is life or its enjoyments without settled principles, laudable purposes, mental exertions, and internal comfort? It is merely a vapour, or, to drop the language of figure on so serious a subject, it is a state worse than non-entity, since it possesses a restless power of action, productive of nothing but misery.

It is recommended, therefore, to all who wish to enjoy their existence (and who entertains not that wish?), that they should acquire a power not only of bearing, but of taking a pleasure in, temporary solitude. Every one must, indeed, sometimes be alone. Let him not repine when he is alone, but learn to set a value on the golden moments. It is then that he is enabled to study himself and the world around him. It is then that he has an opportunity of seeing things as they are, and of removing the deceitful veil, which almost every thing assumes in the busy scene of worldly employments. The soul is enabled to retire into herself, and to exert those energies which are always attended with sublime pleasure. She is enabled to see the dependent, frail, and wretched state of man as the child of nature; and incited by her discovery, to explore grace and protection from the Lord of the universe. They, indeed, who fly from solitude, can seldom be religious; for religion requires meditation. They may be said to "live without God in the world;" not, it is true, from atheistical principles, but from a carelessness of disposition; a truly deplorable state, the consciousness of which could not fail to cloud the gaiety of those halcyon beings who sport in the sunshine of unremitted pleasure.

There is no doubt but that man is made for action, and that his duties and pleasures are often most numerous and most important amidst the busy hum of men. Many vices, and many corrupt dispositions, have been fostered in a solitary life. Monks are not favourable to human nature or human happiness; but neither is unlimited dissipation.

In short, let there be a sweet interchange of retirement and association, of repose and activity. A few hours spent every day by the votaries of pleasure in serious meditation, would render their pleasure pure, and more unmixed with misery. It would give them knowledge, so that they would see how far they might advance in their pursuit without danger; and resolution, so that they might retreat when danger approached. It would teach them how to live, a knowledge which indeed they think they possess already; and it would also teach them, what they are often too little solicitous to learn, how to die.

COMPANY, in a commercial sense, is a society of merchants, mechanics, or other traders, joined together in one common interest.

When there are only two or three joined in this manner, it is called a partnership; the term *company* being restrained to societies consisting of a considerable number of members, associated together by a charter obtained from the prince.

The mechanics of all corporations, or towns incorporated, are thus erected into companies, which have charters of privileges and large immunities.

COMPANY seems more particularly appropriated to those

Company. those grand associations set on foot for the commerce of the remote parts of the world, and vested by charter with peculiar privileges.

When companies do not trade upon a joint stock, but are obliged to admit any person, properly qualified, upon paying a certain fine and agreeing to submit to the regulations of the company, each member trading upon his own stock and at his own risk, they are called *Regulated Companies*. When they trade upon a joint stock, each member sharing in the common profit or loss in proportion to his share in this stock, they are called *Joint-stock Companies*. Such companies, whether regulated or joint-stock, sometimes have, and sometimes have not, exclusive privileges.

However injurious companies with joint-stock, and incorporated with exclusive privileges, may at this time be reckoned to the nation in general, it is yet certain that they were the general parent of all our foreign commerce; private traders being discouraged from hazarding their fortunes in foreign countries, until the method of traffic had been first settled by joint-stock companies. But since the trade of this kingdom and the number of traders have increased, and the methods of assurance of shipping and merchandize, and the navigation to all parts of the known world, have become familiar to us, these companies, in the opinions of most men, have been looked upon in the light of monopolies; their privileges have therefore been lessened from time to time, in order to favour a free and general trade: and experience has shown, that the trade of the nation has advanced in proportion as monopolies have been discouraged. In short, as all restrictions of trade are found to be hurtful, nothing can be more evident, than that no company whatsoever, whether they trade in a joint stock or only under regulation, can be for the public good, except it may be easy for all or any of his majesty's subjects to be admitted into all or any of the said companies, at any time, and for a very inconsiderable fine.

I. REGULATED Companies resemble, in every respect, the corporations of trades, so common in the cities and towns of all the different countries of Europe; and are a sort of enlarged monopolies of the same kind. As no inhabitant of a town can exercise an incorporated trade, without first obtaining his freedom in the corporation; so in most cases no subject of the state can lawfully carry on any branch of foreign trade, for which a regulated company is established, without first becoming a member of that company. The monopoly is more or less strict according as the terms of admission are more or less difficult; and according as the directors of the company have more or less authority, or have it more or less in their power to manage in such a manner as to confine the greater part of the trade to themselves and their particular friends. In the most ancient regulated companies the privileges of apprenticeship were the same as in other corporations; and intitled the person who had served his time to a member of the company, to become himself a member, either without paying any fine, or upon paying a much smaller one than what was exacted of other people. The usual corporation spirit, wherever the law does not restrain it, prevails in all regulated companies. When they have been allowed to act according to their natural genius, they have always, in or-

der to confine the competition to as small a number of persons as possible, endeavoured to subject the trade to many burdensome regulations. When the law has restrained them from doing this, they have become altogether useless and insignificant.

The regulated companies for foreign commerce, which at present subsist in Great Britain, are, The *Hamburg Company*, The *Russia Company*, the *Eastland Company*, the *Turkey Company*, and the *African Company*.

1. *The Hamburg Company* is the oldest trading establishment in the kingdom; though not always known by that name, nor restrained to those narrow bounds under which it is now confined. It was first called the *Company of merchants trading to Calais, Holland, Zealand, Brabant, and Flanders*: then it acquired the general title of *Merchant-adventurers of England*; as being composed of all the English merchants who traded to the Low Countries, the Baltic, and the German ocean. Lastly, it was called the *Company of Merchant-adventurers of England trading to Hamburg*.

This company was first incorporated by Edward I. in 1296; and established again, by charter, in 1406, under the reign of king Henry IV. It was afterwards confirmed, and augmented with divers privileges, by many of his successors. Before the charter of Henry IV. all the English merchants who trafficked out of the realm, were left to their own discretion, and managed their affairs with foreigners as might be most for their respective interests, without any regard to the general commerce of the nation. Henry, observing this disorder, endeavoured to remedy it, by uniting all the merchants in his dominions into one body; wherein, without losing the liberty of trading each for himself, they might be governed by a company still subsisting; and be subject to regulations, which should secure the general interest of the national commerce, without prejudice to the interest of particulars. With this view, he granted all the merchants of his states, particularly those of Calais, then in his hands, a power of associating themselves into a body politic, with directors and governors, both in England and abroad; to hold assemblies, both for the direction of business and the deciding of controversies among merchants; make laws; punish delinquents; and impose moderate duties and taxes on merchandizes, and merchants, to be employed in the service of the corporation. These few articles of the charter of Henry IV. were afterwards much augmented by Henry VII. who first gave them the title of *Merchant-adventurers to Calais, Holland, &c.* gave them a power of proclaiming and continuing free fairs at Calais; and ordered, that to be reputed a member of the society, each person pay twenty marks sterling; and that the several members should attend the general meetings, or courts, appointed by the directors, whether at London, Calais, or elsewhere.

A petition being made to queen Elizabeth, in 1564, for an explanation of certain articles in the charter of Henry VII. and a confirmation of the rest granted by other kings; that princess, by a charter of the same year, declares, that to end all disputes, they shall be incorporated anew, under the title of the *Company of Merchant-adventurers of England*; that all who were members of the former company should, if they desired

Company. fired it, be admitted members of this; that they should have a common seal; that they should admit into their society what other persons, and on what terms, they pleased, and expel them again on misbehaviour; that the city of Hamburg and neighbouring cities should be reputed within their grant, together with those of the Low Countries, &c. in that of the former company; that no member should marry out of the kingdom, nor purchase lands, &c. in any city beyond sea; and that those who do, shall be, *ipso facto*, excluded for ever. Twenty-two years after this first charter, queen Elizabeth granted them a second; confirming the former, and further granting them a privilege of exclusion; with a power of erecting in each city within their grant a standing council.

The revolutions which happened in the Low Countries towards the end of the sixteenth century, and which laid the foundation of the republic of Holland, having hindered the company from continuing their commerce with their ancient freedom; it was obliged to turn it almost wholly to the side of Hamburg, and the cities on the German ocean: from which change, some people took occasion to change its name to that of the *Hamburg Company*; though the ancient title of *Merchant-adventurers* is still retained in all their writings.

About the middle of the last century, the fine for admission was fifty, and at one time one hundred pounds, and the conduct of the company was said to be extremely oppressive. In 1643, in 1645, and in 1661, the clothiers and free traders of the west of England complained of them to parliament, as of monopolists who confined the trade and oppressed the manufactures of the country. Though those complaints produced no act of parliament, they had probably intimidated the company so far, as to oblige them to reform their conduct. The terms of admission are now said to be quite easy; and the directors either have it not in their power to subject the trade to any burdensome restraint or regulations, or at least have not of late exercised that power.

2. *The Russia Company* was first projected towards the end of the reign of king Edward VI. executed in the first and second years of Philip and Mary; but had not its perfection till its charter was confirmed by act of parliament, under queen Elizabeth, in 1566. It had its rise from certain adventurers, who were sent in three vessels on the discovery of new countries; and to find out a north-east passage to China: these, falling into the White Sea, and making up to the port of Archangel, were exceedingly well received by the Muscovites; and, at their return, solicited letters patent to secure to themselves the commerce of Russia, for which they had formed an association.

By their charter, the association was declared a body politic, under the name of the *Company of Merchant-adventurers of England, for the discovery of lands, territories, islands, &c. unknown, or unfrequented*. Their privileges were, to have a governor, four consuls, and twenty-four assistants, for their commerce; for their policy, to make laws, inflict penalties, send out ships to make discoveries, take possession of them in the king's name, set up the banner royal of England, plant them; and lastly, the exclusive privilege of tra-

ding to Archangel, and other ports of Muscovy, not yet frequented by the English. Company.

This charter, not being sufficiently guarded, was confirmed by parliament in the eighth year of queen Elizabeth; wherein it was enacted, that in regard the former name was too long, they should now be called *Company of English Merchants for discovering new trades*; under which name, they should be capable of acquiring and holding all kind of lands, manors, rents, &c. not exceeding a hundred marks *per ann.* and not held of her majesty; that no part of the continent, island, harbour, &c. not known or frequented before the first enterprise of the merchants of their company, situated to the north, or north-west, or north-east of London; nor any part of the continent, islands, &c. under the obedience of the emperor of Russia, or in the countries of Armenia, Media, Hyrcania, Persia, or the Caspian sea, should be visited by any subjects of England, to exercise any commerce, without the consent of the said company, on pain of confiscation. The said company shall use no ships in her new commerce but those of the nation; nor transport any cloths, serges, or other woollen stuffs, till they have been dyed and pressed. That in case the company discontinue of itself to unload commodities in the road of the abbey of S. Nicolas, in Russia, or some other port, on the north coasts of Russia, for the space of three years, the other subjects of England shall be allowed to traffic to Narva, while the said company discontinues its commerce into Russia, only using English vessels.

This company subsisted with reputation almost a whole century, till the time of the civil wars. It is said, the czar then reigning, hearing of the murder of king Charles I. ordered all the English in his states to be expelled; which the Dutch taking the advantage of, settled in their room. After the Restoration, the remains of the company re-established part of their commerce at Archangel, but never with the same success as before; the Russians being now well accustomed to the Dutch merchants and merchandize.

This company subsists still, under the direction of a governor, four consuls, and assistants. By the 10th and 11th of William III. c. 6. the fine for admission was reduced to 5l.

3. *The Eastland Company* was incorporated by queen Elizabeth. Its charter is dated in the year 1579. By the first article the company is erected into a body politic, under the title of the *Company of Merchants of the East*; to consist of Englishmen, all real merchants, who have exercised the business thereof, and trafficked thro' the Sound, before the year 1568, into Norway, Sweden, Poland, Livonia, Prussia, Pomerania, &c. as also Revel, Coningsberg, Dantzick, Copenhagen, &c. excepting Narva, Muscovy, and its dependencies. Most of the following articles grant them the usual prerogatives of such companies; as a seal, governor, courts, laws, &c.

The privileges peculiar to this company are, that none shall be admitted a member who is already a member of any other company; nor any retail-dealer at all. That no merchant qualified be admitted without paying six pounds thirteen shillings and six-pence. That a member of another company, desiring to renounce the privileges thereof, and to be received into that

Company. that of the East, shall be admitted *gratis*; provided he procures the same favour for a merchant of the East willing to fill his place. That the merchant-adventurers who never dealt in the East, in the places expressed in the charter, may be received as members of the company on paying forty marks; that, notwithstanding this union of the Adventurers of England with the Company of the East, each shall retain its rights and privileges. That they shall export no cloths but what are dyed and pressed, except a hundred pieces *per annum*, which are allowed them *gratis*. This charter was confirmed by Charles II. in 1629, with this addition, that no person, of what quality soever, living in London, should be admitted a member, unless he were free of the city. This company was complained of as a monopoly, and first curtailed by legal authority in 1672; and since the declaration of rights in 1689, exist only in name; but still continue to elect their annual officers, who are a governor, a deputy, and twenty-four assistants.

4. *The Turky or Levant Company*, had its rise under queen Elizabeth, in 1581. James I. confirmed its charter in 1605, adding new privileges. During the civil wars, there happened some innovations in the government of the company; many persons having been admitted members, not qualified by the charters of queen Elizabeth and king James, or that did not conform to the regulations prescribed. Charles II. upon his restoration, endeavoured to set it upon its ancient basis; to which end, he gave them a charter, containing not only a confirmation of their old one, but also several new articles of reformation. By this, the company is erected into a body politic, capable of making laws, &c. under the title of the *Company of Merchants of England trading to the seas of the Levant*. The number of members is not limited, but is ordinarily about three hundred. The principal qualification required is, that the candidate be a freeman of London, and a wholesale merchant, either by family or by serving an apprenticeship of seven years. Those under twenty-five years of age pay 25 l sterling at their admission; those above, twice as much. This fine was reduced by act of parliament, in 1753, to 20 l. and the privilege of admission extended to every British subject. Each makes oath at his entrance not to send any merchandizes to the Levant but on his own account; and not to consign them to any but the company's agents or factors. This restriction is likewise enlarged by the above mentioned statute.

The company has a court or board at London, which is composed of a governor, deputy-governor, and sixteen directors or assistants; who are all actually to live in London or the suburbs. They have also a deputy-governor in every city and port, where there are any members of the company. The assembly at London sends out the vessels, regulates the tariff for the price at which the European merchandizes sent to the Levant are to be sold, and for the quality of those returned. It raises taxes on merchandizes, to defray impositions, and the common expences of the company; presents the ambassador which the king is to keep at the Porte, elects two consuls for Smyrna and Constantinople, &c.

One of the best regulations of the company is, not to leave the consuls, or even ambassador, to fix the im-

position on vessels for defraying the common expences *Company.* (a thing fatal to the companies of most other nations); but to allow a pension to the ambassador and consuls, and even to the chief officers, as secretary, chaplain, interpreters, and janizaries, that there may not be any pretence for their raising any sum at all on the merchants or merchandizes.

In extraordinary cases, the consuls, and even the ambassador, have recourse to two deputies of the company, residing in the Levant; or, if the affair be very important, they assemble the whole body. Here are regulated the presents to be given, the voyages to be made, and every thing to be deliberated; and on the resolutions here taken, the deputies appoint the treasurer to furnish the moneys, &c. required.

The ordinary commerce of this company employs from 20 to 25 vessels, carrying from 25 to 30 pieces of cannon. The merchandizes exported thither are, cloths of all kinds and colours, pewter, lead, pepper, cochineal, and a great deal of silver, which they take up at Cadiz: the returns are in raw silk, galls, camlets, wools, cottons, Morocco leather, ashes for making glass and soap, and several gums and medicinal drugs. The commerce to Smyrna, Constantinople, and Scanderoon, is not esteemed much less considerable than that of the East India company; but is, doubtless, more advantageous to Britain; because it takes off much more of the British manufactures than the other, which is chiefly carried on in money. The places reserved for the commerce of this company are, all the states of Venice, in the gulph of Venice; the state of Ragusa; all the states of the grand seignior, and the ports of the Levant and Mediterranean; excepting Carthage, Alicant, Barcelona, Valencia, Marseilles, Toulon, Genoa, Leghorn, Civita Vecchia, Palermo, Messina, Malta, Majorca, Minorca, and Corfica; and other places on the coasts of France, Spain, and Italy.

5. *The Company of Merchants trading to Africa*, established in 1750. Contrary to the former practice with regard to regulated companies, who were reckoned unfit for such sort of service, this company was subjected to the obligation of maintaining forts and garrisons. It was expressly charged at first with the maintenance of all the British forts and garrisons that lie between Cape Blanc and the Cape of Good Hope, and afterwards with that of those only which lie between Cape Rouge and the Cape of Good Hope. The act which establishes this company (the 23d of George II. c. 31.) seems to have had two distinct objects in view; first, to restrain effectually the oppressive and monopolizing spirit which is natural to the directors of a regulated company; and, secondly, to force them as much as possible to give an attention, which is not natural to them, towards the maintenance of forts and garrisons.

For the first of these purposes, the fine for admission is limited to forty shillings. The company is prohibited from trading in their corporate capacity, or upon a joint stock; from borrowing money upon common seal, or from laying any restraints upon the trade which may be carried on freely from all places, and by all persons being British subjects, and paying the fine. The government is in a committee of nine persons who meet at London, but who are chosen annually by the

Company. freemen of the company at London, Bristol, and Liverpool; three from each place. No committee-man can be continued in office for more than three years together. Any committee-man might be removed by the board of trade and plantations; now by a committee of council, after being heard in his own defence. The committee are forbid to export negroes from Africa, or to import any African goods into Great Britain. But as they are charged with the maintenance of forts and garrisons, they may for that purpose export from Great Britain to Africa goods and stores of different kinds. Out of the money which they shall receive from the company, they are allowed a sum not exceeding eight hundred pounds for the salaries of their clerks and agents at London, Bristol, and Liverpool; the house-rent of their office at London; and all other expences of management, commission, and agency, in England. What remains of this sum, after defraying those different expences, they may divide among themselves, as compensation for their trouble, in what manner they think proper. "By this constitution, it might have been expected (Dr Smith observes), that the spirit of monopoly would have been effectually restrained, and the first of these purposes sufficiently answered. It would seem, however, that it had not. Though by the 4th of George III. c. 20. the fort of Senegal, with all its dependencies, had been vested in the company of merchants trading to Africa, yet in the year following (by the 5th of George III. c. 44.), not only Senegal and its dependencies, but the whole coast from the port of Sallee, in South Barbary, to Cape Rouge, was exempted from the jurisdiction of that company, was vested in the crown, and the trade to it declared free to all his majesty's subjects. The company had been suspected of restraining the trade, and of establishing some sort of improper monopoly. It is not, however, very easy to conceive how, under the regulations of the 23d George II. they could do so. From the printed debates of the house of commons (not always the most authentic records of truth), it appears, however, that they have been accused of this. The members of the committee of nine being all merchants, and the governors and factors, in their different forts and settlements, being all dependent upon them, it is not unlikely that the latter might have given peculiar attention to the consignments and commissions of the former, which would establish a real monopoly."

For the second purpose mentioned, the maintenance of the forts and garrisons, an annual sum has been allotted to them by parliament, generally about 13,000l. For the proper application of this sum, the committee is obliged to account annually to the curfitor baron of exchequer; which account is afterwards to be laid before parliament. "But parliament (continues our author), which gives so little attention to the application of millions, is not likely to give much to that of 13,000l. a year; and the curfitor baron of exchequer, from his profession and education, is not likely to be profoundly skilled in the proper expence of forts and garrisons. The captains of his majesty's navy, indeed, or any other commissioned officers, appointed by the board of admiralty, may enquire into the condition of the forts and garrisons, and report their observations to that board. But that board seems to have no di-

rect jurisdiction over the committee, nor any authority to correct those whose conduct it may thus enquire into; and the captains of his majesty's navy, besides, are not supposed to be always deeply learned in the science of fortification. Removal from an office, which can be enjoyed only for the term of three years, and of which the lawful emoluments, even during that term, are so very small, seems to be the utmost punishment to which any committee-man is liable; for any fault, except direct malversation, or embezzlement either of the public money or of that of the company, and the fear of that punishment, can never be a motive of sufficient weight to force a continual and careful attention to a business to which he has no other interest to attend. The committee are accused of having sent out bricks and stones from England for the reparation of Cape Coast Castle on the coast of Guinea, a business for which parliament had several times granted an extraordinary sum of money. These bricks and stones too, which had thus been sent upon so long a voyage, were said to have been of so bad a quality, that it was necessary to rebuild from the foundation the walls which had been repaired with them. The forts and garrisons which lie north of Cape Rouge, are not only maintained at the expence of the state, but are under the immediate government of the executive power; and why those which lie south of that Cape, and which too are, in part at least, maintained at the expence of the state, should be under a different government, it seems not very easy even to imagine a good reason."

The above company succeeded that called *The Royal African Company*, which traded upon a joint stock with an exclusive privilege. Though England began to trade to Africa as early as the year 1536, and several voyages were made to Guinea in 1588, and some following years, for the importation of gold and elephants teeth, nothing like a company was formed till the year 1588, when queen Elizabeth granted a patent of exclusive privilege to certain persons for ten years. In 1618, king James I. established a company by charter, which was soon dissolved. Another company was erected by charter of Charles I. in 1631, which met with little success; but the demand for negroes in the English American plantations increasing, a third company was established by a charter granted 1662, in favour of the duke of York; securing to him the commerce of all the country, coasts, islands, &c. belonging to the crown of England, or not possessed by any other Christian prince; from Cape Blanco in 20° N. Lat. to the Cape of Good Hope in 34° 34' S. Lat. The charter was soon after returned into the king's hands by the duke, and revoked, by consent of the parties associated with him in the enterprize; in consequence of which, the fourth and last exclusive company was established and incorporated by letters patent in 1672, under the title of the *Royal African Company*. A capital was soon raised of 111,000l. and this new company improved their trade, and increased their forts; but after the Revolution in 1689, this trade was laid open. In 1698, all private traders to Africa were obliged by stat. 9 and 10 Will. to pay ten *per cent.* in order to assist the company in maintaining their forts and factories. But notwithstanding this heavy tax, the company were still unable to maintain the competition; their stock and credit gradually declined.

In 1712, their debts had become so great, that a particular act of parliament was thought necessary, both for their security and for that of their creditors. It was enacted, that the resolution of two-thirds of these creditors in number and value, should bind the rest, both with regard to the time which should be allowed to the company for the payment of their debts, and with regard to any other agreement which it might be thought proper to make with them concerning those debts. In 1730, their affairs were in so great disorder, that they were altogether incapable of maintaining their forts and garrisons; the sole purpose and pretext of their institution. From that year till their final dissolution, the parliament judged it necessary to allow the annual sum of ten thousand pounds for that purpose. In 1732, after having been for many years losers by the trade of carrying negroes to the West Indies, they at last resolved to give it up altogether; to sell to the private traders to America the negroes which they purchased upon the coast; and to employ their servants in a trade to the inland parts of Africa for gold dust, elephants teeth, dyeing drugs, &c. But their success in this more confined trade was not greater than in their former extensive one. Their affairs continued to go gradually to decline, till at last being in every respect a bankrupt company, they were dissolved by act of parliament, and their forts and garrisons vested in the present *Regulated Company of Merchants trading to Africa*.

II. JOINT-STOCK COMPANIES, established either by royal charter or by act of parliament, differ in several respects, not only from regulated companies, but from private copartneries. 1. In a private copartnery, no partner, without the consent of the company, can transfer his share to another person, or introduce a new member into the company. Each member, however, may, upon proper warning, withdraw from the copartnery, and demand payment from them of his share of the common stock. In a joint-stock company, on the contrary, no member can demand payment of his share from the company; but each member can, without their consent, transfer his share to another person, and thereby introduce a new member. The value of a share in a joint-stock is always the price which it will bring in the market; and this may be either greater or less, in any proportion, than the sum which its owner stands credited for in the stock of the company. 2. In a private copartnery, each partner is bound for the debts contracted by the company to the whole extent of his fortune. In a joint-stock company, on the contrary, each partner is bound only to the extent of his share.

The trade of a joint-stock company is always managed by a court of directors. This court indeed is frequently subject, in many respects, to the controul of a general court of proprietors. But the greater part of those proprietors seldom pretend to understand any thing of the business of the company; and when the spirit of faction happens not to prevail among them, give themselves no trouble about it, but receive contentedly such half yearly or yearly dividend as the directors think proper to make to them. This total exemption from trouble and from risk, beyond a limited sum, encourages many people to become adventurers in joint-stock companies, who would upon no

account hazard their fortunes in any private copartnery. Such companies, therefore, commonly draw to themselves much greater stocks than any private copartnery can boast of. The trading stock of the South Sea company, at one time, amounted to upwards of thirty-three millions eight hundred thousand pounds. The directors of such companies, however, being the managers rather of other peoples money than of their own, it cannot well be expected that they should watch over it with the same anxious vigilance with which the partners in a private copartnery frequently watch over their own. Like the stewards of a rich man, they are apt to consider attention to small matters as not for their master's honour, and very easily give themselves a dispensation from having it. Negligence and profusion, therefore, must always prevail, more or less, in the management of the affairs of such a company. It is upon this account that joint-stock companies for foreign trade have seldom been able to maintain the competition against private adventurers. They have, accordingly, very seldom succeeded without an exclusive privilege; and frequently have not succeeded with one. Without an exclusive privilege they have commonly mismanaged the trade. With an exclusive privilege they have both mismanaged and confined it.

The principal joint-stock companies presently subsisting in Great Britain are, the *South Sea* and the *East India* companies; to which may be added, though of very inferior magnitude, the *Hudson's Bay* company.

1. *The South-Sea Company*. During the long war with France in the reign of queen Anne, the payment of the sailors of the royal navy being neglected, they received tickets instead of money, and were frequently obliged, by their necessities, to sell these tickets to avaricious men at a discount of 40 and sometimes 50 per cent. By this and other means, the debts of the nation unprovided for by parliament, and which amounted to 9,471,321l. fell into the hands of these usurers. On which Mr Harley, at that time chancellor of the Exchequer, and afterwards earl of Oxford, proposed a scheme to allow the proprietors of these debts and deficiencies 6 per cent. per annum, and to incorporate them for the purpose of carrying on a trade to the South Sea; and they were accordingly incorporated under the title of "the Governor and Company of Merchants of Great Britain trading to the South Seas, and other parts of America, and for encouraging the Fishery," &c.

Though this company seem formed for the sake of commerce, the ministry never thought seriously, during the course of the war, about making any settlement on the coast of South America, which was what flattered the expectations of the people; nor was it ever carried into execution by this company.

Some other sums were lent to the government in the reign of queen Anne, at 6 per cent. In the third of George I. the interest of the whole was reduced to 5 per cent. and the company advanced two millions more to the government at the same interest. By the statute of the 6th of George I. it was declared, that they might redeem all or any of the redeemable national debts; in consideration of which, the company were empowered to augment their capital according to the sums they should discharge: and for enabling them to raise such sums for purchasing annuities, ex-

Company. changing for ready money new exchequer bills, carrying on their trade, &c. they might, by such means as they should think proper, raise such sums of money as in a general court of the company should be judged necessary. The company were also empowered to raise money on the contracts, bonds, or obligations under their common seal, on the credit of their capital stock. But if the sub-governor, deputy-governor, or other members of the company, should purchase lands or revenues of the crown upon account of the corporation, or lend money by loan or anticipation on any branch of the revenue, other than such part only on which a credit of loan was granted by parliament, such sub-governor, or other member of the company, should forfeit treble the value of the money so lent.

The fatal South Sea scheme, transacted in the year 1720, was executed upon the last mentioned statute. The company had at first set out with good success, and the value of their stock, for the first five years, had risen faster than that of any other company; and his majesty, after purchasing 10,000*l.* stock, had condescended to be their governor. Things were in this situation, when, taking advantage of the above statute, the South Sea bubble was projected. The pretence was, to raise a fund for carrying on a trade to the South Sea, and purchasing annuities, &c. paid to the other companies: and proposals were printed and distributed, showing the advantages of this design. The sum necessary for carrying it on, together with the profits that were to arise from it, were divided into a certain number of shares, or subscriptions, to be purchased by persons disposed to adventure therein. And the better to carry on the deception, the directors engaged to make very large dividends; and actually declared, that every 100*l.* original stock would yield 50*l.* *per annum*: which occasioned so great a rise of their stock, that a share of 100*l.* was sold for upwards of 800*l.* This was in the month of July; but before the end of September it fell to 150*l.* by which multitudes were ruined, and such a scene of distress occasioned, as is scarcely to be conceived. But the consequences of this infamous scheme are too well known; most of the directors were severely fined, to the loss of nearly all their property; some of them had no hand in the deception, nor gained a farthing by it; but it was agreed, they ought to have opposed and prevented it.

The South Sea company never had any forts or garrisons to maintain, and therefore were entirely exempted from one great expence, to which other joint-stock companies for foreign trade are subject. But they had an immense capital divided among an immense number of proprietors. It was naturally to be expected, therefore, that folly, negligence, and profusion, should prevail in the whole management of their affairs.

Their stock-jobbing speculations were succeeded by mercantile projects, which, Dr Smith observes, were not much better conducted. The first trade which they engaged in, was that of supplying the Spanish West Indies with negroes, of which (in consequence of what was called the *Assiento* contract granted them by the treaty of Utrecht) they had the exclusive privilege. But as it was not expected that much profit could be made by this trade, both the Portuguese and

French companies, who had enjoyed it upon the same terms before them, having been ruined by it, they were allowed, as compensation, to send annually a ship of a certain burden to trade directly to the Spanish West Indies. Of the ten voyages which this annual ship was allowed to make, they are said to have gained considerably by one, that of the Royal Caroline in 1731, and to have been losers, more or less, by almost all the rest. Their ill success was imputed, by their factors and agents, to the extortion and oppression of the Spanish government; but was, perhaps, principally owing to the profusion and deceptions of those very factors and agents; some of whom are said to have acquired great fortunes even in one year. In 1734, the company petitioned the king, that they might be allowed to dispose of the trade and tonnage of their annual ship, on account of the little profit which they made by it, and to accept of such equivalent as they could obtain from the king of Spain.

In 1724, this company had undertaken the whale-fishery. Of this, indeed, they had no monopoly; but as long as they carried it on, no other British subjects appear to have engaged in it. Of the eight voyages which their ships made to Greenland, they were gainers by one, and losers by all the rest. After their eighth and last voyage, when they had sold their ships, stores, and utensils, they found that their whole loss, upon this branch, capital and interest included, amounted to upwards of L. 237,000.

In 1722, this company petitioned the parliament to be allowed to divide their immense capital of more than L. 33,800,000, the whole of which had been lent to government, into two equal parts: The one half, or upwards of L. 16,900,000, to be put upon the same footing with other government annuities, and not to be subject to the debts contracted, or losses incurred, by the directors of the company, in the prosecution of their mercantile projects; the other half to remain, as before, a trading stock, and to be subject to those debts and losses. The petition was too reasonable not to be granted. In 1733, they again petitioned the parliament, that three-fourths of their trading stock might be turned into annuity stock, and only one-fourth remain as trading stock, or exposed to the hazards arising from the bad management of their directors. Both their annuity and trading stocks had, by this time, been reduced more than L. 2,000,000 each, by several different payments from government; so that this fourth amounted only to L. 3,662,784, 8s. 6d. In 1748, all the demands of the company upon the king of Spain, in consequence of the *Assiento* contract, were, by the treaty of Aix-la-Chapelle, given up for what was supposed an equivalent. An end was put to their trade with the Spanish West Indies, the remainder of their trading stock was turned into an annuity stock, and the company ceased in every respect to be a trading company.

This company is under the direction of a governor, sub-governor, deputy-governor, and 21 directors; but no person is qualified to be governor, his majesty excepted, unless such governor has, in his own name and right, L. 5000 in the trading stock; the sub-governor is to have L. 4000, the deputy-governor L. 3000, and a director L. 2000, in the same stock. In every general court, every member having in his own name and right L. 500 in trading

Company. trading stock, has one vote; if L. 2000 two votes; if L. 3000 three votes; and if L. 5000 four votes.

2. *The East India Company.* The first, or as it is called the Old East India Company, was established by a charter from Queen Elizabeth in 1600; but for some time the partners seem to have traded with separate stocks, though only in the ships belonging to the whole company. In 1612, they joined their stocks into one common capital; and though their charter was not as yet confirmed by act of parliament, it was looked upon in that early period to be sufficiently valid, and no body ventured to interfere with their trade. At this time their capital amounted to about L. 740,000, and the shares were as low as L. 50; their trade was in general successful, notwithstanding some heavy losses, chiefly sustained through the malice of the Dutch East India company. In process of time, however, it came to be understood that a royal charter could not by itself convey an exclusive privilege to traders, and the company was reduced to distress by reason of the multitude of interlopers who carried off the most of their trade. This continued during the latter part of the reign of Charles II. the whole of that of James II. and part of William III. when in 1698 a proposal was made to parliament for advancing the sum of L. 2,000,000 to government, on condition of erecting the subscribers into a new company with exclusive privileges. The old company endeavoured to prevent the appearance of such a formidable rival, by offering government L. 700,000, nearly the amount of their capital, at that time; but such were the exigencies of the state at that time, that the larger sum, tho' at eight *per cent.* interest, was preferred to the smaller at one half the expence.

Thus were two East India Companies erected in the same kingdom, which could not but be very prejudicial to each other. Through the negligence of those who prepared the act of parliament also, the new company were not obliged to unite in a joint-stock. The consequence of this was, that a few private traders, whose subscriptions scarce exceeded L. 7200, insisted on a right of trading separately at their own risk. Thus a kind of third company was established; and by their mutual contentions with one another, all the three were brought to the brink of ruin. Upon a subsequent occasion, in 1730, a proposal was made to parliament for putting the trade under the management of a regulated company, and thus laying it in some measure open. This, however, was opposed by the company, who represented in strong terms the mischiefs likely to arise from such a proceeding. "In India (they said), it raised the price of goods so high, that they were not worth the buying; and in England, by overstocking the market, it sunk the price to such a degree, that no profit could be made of them." Here Dr Smith remarks, that by a more plentiful supply, to the great advantage and conveniency of the public, it must have reduced very much the price of India goods in the English market, cannot well be doubted; but that it should have raised very much their price in the Indian market, seems not very probable, as all the extraordinary demand which that competition could occasion, must have been but as a drop of water in the immense ocean of Indian commerce. The increase of demand, adds he, though in the beginning it may sometimes

raise the price of goods, never fails to lower it in the long run. It encourages production, and thereby increases the competition of the producers, who, in order to underfell one another, have recourse to new divisions of labour and new improvements of art, which might never otherwise have been thought of. The miserable effects of which the company complained, were the cheapness of consumption and the encouragement given to production, precisely the two effects which it is the business of political economy to promote. The competition, however, of which they gave this doleful account, had not been allowed to continue long. In 1702 the two companies were, in some measure, united by an indenture tripartite, to which the queen was the third party; and, in 1708, they were, by act of parliament, perfectly consolidated into one company by their present name of The United Company of Merchants trading to the East Indies. Into this act it was thought worthy to insert a clause, allowing the separate traders to continue their traffic till Michaelmas 1711, but at the same time empowering the directors, upon three years notice, to redeem their capital of L. 7200, and thereby convert the whole capital of the company into a joint-stock. By the same act, the capital of the company, in consequence of a new loan to government, was augmented from L. 2,000,000 to L. 3,200,000. In 1743, another million was advanced to government. But this being raised, not by a call upon the proprietors, but by selling annuities and contracting bond-debts, it did not augment the stock upon which the proprietors could claim a dividend. Thus, however, their trading stock was augmented; it being equally liable with the other L. 3,200,000, to the losses sustained, and debts contracted, by the company in the prosecution of their mercantile projects. From 1708, or at least from 1711, this company being freed from all competitors, and fully established in the monopoly of the English commerce to the East Indies, carried on a successful trade; and from their profits made annually a moderate dividend to their proprietors. Unhappily, however, in a short time, an inclination for war and conquest began to take place among their servants; which, though it put them in possession of extensive territories and vast nominal revenues, yet embarrassed their affairs in such a manner, that they have not to this day been able to recover themselves. The particulars of these wars are given under the articles BRITAIN, and INDOSTAN. Here it will be sufficient to observe, that they originated during the war in 1741 through the ambition of M. Dupleix the French governor of Pondicherry, who involved the company in the politics and disputes of the Indian princes. After carrying on hostilities for some time with various success, they at last lost Madras, at that time the principal settlement in the East Indies, but it was restored by the treaty of Aix-la-Chapelle. During the war of 1755, they acquired the revenues of a rich and extensive territory, amounting, as was then said, to near L. 3,000,000 *per annum.*

For several years they remained in quiet possession of the revenue arising from this territory, though it certainly never answered the expectations that had been formed concerning it. But in 1767 the British ministry laid claim to the territorial possessions of the company,

Company. company, and the revenue arising from them, as of right belonging to the crown; and the company, rather than yield up their territories in this manner, agreed to pay government a yearly sum of L.400,000. They had before this gradually augmented their dividend from about six to ten *per cent.*; that is, on their capital of L.3,200,000, they had raised it from L.192,000 to L.320,000 a-year. About this time also they were attempting to raise it still further, viz. from 10 to 12½ *per cent.*; but from this they were prevented by two successive acts of parliament, the design of which was to enable them to make a more speedy payment of their debts, at this time estimated at more than six or seven millions Sterling. In 1769 they renewed their agreement with government for five years more, stipulating, that during the course of that period they should be allowed gradually to augment their dividend to 12½ *per cent.*; never increasing it, however, more than one *per cent.* annually. Thus their annual payments could only be augmented by L.608,000 beyond what they had been before their late territorial acquisitions. By accounts from India in the year 1768, this revenue, clear of all deductions and military charges, was stated at L.2,048,747. At the same time they were said to possess another revenue, arising partly from lands, but chiefly from the customs established at their different settlements, amounting to about L.439,000. The profits of their trade, too, according to the evidence of their chairman before the house of commons, amounted to at least L.400,000 *per annum*; their accountant made it L.500,000; and the lowest account stated it at least equal to the highest dividend paid to their proprietors. Notwithstanding this apparent wealth, however, the affairs of the company from this time fell into disorder; inasmuch that in 1773 their debts were augmented by an arrear to the treasury in the payment of the L.400,000 stipulated; by another to the customhouse for duties unpaid; by a large sum borrowed from the bank; and by bills drawn upon them from India to the amount of more than L.1,200,000. Thus they were not only obliged to reduce their dividend all at once to six *per cent.* but to apply to government for assistance. A particular account of this transaction is given under the article BRITAIN. Here it may be mentioned in general, that the event proved very unfavourable to the company, as they were now subjected to an interference of government altogether unknown before. Several important alterations were made in their constitution both at home and abroad. The settlements of Madras, Bombay, and Calcutta, which had hitherto been entirely independent of one another, were subjected to a governor-general, assisted by a council of four assessors. The nomination of the first governor and council, who were to reside at Calcutta, was assumed by parliament; the power of the court of Calcutta, which had gradually extended its jurisdiction over the rest, was now reduced and confined to the trial of mercantile causes, the purpose for which it was originally instituted. Instead of it a new supreme court of judicature was established, consisting of a chief justice and three judges to be appointed by the crown. Besides these alterations, the stock necessary to intitle any proprietor to vote at the general courts was raised from L.500 to L.1000. To vote on this qualification, too, it was

necessary that he should have possessed it, if acquired by his own purchase and not by inheritance, for at least one year, instead of six months, the term requisite formerly. The court of 24 directors had before been chosen annually; but it was now enacted, that each director should for the future be chosen for four years; six of them, however, to go out of office by rotation every year, and not to be capable of being rechosen at the election of the six new directors for the ensuing year. It was expected that, in consequence of these alterations, the courts both of the proprietors and directors would be likely to act with more dignity and steadiness than formerly. But this was far from being the case. The company and its servants showed the utmost indifference about the happiness or misery of the people who had the misfortune to be subjected to their jurisdiction. This indifference, too, was more likely to be increased than diminished by some of the new regulations. The house of commons, for instance, had resolved, that when the L.1,600,000 lent to the company by government should be paid, and their bond-debts reduced to L.1,500,000, they might then, and not till then, divide eight *per cent.* upon their capital; and that whatever remained of their revenues and nett profits at home should be divided into four parts; three of them to be paid into the exchequer for the use of the public, and the fourth to be reserved as a fund, either for the further reduction of their bond-debts, or for the discharge of other contingent exigencies which the company might labour under. But it could scarce be expected that, if the company were bad stewards and bad sovereigns when the whole of their nett revenue and profits belonged to themselves, they would be better when three-fourths of these belonged to other people. The regulations of 1773, therefore, did not put an end to the troubles of the company. Among other institutions, it had been at this time enacted, that the presidency of Bengal should have a superiority over the other presidencies in the country; the salary of the chief justice was fixed at L.8000 *per annum*, and those of the other judges at L.6000 each. In consequence of this act, Sir Elijah Impey, who was created a baronet on the occasion, set sail, with three other judges, for India in the year 1774. The powers with which they were invested were very extraordinary. They had the title of His Majesty's Supreme Court of Judicature in India. Civil law, common law, ecclesiastical, criminal, and admiralty jurisdiction, belonged of right to them. They were empowered to try Europeans on personal actions, and to assess damages, without a jury. Every native, either directly or indirectly in the service of the company, or in their territories, was made subject to their jurisdiction, with a view to prevent the Europeans from eluding justice under the pretence of employing natives in the commission of their crimes; so that in fact they were absolute lords and sovereigns of the whole country.

Such excessive and unlimited powers conferred on any small number of men, could not but be extremely disagreeable to the Europeans, who had been accustomed to enjoy a liberty almost equally unbounded before; nor was it to be supposed that the judges, thus suddenly raised from the rank of subjects to the height of despotism, would always use their power in an unexceptionable

tionable manner. The design of the establishment was to preserve the commerce and revenues of the company from depredation, by subjecting its servants to the controul of the court; to relieve the subject from oppression by facilitating the means of redress; and to fix a regular course of justice for the security of liberty and property. Instead of considering the circumstances of the country, however, or the manners and customs of the natives, the judges now precipitately introduced the British laws in their full extent, without the least modification to render them agreeable to the Asiatics, who had been accustomed to others of a quite different nature; nor did they even pay the least regard to the religious institutions or habits to which the Indians are so obstinately attached, that they would sooner part with life itself than break through an article of them.

Besides this it was said, that, on the first arrival of the judges, they endeavoured to extend their authority beyond even what the British legislature had allowed them. Hence they were frequently at variance with the council; and complaints of their conduct were repeatedly sent to England by the servants of the company. These produced a letter in 1777 from the directors to Lord Weymouth, secretary of state for the southern department. In this they stated, that the supreme court of India had extended its jurisdiction to those whom it did not appear to have been the intention of the king or parliament to subject to its authority. It had also taken cognizance of matters which, they apprehended, belonged properly to other courts. That the judges considered the criminal law of England as in force, and binding on the natives of Bengal, though utterly repugnant to the laws and customs by which they had hitherto been governed; and that the jurisdiction exercised by the supreme court was incompatible with the powers given by parliament to the governor-general and council, obstructed the administration of government, and tended to alienate the minds of the natives; all which they feared would prevent the establishment of the government of India upon any settled or permanent foundation.

This letter not having produced any effect, the discontent of India, both in the Europeans and natives, continued and increased. The decisions of the judges were such as by no means did them honour. A number of adventurers had also emigrated along with them, in hopes of enriching themselves under the new constitution. Some of these were of the lowest sort of people, who had rendered it in a manner impossible for them to remain in England on account of their vices or extravagance. Many such persons had enrolled themselves among the domestics of the judges, or had become their immediate dependents; and some of these were permitted to assume the characters of attorneys, court-officers, under-sheriffs, and bailiffs. It may easily be supposed, that people of such characters would find it for their interest to promote suits in the supreme court; and in this some of them employed themselves with great success. The consequence of all this was, that on the 4th of December 1780, a petition was presented against the supreme court by a great number of British inhabitants in the kingdoms of Bengal, Bahar, and Oriza. In this, complaint was made of the indiscriminate man-

ner in which the judges of the supreme court attempted to exercise the English laws in that country, at the same time that they refused the undoubted right of every British subject, viz. that of trial by jury. They intreated the house "to reflect on the innumerable hardships which must ensue, and the universal confusion which must be occasioned, by giving to the voluminous laws of England a boundless retrospective power in the midst of Asia, and by an application of those laws made for the freest and most enlightened people on earth, the principle of whose constitution was founded on virtue and liberty, to transactions with the natives of India, who had, from time immemorial, lived under a despotic government founded on fear and restraint. What must be the terrors of individuals to find their titles to property, and their transactions with the natives previous to the establishment of this court of judicature, tried by the standard of the English law, and by men educated under its forms, and unavoidably imbibing its prejudices, when no such laws could be known to or practised by natives or Europeans then residing in the country, and that at a time when there were few persons of legal knowledge in the country to advise or assist them? No tyranny could be more fatal in its consequences, than that a court, invested with all the authority of one of the first courts in England, should also possess undefined powers and jurisdiction, of which its judges were the sole interpreters, and at such an immense distance from the mother country. This was in truth the situation of the British subjects in India at that time; for the judges of the supreme court could at pleasure determine on the denomination of a civil jury, the degree of guilt incurred by any offence, the statute by which it should be tried, what penalties should be inflicted, as well as who were and who were not amenable to the jurisdiction of the court.

"Besides their other powers also, the judges of the supreme court were allowed to sit as a court of chancery, and in that capacity to revise, correct, rescind, or confirm the decisions passed by themselves as a court of law; and, by another part of their constitution, they were allowed to stop execution in criminal cases until his Majesty's pleasure was known. The petitioners conceived, that there must be some fundamental error in that institution, which required a more than ordinary degree of temper, integrity, and ability, to carry its purposes into execution; and they did not hesitate to declare, that to administer the powers appertaining to the institution of the supreme court, without committing flagrant acts of injustice, and doing great detriment to the public, required more equity, moderation, discernment, and enlightened abilities, than they could hope to find in any set of men." They concluded with earnestly soliciting parliament, that a trial by jury might be granted to the British subjects in Bengal, in all cases where it was established by law in England; that the retrospective powers of the supreme court might be limited to the time of its establishment in Bengal; that it should be defined beyond the power of discretionary distinction, who the persons were that properly came under the jurisdiction of the court, and who did not; that it should be expressly declared what statutes should, and what should not, be in force in Bengal; that distinct and separate judges

Company for the law and equity sides of the court should be appointed; and that a power of delaying executions in criminal cases until his Majesty's pleasure was known, should be lodged in the governor and council.

This petition was soon followed by another signed by Warren Hastings, Esq; governor-general, Philip Francis and Edward Wheeler, Esqs; counsellors for the government and presidency of Fort-William in Bengal; in which they represented, "that, though the jurisdiction of the supreme court of judicature at Calcutta, as well as the powers granted to the governor-general and council, were clearly limited by parliament and the king's letters patent, yet the chief justice and judges of that court had exercised authority over persons not legally within their jurisdiction, and had illegally and improperly advised and admitted suits against the governor-general and council; that they had attempted to execute their writs upon natives of high rank in the kingdom of Bengal, who were not within their jurisdiction: the governor and council therefore had found themselves under a necessity of opposing them, and of affording protection to the country and people, who were placed under their own immediate inspection, and freeing them from the terrors of a new and usurped dominion. They had even been obliged to make use of a military force, in order to resist the proceedings of the judges and their officers: And they declared, that no other conduct could have saved those provinces and the interests of the company, or of the British nation itself, from the ruin with which they were threatened. They also declared themselves to be of opinion, that the attempt to extend, to the inhabitants of these provinces, the jurisdiction of the supreme court of judicature, and the authority of the English law, which were still more intolerable than the law itself, would be such a constraint on the minds of the people of those provinces, by the difference of such laws and forms from their laws, that they might at least inflame them, notwithstanding their known mildness and patience, into an open rebellion." The petition was concluded, by soliciting an indemnity from the legal consequences of the resistance they had been obliged to make to that court.

While the British were thus expressing their displeasure against the conduct of these judges, the natives were thrown into the utmost consternation and despair by the acts of oppression and violence committed by them. A prosecution for forgery had been commenced against Nundcomar, a bramin of the first rank in Bengal. The crime was not capital by the laws of Indostan, and had been committed many years before; yet with the utmost cruelty and injustice was this man condemned and executed on the British statute, by which forgery is made capital; a statute which, at the commission of the crime, he had never heard of, nor could ever dream that he would be subjected to its power. What rendered this execution the more remarkable was, that, at the very time when charge of forgery was brought against him, Nundcomar had been employed in exhibiting an accusation against Mr Hastings. This, together with the hurry in which the court were to have him put to death (for the court refused to allow him a respite till his Majesty's pleasure was known), made the natives conclude, that he was executed, not on account of the

Company forgery, but for having ventured to prefer an accusation against an English governor. In other respects they were terrified to such a degree, that many of them ran into the river on seeing a bramin put to death with such circumstances of ignominy.

The alarm excited by the execution of Nundcomar was kept up by fresh decisions of the supreme court. Among those the Patna cause, as it is commonly called, was one of the most remarkable. An adventurer, named Shahaz Beg Cawn, had come from Cabul in Persia to Bengal, where he entered himself in the service of the company, and was preferred to the command of a body of horse. Having gained a competent fortune, and obtained from the Mogul a grant of lands called an *Ultumghaw* in the province of Bahar, he retired from the army, and settled in Patna. About this time, when advanced in years, he married a woman of low rank, named *Nadara Begum*, by whom he had no children. His brother, Allum Beg, came likewise to Patna; and on his leaving the place some time after, committed the care of one of his sons, named *Behader Beg*, to his brother Shahaz Beg Cawn. On the death of the latter in 1776, a dispute ensued concerning the inheritance betwixt the widow and Behader Beg. The widow having taken possession of the whole property of Shahaz, the nephew, as adopted son and heir, gave in a petition to the provincial council at Patna, on the 2d of January 1777, setting forth his claim. In this petition he stated, that the widow was removing and secreting the effects of the deceased; and concluded with a prayer, that orders should be given to prevent their removal; to recover such as had already been carried away; and that the *cadi* or Indian judge should be directed to ascertain his right. As the parties were Mahometants, the council of course referred the cause to the *cadi* and two *musties*, the proper officers for determining it according to the established laws of the country. These having inquired into the matter, reported, that the title-deeds, on which the widow pretended to found her right, appeared to be forged; and that, even if they had appeared in the life-time of Shahaz, they were still informal, on account of a point of the Mahometan law, which requires, that to make deeds of gift valid, possession should be entered into at the time of executing or delivering them over; but that, as no possession of this kind had been given, the estate ought to be divided according to the Mahometan law; viz. one-fourth to the wife, and three-fourths to the nephew, as the representative of his father Allum Beg, who was considered as the more immediate heir of the deceased. This decision was confirmed by the council of Patna, with the following exception in favour of the widow, that the heir at law should pay her one-fourth of the rents of the *ultumghaw*, or royal grant, for her support during life. The widow, however, refused to submit to the decision, or to deliver up the effects of her husband; in consequence of which compulsory methods were used; when, by the advice of some English lawyers, an action of trespass was brought, according to the law of England, against the *cadi* and two *musties* for their proceedings against her, laying the damages at about 66,000 l. Sterling. This process being brought before the supreme court, was by them conducted in such a manner as must entail everlasting

Company. infamy on the actors. They began with obliging the *cadi* and *muffies* to find bail in no less than 40,000 pounds for their appearance, which was immediately given by the council at Patna. The supreme court then having entered into the merits of the cause, and decided the matter in the most rigorous manner, according to all the forms of English law, assessed the *cadi* and *muffies* in damages no less than 30,000*l.* Sterling. Their houses and effects were seized by the sheriff's officers, and publicly put up to sale: the *cadi*, who was upwards of 60 years of age, and had been in office for many years with great applause, died on his way to the common gaol at Calcutta, to which the nephew and two *muffies* were conveyed, being a distance of no less than 400 miles from their former residence at Patna. A suit, however, was commenced against the widow, on account of having forged the title-deeds by which she claimed her husband's estate; but it was suppressed on account of some inform-

Another decision, by which the supreme court likewise incurred much censure, was that against Jaggernaut, the principal public officer of a Mahometan court at Dacca. The action was brought at the instigation of an English attorney, in behalf of one Khyne, a servant or messenger, who had been fined and imprisoned for a misdemeanor, in which Jaggernaut had concurred in virtue of his office as judge of the Nizamut (the name of the Mahometan court just mentioned). The sheriff-officers attempted to arrest the judge as he sat on the tribunal; which could not fail to produce much disturbance. Jaggernaut, with his officers, denied the authority of the supreme court over the Nizamut, and refused to comply with the writ. The English sheriff-officers proceeded to force; and a violent scuffle ensuing, Jaggernaut's father was wounded in the head with a sword by one of the under-sheriff's attendants, while his brother-in-law was very dangerously wounded with a pistol bullet by the under-sheriff himself. The immediate consequence of this was an absolute refusal of the judge to take cognizance of any criminal matters; and this was intimated in a letter from the council at Dacca to the English governor and council of India; wherein they declared that all criminal justice was at a stand.

The supreme court, having proceeded in this arbitrary and oppressive manner for some time, at length attempted to extend their jurisdiction over the hereditary Zemindars of Bengal. These are a kind of tributary lords, or great landholders, who are answerable to the company for the revenues or rents of the districts; and excepting the circumstance of remitting their revenues to the company, have not the least connection with the English in any respect. At the time we speak of, however, a writ, upon an action of debt, was issued out to arrest one of these Zemindars in his palace. Timely notice, however, was given, by one of the company's collectors, of this attempt to the governor and council, and application made to protect a man of such quality from the disgrace of an arrest. They being unanimously of opinion that the Zemindar was not within the jurisdiction of the court of Calcutta, desired him to pay no regard to the writ. The court, however, determined to enforce their process by a writ of sequestration; upon which the na-

tives, who are superstitiously attached to their Zemindars, rose in his defence, and insulted the sheriff's officers. The latter having obtained a reinforcement, the Zemindar's palace was entered by 86 men armed with bludgeons, cutlasses, and muskets; the apartment of his women, always held inviolably sacred by the Asiatics; was broken open; his temple profaned; and the image, which was the object of his worship, put into a basket, and carried off with some common lumber. This roused the attention of the governor and council; who, from a full conviction of the ruinous tendency of these proceedings, determined at last to oppose force by force. They accordingly sent a party of military to apprehend the sheriff's people, and they were all conducted prisoners to Calcutta. The judges ordered attachments against the officer who commanded the troops, and against two other servants of the company; while the governor and council endeavoured to justify their proceedings, by writing to England as already mentioned.

Besides all this, the natives themselves testified their disapprobation of the conduct of the supreme court in very strong terms. A petition to his Britannic majesty was sent by the natives of Patna; in which are the following remarkable passages: "When the ordinances of this court of judicature were issued, as they were all contrary to the customs, modes, usages, and institutions, of this country, they occasioned terror in us; and day by day, as the powers of this court have become more established, our ruin, uneasiness, dishonour, and discredit, have accumulated; till at last we are reduced to such a situation, that we consider death to us as infinitely preferable to the dread we entertain of the court: for from this court no credit or character is left to us, and we are now driven to the last extremity. Several who possessed means and ability, deeming flight as their only security, have banished themselves from the country; but bound as we are by poverty and inability, and fettered by the dearest ties of consanguinity, we do not all of us possess the means of flight, nor have we power to abide the oppression of this court."—"If, which God forbid! it should so happen, that this our petition should not be accepted, and should be rejected at the chamber of audience, those amongst us who have power and ability, discarding all affection for our families, will fly to any quarter we can; whilst the remainder, who have no means or ability, giving themselves up with pious resignation to their fate, will sit down in expectation of death."

These repeated complaints could not but be taken notice of in parliament. On the 12th of February 1781, General Smith made a motion in the house of commons, that the petition from the British inhabitants of Bengal, Bahar, and Orissa, should be taken into consideration by a select committee, consisting of 15 persons, chosen by ballot. In the introduction to his motion, he stated briefly the bad conduct of the supreme court in the particulars already related; and concluded, that the affairs of Bengal required the immediate attention and consideration of parliament. The matter was accordingly debated; when, after various proposals, a motion was at length made by General Smith, for leave to bring in a bill "to explain and amend so much of an act passed in the 13th year of his present majesty, for the better regulation of the East

Company. India company, as related to the administration of justice in Bengal; and also to indemnify the governor and council of Bengal for having resisted by force of arms the execution of an order of the supreme court of judicature in that kingdom." Leave was accordingly given to bring in the bill. The house having resolved itself into a committee, Lord North observed, "that it had been much his wish that an agreement for the renewal of the company's charter had been made in an amicable manner; and that voluntary propositions should have come from themselves, offering terms for the benefit of the exclusive trade and the territorial acquisitions. No such terms, however, had been proposed, nor any agreement made. A negotiation had indeed taken place between him and the chairman and deputy-chairman; but the propositions made by them were neither such as the public might expect, nor had the company any right to them. With regard to the territorial possessions, he was clearly of opinion, that they of right belonged to the public; though how far it might be proper to allow the revenue of them to remain in the possession of the company was quite another matter. In his opinion, it would be proper to allow it to remain in their hands as long as they possessed an exclusive trade, but he never would consent to forego the claim of the public. He made a motion, therefore, that it was the opinion of the committee, that three-fourths of the surplus of the net profits of the East India company, ever since the company's bond-debt was reduced to L. 1,500,000, and the company's dividends had been eight *per cent. per annum*, belong to the public; and that L. 600,000 in lieu thereof, and in discharge of all claims on the part of the public, be paid into his majesty's exchequer by instalments, in such manner, and at such times, as shall be agreed on." This proposal was vehemently opposed by the minority. Mr Burke called it the daring effort of a minister determined on rapine and plunder, without regard to truth, honour, or justice. Mr Hussey reprobated the idea of taking L. 600,000 from the company in their circumstances at that time. He produced a paper full of arithmetical calculations, which he read to the house; asserting that they contained an exact state of the amount of the company's exports and imports, the expences of their trade at home, and the balance of profit of each year, for many years past, distinguishing the territorial from the commercial income and expences. From these he showed, that the commercial and territorial revenues of the company had, upon an average for 16 years, constituted a sum equivalent to a proportion of 16 *per cent.*; that 9 *per cent.* of this had arisen from the commercial profits accruing to the company; and therefore, that there had not been 8 *per cent.* divided upon that part of the profits to which the public had any claim or pretension. The accession of territorial possessions, he observed, had brought along with it additional expences; and the public had already received a very large share of the company's profits. He declared it to be his opinion, that the company should always make it a rule to give as ample and full relief to the public burdens as their situation would allow; and if they did this, he saw no reason why the minister should expect any more. Mr Dempster reminded the house of the consequences of violating the American charters; and added, that to

Company. tear from the company by force what was not stipulated in any act of parliament, would be a breach of public faith disgraceful to the nation, and such as would damp the spirit of enterprize and adventure which had been productive of such happy effects.— Notwithstanding these remonstrances, however, the bill was at last passed into a law; only with this mitigation, that the company should pay only L. 400,000, instead of L. 600,000 demanded originally by the minister.— Another bill was also passed the same year, in consequence of the motion made by General Smith. This act declared, that the governor-general and council of Bengal were not subject to the jurisdiction of the supreme court, and indemnified the former for the resistance they had made to the orders of that court. It enacted also, that no person should be subject to the jurisdiction of that court on account of his being a landholder or farmer of land in the provinces of Bengal, Bahar, or Orix; that no judicial officers in the country courts should be liable to actions in the supreme court for their decisions; and the two mufties, with Behader Beg, who were then in prison, in consequence of the decision of that court in the Patna cause, were ordered to be set at liberty.

The debates on this subject were attended with the most violent charges against the minister, and assertions the most humiliating and disgraceful to the British nation. Mr Townshend affirmed, that it was from the minister's screening the delinquents who came from India that all the evils in that quarter had originated; and if matters were suffered to go on in that country as they had done for some time past, the conduct of the British in the East Indies must be viewed in a light still more detestable than that of the Spaniards in America. It was reported, that the nabob of Arcot had several members in the house of commons! If it were true, that by sending over a sum of money to England he could seat eight or ten members in that house, then Mr Townshend declared, that in his opinion they were the most abject and contemptible beings in the world.—The bill for regulating the powers of the supreme court, also, though so evidently founded in reason and justice, did not pass without opposition, particularly from Mr Dunning; who was thought on this occasion to have allowed his regard for his friend Sir Elijah Impey, the chief justice, to bias him too much.

The regulations just mentioned did not yet put an end to the troubles of the East India company, nor allay the ferment which had been so effectually excited. Their affairs were still a subject of parliamentary discussion; and in the month of April 1782, a motion was made by Mr Dundas, then Lord Advocate of Scotland, for taking into consideration the several reports concerning affairs, which had been made by the secret committee appointed to inquire into them during the last and present session of parliament. In his speech on this occasion, he remarked, that the opinion of Lord Clive had been against keeping too extensive a territory in that country. Instead of this, he had restored Sujah Dowlah to the possession of his country; considering the British territories in Hindostan, with those on the coasts of Coromandel and Bombay, as sufficient for all the purposes by which this country could be benefited; but instead of adhering to the maxims of sound policy laid

Company. laid down by his Lordship, they had become so ambitious of extending their territories, that they had involved themselves in a war with almost all India. He then considered the finances of the company. The revenue of Bombay, he said, fell short of the necessary civil and military establishment by L. 200,000 a-year, which was annually drawn from Bengal. With regard to that of Madras, it appeared, on an average of 12 years, from 1767 to 1779, that there had been eight years of war and only four of peace; and that, during the whole time of war, the revenue had not been able to support the civil and military establishments; though, in time of peace, it was able to do nearly one-half more. Bengal, however, was the most lucrative of all the East India settlements; but such had been the expenses of the Mahratta war, that the governor-general had been obliged to contract a very large debt, inasmuch that it was doubtful whether the investments for England should be wholly or partially suspended. Mr Hastings, he said, had in many instances proved himself a very meritorious servant: but he wished that every one of their servants would consider himself as bound in the first place to prove a faithful steward to the company; not to fancy that he was an Alexander or Aurengzebe, and prefer frantic military exploits to the improvement of the trade and commerce of his country.—General Smith observed, that by the evidence produced to the committee, it appeared that there had been a variety of great abuses in India. Sir Elijah Impey, his majesty's chief justice in that country, had so far derogated from the character of a judge, as to accept of a place from the company; by which means he was brought under their controul, and consequently allowed himself to be deprived of that independence which he ought to possess as a judge. Justice had been so partially administered, that several worthy and respectable persons had been imprisoned, some had been ruined, and others died in jail. From all which considerations he moved, that the affairs of the company ought to be taken into consideration by a committee of the whole house. Some hints were thrown out by Mr Dundas, that the territorial possessions in the East ought to be taken from the company entirely, and put under the direction of the crown; but this was opposed by Mr Fox, as furnishing ministers with such ample means of corruption and undue influence, as might overthrow the constitution entirely. For this reason, he thought it would be more prudent to leave the appointment of its own servants to the company; but at the same time to keep a watchful eye over them, in order to be able to punish and remove those who should be found delinquent.

The house having resolved itself into a committee, a motion was made by General Smith, "That Warren Hastings, Esq; governor-general of Bengal, and Sir Elijah Impey, the chief justice, appear to have been concerned, the one in giving, the other in receiving, an office not agreeable to the late act for regulating the company's affairs; which unjustifiable transaction was attended with circumstances of evil tendency and example." Resolutions were also passed for ascertaining more distinctly the powers of the governor-general and council of Bengal; and votes of censure against Laurence Sullivan, Esq; chairman of the East India

Company, for having neglected to transmit to India an act for explaining and amending the act for regulating the affairs of the company, and for the relief of certain persons imprisoned at Calcutta. Among the number of this gentleman's transgressions, also, was his imposing an oath of secrecy on Mr Wilkes, one of the company's clerks; and especially his restraining him from giving information to a select committee of the house of commons.

Mr Dundas having made several motions tending to criminate Sir Thomas Rumbold, formerly governor of Bengal, a bill was brought in, and passed into a law, for restraining him and Peter Per- ring, Esq; from going out of the kingdom for the space of one year, for discovering their estates, &c. An address was also presented to the king, requesting him to recal Sir Elijah Impey from India, in order to answer for high crimes and misdemeanors. A number of other resolutions were now passed by the house, in consequence of motions by Mr Dundas, and which were founded on the reports of the Secret Committee. Among these it was resolved, "That the orders of the Court of Directors of the East India Company, which have conveyed to their servants abroad a prohibitory condemnation of all schemes of conquest and enlargement of dominion, by prescribing certain rules and boundaries for the operation of their military force, were founded no less in wisdom and policy than in justice and moderation. That every transgression of these orders, without evident necessity, by any of the several governments in India, has been highly reprehensible, and tended in a great degree to weaken the force and influence, and to diminish the influence of the company in those parts. That every interference of the company as a party in the domestic or national quarrels of the country powers, and all new engagements with them in offensive alliance, have been wisely and providentially forbidden by the company in their commands to their administrations in India. That every unnecessary deviation from these rules should be severely reprov'd and punished. That the maintenance of an inviolable character for moderation, good faith, and scrupulous regard to treaty, ought to have been the simple grounds on which the British government should have endeavoured to establish an extensive influence, superior to that of other Europeans; and that the danger and discredit arising from the forfeiture of this pre-eminence, could not be compensated by the temporary success of any plan of violence and injustice. That should any relaxation take place, without sufficient cause, in those principles of good government on the part of the directors themselves, it would bring upon them, in a heavier degree, the resentment of the legislative power of their country. That the conduct of the company, and their servants in India, in various instances specified, was contrary to policy and good faith; the company's servants, in their presidency of Bombay, had been guilty of notorious instances of disobedience to the orders of their employers, particularly in forming an alliance with Ragobah, or Ragonaut Row: that they had undertaken, without any adequate military force, or certainty of a sufficient revenue, and without proper communication with the superior government upon which they were to depend for sanction and support, to reinstate the

Company. usurper above mentioned, and thereby to involve themselves in a war with the ruling ministers of the Mahratta state, while Ragobah himself was not in the mean time able to give the company any secure possession of the grants he had made to them for the purchase of their assistance. That it was the opinion of the house, that all the disasters in which the British empire in the East were involved, had proceeded from the unjustifiable manner in which the Mahrattas had been treated, and the conduct of the Madras presidency in other respects specified. That it is the opinion of this house, that it must be reckoned among the additional mischiefs arising chiefly from the improvident war with the Mahrattas, that the military force of the Carnatic had been weakened by reinforcements sent to the Malabar coast: that the Bengal government had been under a necessity of supporting, on their confines, the army of a power confederated against them (A): that they had been under the necessity of suing for the mediation of the same power; had submitted to a refusal, and purchased at last an uncertain, because apparently an unauthorized, treaty, on most extravagant and dishonourable conditions, with Chinnagee the rajah of Berar's son: and, finally, that being burdened with the expences of a variety of distant expeditions, while their allies were in distress, and their tributaries under oppression, there was also an alarming deficiency in the resources of revenue and commerce, by the accumulation of their debt, and the reduction of their investment. That it was the opinion of the house, that an attempt made by the government-general, in the beginning of January 1781, to form an engagement of alliance, offensive and defensive, with the Dutch East India company, in the manner stated by the proceedings of their council, was unwarranted, impolitic, extravagant, and unjust.

These severe censures extended even to the directors themselves, whose conduct on some occasions was declared to be indefensible, as well as that of their servants and agents. It was also resolved, "That Warren Hastings, Esq; governor-general of Bengal, and William Hornby, Esq; president of the council of Bombay, having, in sundry instances, acted in a manner repugnant to the honour and policy of this nation, and thereby brought great calamities on India, and enormous expences on the India company, it was the duty of the directors to pursue all legal and effectual means for the removal of the said governor-general and president from their offices, and to recal them to Britain."

The commons having thus seriously entered into a consideration of East India affairs, soon found still more abundant reason for censure. It was discovered, that corruption, fraud, and injustice, had pervaded every department. It had become an object with the servants of the company to oppress the natives by every possible method. They monopolized every article of trade, and seemed to have no other principle of commerce but lawless violence: the Court of Directors sent out instructions; but for the most part without any effect. Though the delegated administration of

Company. India ought to have preserved the strictest obedience to that of Britain; yet, being at so great a distance from the seat of supreme authority, and being possessed of endless means of abuse, it had become corrupt in an extreme degree. Instead of being subservient to government at home, the administration of India affected independence. The maxims of Mr Hastings were arbitrary; and he seemed to have no inclination to obey. He treated with sovereign contempt the authority of the Court of Directors; and the confusion produced by the disputes between them were fostered by the body of India proprietors, who were disposed to act as a check upon the directors. The necessity of new regulations in the government of India was universally admitted; and a bill for this purpose was accordingly brought in by Mr Dundas. His propositions were, that the governor and council of Bengal should have a controuling power and jurisdiction over the inferior presidencies of India; and he was of opinion, that the governor-general should be invested with a power to act even against the will and opinion of the council, whenever he should imagine that, by so doing, he could contribute to the public good; though, in these cases, he alone should be responsible for the event. With regard to the inferior governors, though he did not think it proper that they should be authorized to act contrary to the advice of the council, he was of opinion, that they ought to have a right of negating every proposition, until application was made to the governor-general and council of Bengal. With regard to the Zemindaries, and other tenures of land, he observed, that when Hindostan had been conquered by the Moguls, a tribute was imposed upon the Zemindars; and while they continued to pay this tribute, they accounted themselves to be the real proprietors and masters of the lands they possessed. The people called *Ryots*, to whom these Zemindaries were let out, considered themselves likewise as secure in their possessions, while they performed the articles of their respective contracts. Of late, however, these rights had been infringed; and the Mogul came to consider himself as the absolute master of all the soil of Indostan: which maxim he was inclined to destroy, and erect upon it another, that might secure the land-holders in their property. He proposed to secure the nabob of Arcot and rajah of Tanjore in their territories, by making an act of parliament in favour of the latter; but was of opinion, that the debts of these princes ought not to be too nicely inquired into, as the greatest part of them originated in corruption. He was clearly of opinion, however, that Governor Hastings ought to be recalled; and that steps ought to be taken to prevent the court of proprietors from presuming to act in contradiction to parliament. Lord Cornwallis appeared to be the most proper successor to Mr Hastings. His personal honour, and that of his ancestors, were pledged for his good behaviour; and being independent in his fortune, he could have no view of repairing his estate out of the spoils of India; and from his profession, he could add to the character of governor that of com-

(A) The power here alluded to was Mowdajee Boosla, Rajah of Berar. See INDOSTAN.

Company. commander in chief; he would not, however, insist on his name being filled up in the bill, as that would rest more properly with government.

Mr Hastings was defended by Governor Johnstone, who endeavoured to ridicule the arguments and proposals of Mr Dundas. He observed, to the honour of the former, that he had been able to conclude a peace with the Mahrattas; and while he enlarged on his talents for negotiation, he admired the resources with which he had supplied the expences of the war. It ought to be considered, that Mr Hastings was in a situation the most difficult, and that no man could have sustained it with more fortitude and ability. His enemies had dealt in insinuation and invective; but when the hour of trial came, they would find that their charges would be refuted with equal ease. He was defended also by Mr Dempster, who advised the house seriously to think before they passed a vote for the removal of Mr Hastings. His exertions had been extraordinary; and it would then be as ridiculous to supersede him, as it would have been to recal General Elliot, when the Spanish batteries were playing against Gibraltar. He was not, however, an advocate for all the measures of Mr Hastings; his errors might be numerous: but no censure of him should be established before they were pointed out and explained.

Mr Dundas having now obtained leave to bring in his bill, another was moved for by Sir Henry Fletcher, "That leave be given to bring in a bill to discharge and indemnify the united company of merchants trading to the East Indies, from all damages, interest, and losses, in respect to their not making regular payment of certain sums due to the public, and to allow farther time for such payment; to enable the company also to borrow a certain sum of money, and to make a dividend to the proprietors of four *per cent.* at midsummer 1783." He endeavoured to show, that the public had derived very considerable advantages from the company; that their dividend had been L. 8, 4s. annually during the time of peace, and L. 7, 15s. *per cent.* during war; they were by no means in a state of insolvency, as some members had endeavoured to prove, their present application proceeding only from a temporary embarrassment. A new dispute took place concerning Mr Hastings, who was warmly attacked by Mr Burke, and defended by Governor Johnstone. The former enlarged on the bloodshed, ravages, and rapacity, which had taken place in India. The established system of the servants of the company, he said, was rapine and robbery. The Mahratta war was occasioned by their refusal to be robbed; the famine at Madras was occasioned by the misconduct of the English government in India; and he set forth in strong colours the manner in which the Indian princes and princesses had been plundered. He instanced, that Mr Hastings had raised L. 800,000 in Bengal by private loan; and used it as an argument, that the company had ceased to exist, and that their commerce was nothing more than an instrument for procuring immense fortunes to individuals, totally destitute of conscience or principle.

All this was excused by Governor Johnstone. He regarded the sum of L. 800,000 as merely trifling, when the number of civil and military servants on the Bengal government was considered. The famine at

Madras was owing to the modes of war which prevailed in the East; as the enemy there marked their course by desolation. He concluded with censuring the manner in which Mr Hastings had been spoken of; and insisted that his high reputation ought to have guarded him from such insults. Mr Burke replied by an intimation of his design to impeach Mr Hastings on his return; whom he called the greatest delinquent that had ever violated in India the rights of humanity and justice.

It was observed by Lord John Cavendish, that the territorial acquisitions of the company were a fruitful source of grievance; and it would have been more for their advantage to have confined themselves to their original character of merchants. However, as the territorial acquisitions had been obtained, it was proper to take means for their preservation; as otherwise they would not revert to the natives, but fall into the hands of our natural enemies the French.

In the house of peers the cause of the company was ably defended by Earl Fitzwilliam. He maintained, that their situation was desperate, and bankruptcy inevitable, unless relief was instantly afforded. A report of their being in an insolvent state had gone abroad; and nothing was better calculated to preserve and support their credit than a large dividend sanctioned by act of parliament. The expenditure on their settlements had far exceeded their revenue; of consequence their servants had drawn bills, which they were unable to answer without a temporary supply. Thus the existence of the company might be said to depend on the bill; and he hoped no objections could be raised strong enough to destroy it.

On the 18th of November 1783, Mr Fox proposed his celebrated East India bill, which for some time attracted the attention of the nation at large in a very considerable degree. By this it was intended to take from the India proprietors and directors the entire administration of their territorial and commercial affairs. It took from them also their house in Leadenhall-street, together with all books, papers, and documents, vesting the entire management, the appointment of all officers and servants, the rights of peace and war, and the disposal of the whole revenue, in the hands of certain commissioners. These were, in the first instance, to be appointed by the whole legislature, but afterwards by the crown; and were to hold their offices by the same tenure as the judges in England, viz. during their good behaviour; and could be removed only by an address from one of the houses of parliament. They were required to come to a decision upon every question within a limited time, or to assign a specific reason for their delay. They were never to vote by ballot; and, almost in every case, were to enter the reason of their vote in their journals. They were also to submit, once every six months, an exact state of their accounts to the court of proprietors; and at the beginning of every session, a state of their accounts and establishments to both houses of parliament. Their number was limited to seven; but they were to be assisted by a board of nine persons, each of them possessed of L. 2000 company's stock; who, as well as the commissioners, were to be appointed in the first instance by parliament, and ever afterwards by the court of proprietors. They were also to be removeable at

Company. the pleasure of any five commissioners, and were disqualified from sitting in the house of commons. The whole system of government thus proposed, was to continue for the space of three or five years.

This was accompanied with another bill, the professed design of which was to preclude all arbitrary and despotic proceedings from the administration of the company's territorial possessions. By this the powers of the governor-general and supreme council were ascertained more exactly than had hitherto been done; it deprived the governor-general of all power of acting independent of his council; proscribed the delegation of any trust; and declared every British power in the East incompetent to the acquisition or exchange of any territory in behalf of the company, to the acceding to any treaty of partition, the hiring out of the company's troops, the appointing to office any person removed for misdemeanour, or to the hiring out any property to a civil servant of the company. By this also monopolies were entirely abolished; and illegal presents recoverable by any person for his sole benefit. The principal part of the bill, however, related to the Zemindars, or native landholders, who were now to be secured by every possible means in the possession of their respective inheritances, and defended in all cases from oppression. Lastly, a mode was presented for terminating the disputes between the nabob of Arcot and the rajah of Tanjour; disqualifying every person in the service of the company from sitting in the House of Commons during his continuance in their service, and for a certain specified time after his demission.

During the course of the debates on this bill, Mr Fox set forth the affairs of the company as in the most desperate situation. They had asked leave, he said, the year before, to borrow L. 500,000 upon bonds; had petitioned for L. 300,000 in exchequer bills; and for the suspension of a demand of L. 700,000 due to government for customs. He took notice also, that, according to an act of parliament still in force, the directors could not, by their own authority, accept bills to the amount of more than L. 300,000; under which circumstances it would no doubt surprise the house to be informed, that bills were now coming over for acceptance to the amount of L. 2,000,000. It was evidently, therefore, and indispensably necessary, that government should interfere in the affairs of the company to save them from certain bankruptcy. He stated their actual debt at no less than L. 11,200,000, while their stock in hand did not exceed L. 3,200,000. There was therefore a deficiency of L. 8,000,000; a most alarming sum when compared with the company's capital. Unless speedily assisted, therefore, they must inevitably be ruined; and the ruin of a company of merchants so extensive in their concerns, and of such importance in the eyes of all Europe, could not but give a very severe blow to the national credit. On the other hand, the requisite assistance was a matter of very extensive consideration. It would be absolutely necessary to permit the acceptance of the bills to the above mentioned amount; and to do this without regulating their affairs, and reforming the abuses of their government, would only be to throw away the public money.

The conduct of the company's servants, and of the

company itself, was now arraigned by Mr Fox in the most severe terms; and their misconducts were pointed out under the following heads:

1. With regard to Mr Hastings.—The chairman of the committee had moved in the house of commons, that it was the duty of the company to recal that gentleman; to which motion the house had agreed. In obedience to this resolution, the directors had agreed that Mr Hastings should be recalled: but supposing this to be a matter rather beyond their jurisdiction, they had submitted their determination to a court of proprietors, who rescinded the resolution of the directors; and after this the whole affair came to be laid before the house of commons. In the mean time every thing was anarchy and confusion in the East, owing to this unsettled conduct with regard to the governor; as the whole continent had been made acquainted with the resolution of the house for recalling him, while that of the proprietors for continuing him in his office was kept a secret. The proprietors had also been guilty of another contradiction in this respect, as they had voted their thanks to Mr Hastings for his conduct in India. Hence Mr Fox was led to comment on the nature of the company's connections with their servants abroad, as well as on the character of the company themselves. Among the former, he said, there were a few, who, being proprietors themselves, endeavoured to promote the trade of the company, and increase its revenues. The views of the rest were otherwise directed; and from the difference in speculation between the two parties, the former were inclined to support that governor who enabled them to make large dividends; and who, for that reason, after having speculated for his own advantage, was obliged to do the same for the benefit of the proprietors. The latter, therefore, could not better gratify their wishes, than by supporting a governor who had in his power so many opportunities of providing for his friends.

2. The next charge was against the servants of the company, whom he accused of a regular and systematic disobedience to the orders of the proprietors.—The supreme council of Bengal, he said, had resolved, in opposition to Mr Hastings, to send two gentlemen, Mr Fowke and Mr Bristow, the one to reside with the Nabob of Oude, the other at Benares. Mr Hastings, however, refused to send them: the directors transmitted the most positive orders to carry the vote of the supreme council into execution; but still Mr Hastings disobeyed; alleging in his defence, that he could not employ persons in whom he had no confidence. Afterwards, however, Mr Hastings seemed to contradict himself in a very curious manner. He granted Mr Fowke a contract, with a commission of 15 per cent.; which, he observed, was a great sum, and might operate as a temptation to prolong the war. "But (added he) the entire confidence I have in the integrity and honour of Mr Fowke, amounts to a full and perfect security on that head."

To this Mr Fox added some other instances of a similar kind; but though he supported these and the projected bill with all the argument and eloquence for which he is so remarkable, he found it impossible to make his scheme agreeable to the majority of the house. The strongest opponent was Mr William Pitt, who

Company. who insisted chiefly on the two following topics. 1. Its infringement, or rather annihilation of the company's charter; and, 2. The new and unconstitutional influence it tended to create.—He owned indeed, that India stood in need of a reform, but not such a one as broke through every principle of justice and reason. The charter of the company was a fair purchase from the public, and an equal compact for reciprocal advantages between the proprietors and the nation at large; but if it was infringed in the manner proposed by the bill, what security could other trading companies have that they should not be treated in the same manner? nay, what security could there be for Magna Charta itself? The bill, he said, amounted to a confiscation of property. It had been suggested indeed, that it was not a bill of disfranchisement, because it did not take from the proprietors their right to an exclusive trade; but this was not the only franchise of the proprietors. A freehold might have a franchise annexed to it, the latter of which might be taken away, and yet the property of the former remain; in which case it could not be denied that the freeholders would have great cause to complain. The case was exactly parallel with the India stock. Persons possessed of this to a certain amount, were intitled to a vote upon every important question of the company's affairs; and on this account the purchase-money was more considerable. But, by the bill in question, this privilege was to be taken away; which plainly amounted to a disfranchisement.

The great objection to this bill, however, seemed to be a suspicion that it was a scheme of Mr Fox to gratify his own personal ambition as a minister, he being at that time secretary of state. On this account he was deserted even by the patriotic members, who, upon former occasions, had so strenuously supported his cause.—Mr Dundas accused him of attempting to create a fourth estate in the kingdom, the power and influence of which might overturn the crown and subvert the constitution of Britain. A petition was presented from the proprietors, and another from the directors of the company, representing the bill as subversive of their charter, and confiscating their property, without either charge of delinquency, trial, or conviction. They prayed, therefore, that the acts of delinquency presumed against them might be stated in writing, and a reasonable time allowed them to deliver in their answer; and that they might be heard by counsel against the bill. About the same time the directors gave in a state of the company's affairs, differing in the most extraordinary manner from that given by Mr Fox. In this they represented the creditor side of the account as amounting to L. 14,311,173, and they brought themselves in debtors to the amount of L. 10,342,692; so that of consequence there was a balance in their favour of L. 3,968,481. This was vehemently contested by the secretary, who said he could bring objections to the statement of the directors to the amount of more than L. 12,000,000 Sterling. He then entered into a particular discussion of the articles stated in the directors account, and made good his assertion. Objections to his method of calculation, however, were made on the part of the company; so that nothing could certainly appear to the public but that the company were at that time much

distressed, and would fail entirely unless powerfully supported by government. Company.

Mr Fox now proceeded to a particular refutation of the arguments brought against the bill; in which indeed he displayed an astonishing force of argument and acuteness of reasoning. The objection drawn from the validity of the company's charter, he set aside, by showing that the company had abused their power, and that it was therefore necessary to take it from them. This he said always had been the case, and must be the case, in a free nation; and he brought the example of James II. who, on account of the abuse of his power, had been deprived of it by the nation at large. The case was the same with the company. They had made a bad use of their power, and therefore the nation at large ought to deprive them of it. It had been objected by the country gentlemen, that the bill augmented the influence of the crown too much; and by Mr Dundas, that it reduced it to nothing. Both these objections, he said, were overturned by the circumstance of making the commissioners hold their office only during good behaviour. Thus, when conscious that they were liable to punishment if guilty, but secure in case they faithfully discharged their trust, they would be liable to no seduction, but would execute their functions with glory to themselves, and for the common good of their country and of mankind. He then drew a comparison betwixt his own bill and that of Mr Dundas's already mentioned. The bill of the latter, he said, had created a despotic authority in one man over some millions of his fellow-creatures; not indeed in England, where the remedy against oppression was always at hand; but in the East Indies, where violence, fraud, and mischief every where prevailed. Thus the bill proposed by Mr Dundas afforded the most extensive latitude for malversation, while his own guarded against it with every possible care; as was instanced in its confiding in no integrity; trusting in no character; and annexing responsibility not only to every action, but even to the *inaction* of the powers it created.

After having expatiated for a considerable time, the secretary was seconded by Mr Burke, whose force of oratory was chiefly directed, as indeed it usually has been when speaking of India affairs, on the monstrous abuse of the company's power in that quarter. He affirmed that there was not in India a single prince, state, or potentate, with whom the company had *come into contact*, whom they had not sold; that there was not a single treaty they had ever made which they had not broken; and that there was not a single prince or state that had ever put any confidence in the company who had not been ruined. With regard to the first article, Mr Burke instanced the sale of the Great Mogul himself; of the Rohillas; the nabob of Bengal; the polygars of the Mahratta empire; Ragobah the pretender to that empire; and the Subah of Decan.—The second article was proved by a review of the transactions from the beginning to the end of the Mahratta war. With regard to the third, *viz.* the ruin of such princes as put any confidence in the company or their servants, he desired them to look into the history and situation of the nabob of Oude. In the year 1779, this country had been visited by a famine; a calamity which had been known to relax the severity

Company. rity even of the most rigorous government; yet in this situation the president of Bengal had put an absolute negative upon the representation of the prince; adding, that perhaps expedients might be found for affording him a gradual relief; but their effect must be distant. This distant relief, however, never arrived, and the country was ruined.

Our limits cannot allow a particular detail of the charges against the company on the one hand, or the defences on the other. In general, it must appear, that such severe and heavy charges could not be advanced without some foundation, though perhaps they may have been considerably exaggerated by the orators who brought them. The picture drawn by Mr Burke on this occasion indeed was shocking. "The Arabs, Tartars, and Persians, had conquered Indostan with vast effusion of blood; while the conquests of the English had been acquired by artifice and fraud, rather than by open force. The Asiatic conquerors, however, had soon abated of their ferocity; and the short life of man had been sufficient to repair the waste they had occasioned. But with the English the case had been entirely different. Their conquests were still in the same state they had been 20 years ago. They had no more society with the people than if they still resided in England; but, with the view of making fortunes, rolled in one after another, wave after wave; so that there was nothing before the eyes of the natives but an endless prospect of new flights of birds of prey and passage, with appetites continually renewing for a food that was continually wasting. Every rupee gained by an Englishman in India was for ever lost to that country. With us there were no tributary superstitions, by which a foundation of charity compensated, for ages, to the poor, for the injustice and rapine of a day. With us no pride erected stately monuments, which repaired the mischiefs pride had occasioned, and adorned a country out of its own spoils. England had erected no churches, no hospitals, no palaces, no schools (the trifling foundation at Calcutta excepted); England had built no bridges, made no high-roads, cut no navigations, dug no reservoirs. Every other conqueror of every other description had left some monument either of state or beneficence behind him; but were we to be driven out of India this day, nothing would remain to tell that it had been possessed, during the inglorious period of our dominion, by any thing better than the ouran outang or the tiger!"

All this eloquence, however, was at present entirely ineffectual, and the bill was finally rejected: much confusion and altercation ensued, which terminated in a change of ministry and dissolution of parliament. On the 26th of May 1784 a petition from the company was presented to the house of commons, praying for such relief as the nature of their affairs might seem to demand. This was followed on the 24th of June by a bill for allowing the company to divide four *per cent.* for the half year concluding with midsummer 1784. This having passed, after some debate, a new bill was proposed by Mr Pitt for relieving the company in the mean time, and regulating their affairs in time to come. A bill to this purpose had been brought in during the last session of the former parliament by the same gentleman, which he wished to bring to a comparison with that of Mr Fox, of which an ac-

count has already been given. In this bill he began with laying it down as a principle, that "the civil and military government of India, or, in other words, the imperial dominion of our territories in the East, ought to be placed under other controul than that of the merchants in Leaden-hall street; and this controul could be no other than the executive branch of the constitution. The commerce of the company, however, ought to be left as free from restrictions as possible; and, lastly, capricious effects from the government of India upon the constitution of Britain, were to be carefully avoided. A controul in the executive branch of the legislature over the government of India had indeed been established by the regulation bill of 1773; but the former interference of ministers had not been beneficial, because it had not been active and vigilant. He now proposed, therefore, that a board should be instituted expressly for the purpose. This board was to be appointed by the king, and to consist of the secretary of state for the home department, the chancellor of the exchequer, and a certain number of the privy council. To this board the dispatches of the company were to be submitted, and were not to be sent to India until they were countersigned by them. To prevent questions concerning the commercial and political concerns of the company, it was proposed, that the dispatches upon the former subject should be submitted to the board; and that, in case of any difference, an appeal should be made to the king in council. Though he (Mr Pitt) had not thought proper to accept of the proposal of the company to yield the appointment of foreign councils to the crown, he was nevertheless clearly of opinion, that the commander in chief ought to be appointed by the king. He proposed also that this commander should have a vote in council next to the president; that the king should be empowered to bestow the reversion of his office; that the king might recall the governor-general, the presidents, and any members of their councils. He yielded the appointment of all officers, with the single exceptions he had stated, to the court of directors, subject, however, to the approbation of the king; and that, in case of a negative, the directors should proceed to a second choice, and so on. He deprived the court of proprietors of their privilege of rescinding or altering the proceedings of their court of directors; and with respect to the foreign government, he was of opinion, that their authority should comprise in it a considerable discretion, accompanied with the restraint of responsibility. He proposed, that there should be a revision of the establishments in India with a view to retrenchments; that appointments should take place by gradation; and that a new and summary tribunal should be erected for the trial of offences committed in that country. With regard to the Zemindaries, though he could not help paying a compliment to Mr Fox, on his intention of restoring them to their proper owners, he yet thought that a general and indiscriminate restitution was as bad as an indiscriminate confiscation. He therefore proposed, that an inquiry should be instituted for the purpose of restoring such as had been irregularly and unjustly deprived, and that they should in time to come be secured against violence.

In the bill of 1784 few alterations were made; and these

Company. these uniformly tended to enlarge the powers of the board of controul. They were permitted, in cases of emergency, to concert original measures, as well as to revise, correct, and alter those of the directors. In matters relative to peace or war, where secrecy was a principal object, they were allowed to send their orders directly to India, without any communication with the directors; to the commander in chief, without any communication with the presidencies; and the number of persons constituting the different councils of Bengal, Fort St George, and Bombay, was determined.—The governor-general and council of Bengal were to have an absolute power to originate orders to the inferior presidencies, in such cases as did not interfere with the directions already received from Britain; adding a power of suspension in case of disobedience. The supreme council were forbidden, unless any of the Indian princes should have first commenced or meditated hostilities, to enter upon war, or form an offensive treaty, without orders from home. The inferior councils were forbidden in all cases to form alliances; and in cases of urgency, were commanded to insert a provisional clause, rendering the permanency of the alliance dependent on the confirmation of the governor-general.

Various salutary regulations were proposed concerning the behaviour of the company's servants, against whom so great complaints had been made. Inquiry was ordered to be made by the different presidencies into the expulsions that might have been made of any of the hereditary farmers, and of the oppressive rents and contributions that might have been extorted from them; and measures were directed to be taken for their relief and future tranquillity. A similar examination was ordered into the different establishments in the Indian settlements; a report of which was to be laid annually before parliament. The company were prohibited from sending out a greater number of cadets or writers than what were absolutely necessary; and it was likewise provided, that the age of such as were sent out, should not be less than 15, nor more than 22 years. It was likewise provided, that promotions should be made in the order of seniority, unless in extraordinary cases; for which the presidencies should make themselves specifically responsible. Crimes committed by English subjects in any part of India, were made amenable to every British court of justice, in the same manner as if they had been committed in Britain. Presents, unless such as were absolutely ceremonial, or given to a counsellor at law, a physician, a surgeon, or a chaplain, were absolutely prohibited, under the penalty of confiscation of the present, and an additional fine at the discretion of the court. Disobedience of orders, unless absolutely necessary, and pecuniary transactions prejudicial to the interests of the company, were declared to be high crimes and misdemeanors. The company were forbidden to interfere in favour of any person legally convicted of any of the above crimes, or to employ him in their service for ever. The governors of the different presidencies were also permitted to imprison any person suspected of illicit correspondence, and were ordered to send them to England with all convenient speed. Every person serving, or who should hereafter serve, in India, was also required, on his return to England, to give an exact account, upon oath, to the court of exchequer, of his property, within two

months after his arrival; one copy of which was to be kept in the court of exchequer, and the other at the India-house. The board of controul, the court of directors, or any three of the proprietors whose stock should amount together to 1000*l.* were allowed to move the court of exchequer to examine the validity of the account. In case of an apparently well founded accusation, the court of exchequer were allowed to examine the party upon oath, and even to imprison him until the interrogatories proposed to him should be answered. The whole property of a person who should neglect to give in such an account within the time limited, or who should have been guilty of a misrepresentation in that account to the amount of 2000*l.* sterling, was ordered to be confiscated; ten *per cent.* to be paid to the accuser, and the remainder to be equally divided between the public and the company. Every person who had once been employed in India, but had afterwards resided in Europe for five years, unless such residence had been expressly on account of his health, was declared incapable of ever being sent out to India again.

As a farther curb on the company's servants, the attorney-general or court of directors was authorized to file an information in the court of King's-bench against any person for crimes committed in India. That court was empowered also to imprison or admit the accused to bail immediately. It was then ordered, that within 30 days a certain number of peers should be chosen by the house of lords, and of the members of the house of commons by that house, to constitute a court for the trial of the accused. The court was finally to consist of three judges appointed by the crown, four peers, and six members of the house of commons; and the accused had a right to a peremptory challenge. From this court there was no appeal; and it was empowered to adjudge the party incapable of ever serving the company; to punish by fine or imprisonment; and in order to proportion the fine to the property of the convict, the court of exchequer might, at the requisition of the attorney-general, or of the company, examine him upon oath concerning the sum he was worth. A refusal to answer was to be punished with confiscation of property, and imprisonment during pleasure.

With regard to the treatment of delinquents in India, Mr Pitt observed, that at that time we had it not in our power to punish them. Either a new process must therefore be instituted, or offences, equally shocking to humanity, and contrary to every principle of religion and justice, must be permitted to continue unchecked. Every person therefore who went hereafter, would know the predicament in which he stood; and would understand, that by so doing he agreed to give up some of the most valuable privileges of an Englishman; yet in this he would do no more than a very numerous and honourable body of men, the military, did daily, without the least hesitation, or the smallest impeachment of their character.

This bill, so tremendous in its appearance to the company's servants, was vehemently opposed by the minority. Mr Francis observed, that it went upon two principles, *viz.* the abuse of power abroad, and the want of it at home. To remedy these, Mr Pitt had proposed to augment the power abroad, and to

Company. diminish that at home. He condemned the unlimited power of the commissioners, and even pretended to suppose that there must have been some mistake in the structure of the clause; it being impossible to think that it was intended to set aside the directors at home and the government abroad, in order to throw the whole power into the hands of a military commander. Though he approved of the clause by which schemes of conquest and extension of territory were condemned, he remarked, that it was essentially defective in other respects; as alluding to facts and offences which were not described, and to criminals whom, so far from punishing, it did not venture to describe. With respect to the affair of presents, he confessed that his opinion was rather singular. He was for an unlimited prohibition to men in high stations; but in the ordinary transactions of business, he was of opinion that they were useful, without giving room for any just apprehensions. The government of India, as it was now constituted, was a government of favour, and not of justice; and nothing would be done for the natives unless the persons who forwarded their affairs were gratified. In the mean time, however, the exception in favour of presents of ceremony was founded upon ideas which he knew to be fallacious, and was even calculated to render the prohibition itself useless and ineffectual. For the purpose of receiving presents of ceremony, all occasions would be sufficiently solemn. He warmly censured also the power of imprisonment given to the respective presidencies, and he condemned the institution of the new court of judicature as unnecessary, arbitrary, and dangerous.

By Mr Fox the bill was so highly disapproved of, that he objected to the house going into a committee upon it. He endeavoured to show, that instead of diminishing, it was calculated to increase the calamities of the East; and instead of reforming, to perpetuate the abuses so much complained of. The board of controul, he said, provided for a weak government at home by a division of power; and if there were a receipt or a nostrum for making a weak government, it was by giving the power of contriving measures to one, and the nomination of the persons who were to execute them to another. The negative given to the commissioners operated as a complete annihilation of the company, and the chartered rights so much vaunted of. The bill was a scheme of dark and delusive art, and took away the rights of the company by slow and gradual sap. The first step was originally to contrive measures without the knowledge of the company; and the next, to convey orders secretly to India, at the very time perhaps that the commissioners were openly giving countenance to orders of a quite different tendency sent from the directors. With regard to the new tribunal, he considered it as in truth a screen for delinquents; since no man was to be tried but on the accusation of the company or of the attorney-general; in which case he had only to conciliate government in order to remain in perfect security.

The opposition of Mr Fox's party against this bill proved as fruitless as their efforts had been in favour of the other. The house divided on the speaker's leaving the chair; when the motion was carried by a majority of 215. Still, however, all parts of the bill were warmly debated. In the course of conversation

upon this subject, Mr Dempster expressed a wish that the king could be requested to send over one of his sons to become sovereign of that country. We might then enter into a federal union, and enjoy all the benefits that could be derived from the inhabitants of the East by Europeans, *viz.* those of commerce. The clauses relative to the native princes and hereditary farmers were all withdrawn at the motion of Mr Dundas; and under the head of presents, the exception in favour of those of ceremony was withdrawn. That clause, which insisted on all persons returning from India to give an account of the value of their estates upon oath, was severely censured by Mr Dempster and Mr Eden; and after some debate was entirely withdrawn, as was also the idea of making the person take the oath when required by the board of controul. Mr Pitt then proposed, that persons who had passed five years in India, and accumulated no more than £.5000 for that time, or double that sum for the next five years, should be exempted from all prosecution on the score of their fortunes. But on a suggestion by Mr Atkinson, that, in case of sickness, it might not be practicable for a person arriving from India to give in an account upon oath in the space of two months; on which suggestion, a power was granted to the court of exchequer for extending the term from time to time as they should think proper. It had been the original idea of the chancellor, that this jurisdiction should take place in twelve months; and it had been objected, that thus persons would be deprived of the trial by jury, without time being granted them to choose whether they would submit to the condition. Mr Pitt now moved, that no account upon oath should be required of any person who should arrive from India before the first of January 1787. This amendment was likewise censured by opposition, as holding out an indemnity to speculators, and a warning for them to return within the assigned period. It was remarked by Mr Sheridan, that by the bill before the house, a person who took the oath would be liable all his lifetime to a prosecution for perjury. He could therefore make no settlement of his fortune; he could not sell or mortgage his estate, as nobody would have any thing to do with a property which was still liable to contest and forfeiture. This representation produced another amendment, limiting the commencement of a prosecution to the period of three years. The clause prohibiting the return of any person to India under certain conditions, was also mitigated by two amendments from the chancellor; one of them exempting the officers of the king from its operation; and the other permitting the restoration of any person with the consent of the directors, and three-fourths of the court of proprietors.

With these amendments the bill finally passed the house of commons on the 28th of July. On being carried up to the house of lords, it met with a very vigorous opposition; the principal speakers against it being Lord Stormont and the Earl of Carlisle. The former animadverted upon the principle of seniority established by it; which he said was particularly ill-suited to the critical posture of affairs and our present situation in India; and he asserted, that had such a clause been in effect at the time that Lord Clive first entered into the company's service, there would not

Company. have been an inch of the territorial possessions at present belonging to this country. It would damp the ardour of emulation, check the rising spirit of the youth now in Asia, and that at a time when the most extraordinary talents were necessary to raise us from our inauspicious and ruined condition. He objected also to the power of recall in the board of controul; which, he said, was by no means a sufficient check upon the company's servants in India. The distance of time and place, he said, were so great, that a recall from India could not have the least effect. But these remonstrances had very little weight with the house; the bill being finally passed on the 9th of August.

Some years after this, however, a declaratory law was found necessary, in consequence of a controversy which had arisen between the board of controul and the company. It had been resolved, in the month of October 1787, when his Majesty had reason to be alarmed, and to look with more than common anxiety to the safety and preservation of every part of the British dominions, to send out four additional regiments for the better protection of our Indian possessions; nor was the design taken up as a temporary, but with a view to a permanent, establishment of his Majesty's troops in India. At that time, no unwillingness to receive the regiments on board the company's ships, and provide for their support in India, had been intimated by the court of directors; but, on the contrary, the measure had been considered as a wise one, and the suggestion of it had given universal satisfaction. Since, however, the threatening storm had been dispersed, far different sentiments prevailed. Some of the directors, at least, were of opinion, that unless they made a requisition to government for further military assistance, they had it in their option to bear, or to refuse to bear, the expence of any additional regiments of his Majesty's army which might be sent to India; and this opinion seemed to be, in a great measure, grounded on the act of 1781, by which the East India company were bound to pay for such of his Majesty's troops as had, by their requisition, been sent to India. This idea had been much agitated without doors, and the directors had thought proper to consult different counsel of eminence on the subject.

In this business two questions naturally arose—First, Whether the king had a right to send his troops to any part of his dominions? and, secondly, If he sent them to India, who ought to defray the expence? That his Majesty had an undoubted right, by his royal prerogative, to direct the distribution of his army, no one could, with any colour of reason, dispute. The only point, therefore, which offered itself for discussion was, whether, if his Majesty, by virtue of his prerogative, thought proper to send four additional regiments to India, the expence of sending them, and their support, ought to be provided for out of the revenues of India, which they protected? It was certainly the opinion of ministers, that by the act of 1784, the authority and power of the court of directors, touching the military and political concerns of India, and also the collection, management, and application of the revenues of the territorial possessions, was transferred to the board of controul, which might direct the appropriation of these revenues in the manner that to them

should appear to be most for the public advantage; Company. but as doubts had been entertained by others, and the opinions of counsel, confirming those doubts, had been taken, all of which had gone abroad into the world, it was considered as a necessary measure to call upon the different branches of the legislature to remove those doubts in the most effectual way by a bill. It was certainly very evident, that, on the present occasion, the four regiments might, on board the company's ships, be sent out to India at a very inconsiderable expence; whereas, if transports had been specially provided for that purpose, the expence must have been enormous. To oblige the company, therefore, to pay the expence out of their Indian revenues, as had already been intimated to them by the commissioners of controul, the chancellor of the exchequer moved, on the 5th of February 1788, "That leave be given to bring in a bill for removing any doubts respecting the power of the commissioners for the affairs of India."

In explanation of this bill, and in answer to the remarks of opposition, Mr Pitt desired to remind the house that he had provoked the discussion of the bill, and had earnestly solicited them to bring it to the test of the most severe and scrupulous investigation. He found that it would be disputed, whether by the act of 1784 the board of controul had any right of superintendance over the revenue? Would it be contended that parliament meant to leave the finances in the hands of the company, who had been declared unfit to be trusted with them? Was it likely, that, when they provided for the better management of the political and military concerns, they had paid no attention to the circumstance upon which these concerns inseparably depended? The board of controul had already proceeded to reduce the enormous establishments in India; their right of interference in that respect had never been questioned; and what indeed would be the consequence of denying this right? The court of directors, if they had it in their power, as the expiration of their charter drew near, and it was doubtful whether their monopoly would be renewed, would certainly make it their first object to swell the amount of their imports, and would neglect the care of the territorial and political state of India. The duty of administration was to look, first, to the prosperity and happiness of the natives; secondly, to the security of the territorial possessions; thirdly, to the discharge of the debts due to the persons who had advanced their money, and enabled the company to struggle with their late difficulties; and, in the last place, to the commercial benefit of the proprietors. Was it probable that the court of directors would act upon that scale? Could it have been intended to confide in their discretion? It had been said, that the powers attributed to the board of controul were the same in substance as had before been given to the secretaries of state and the lords of the treasury. But the fact was otherwise. The court of directors had been obliged to communicate their dispatches previous to their going to India; but there was no obligation upon the secretary of state to give any directions concerning them. The responsibility had ordinarily rested, under the former government, with the court of directors; under the present it was wholly vested with the board of controul.

Company. An objection had been stated, that the declaratory bill conveyed to the king the power of maintaining an army without the consent of parliament. No proposition (Mr Pitt observed) could be more adverse to his intentions than that which was thus imputed to him. But in reality the troops in question had already been recognised by parliament when they voted the estimate for raising them; and the number of king's regiments serving in India would always be to be ascertained by the company belonging to each, which remained in England for the purpose of recruiting, and the expence of which would be to be provided for by parliament.

Mr Pitt acknowledged, that it had been the object of the act of 1784 to assume the power of superintendance and controul, without assuming the power of patronage. In the present bill he declared, that every thing had been done which his understanding had suggested for the diminution of patronage. The regiments in question belonged to the crown; and of course it could not be supposed that the sovereign could entirely depart from his prerogative of naming his own officers. But the king had acted with the most gracious attention to the company, and to the merits of the officers who had grown grey in their service; having relinquished nearly half the patronage of the regiments, and leaving the disposal of these commissions to the court of directors. The company indeed alleged that they had 600 officers unemployed; but the king could not forget that he had 2800 officers upon half-pay, not perhaps more meritorious, but certainly not less so, than those in the company's service, and many of whom had actually served with distinction in India. Such had been the forbearance he had thought it proper to exercise upon the subject of patronage. But if, by the objection that had been started, it was intended to refer to the great political patronage, this he did not deny that he had at all times intended to assume. Men who were responsible for the government of a country, ought undoubtedly to have the appointment of those whom they were to entrust with the execution of their orders. But it would be admitted that the patronage left to the company was very considerable, when the great extent of their military establishment was properly recollected. Mr Pitt added, that the objections that were started on this head would possibly throw difficulties in the way of the consolidation of the two armies in India; an object on many accounts desirable, and which in some way or other must be attempted. If it should be thought advisable to make the whole army royal, then undoubtedly the patronage of the crown would be greatly increased. He believed, however, that the measure was necessary; and there was scarcely any thing to which he would not assent, to remove the apprehensions of the nation respecting the undue use of this patronage. For the bill now before the house, Mr Pitt professed himself ready to propose clauses that should annihilate every suspicion of danger.

The speech of Mr Pitt produced a favourable effect upon the country gentlemen; and the clauses which he had alluded to being moved, were received without any debate. These provided, That no king's troops, beyond the number which was now proposed, should be sent to India under the authority of any existing law;

Company. That no increase of salary should be given to any of the servants of the company, without the dispatches for that purpose being laid before both houses of parliament thirty days previous to their being sent; and that no gratuity should be given, the proposal for which did not originate with the court of directors. A fourth clause was added to these by the minister, which had not precisely the same object: it directed, that an account of the revenues and disbursements of the company should be laid before parliament at a certain assigned period in the course of every year.

The bill was carried up to the house of lords on the 14th of March, read a first time on the following day, which was Saturday, and proposed for a second reading on the ensuing Monday. This precipitation was made the subject of a petition, offered by certain proprietors, and presented to the house by the Duke of Norfolk, in which they requested a delay of three days, till a general meeting could be held of the proprietors of the East India company. To this suggestion it was objected by Lord Thurlow and Lord Hawkebury, that the ships of the East India company were now detained in port at the enormous expence of three or four hundred pounds *per diem*. By Lord Stormont and Lord Loughborough it was replied, that no expence, however great, ought to weigh in the consideration of the present question. The bill decided upon a matter of private right, and parliament could not justly refuse to hear the petitioners. The house divided upon the question, contents 32, not contents 75. A motion of Lord Porchester was rejected by a similar majority, for referring a question to the twelve judges respecting the true meaning and intent of the act of 1784.

The Duke of Richmond said, that he was peculiarly circumstanced on the present occasion, since he had never been pleased with any of the bills for the government of India that had yet been brought into parliament. He had ever been of opinion, that the concerns of the East were trusted in the best hands when they were vested in the company itself. He had opposed the bill of 1783, because it flagrantly violated the charter of the company, and placed an immense power in the hands of a commission, that was not responsible, so far as he could find, either to the king or the parliament. He had opposed the act of 1784, because it gave to the crown an enormous addition of power. But he could not admit that that act was in any degree so violent and despotal as the bill which preceded it. The declaratory measure now under consideration must necessarily have his complete approbation. It consisted of two distinct parts; its exposition of the act of 1784, and certain enacting clauses containing checks and restraints upon the extensive patronage that the government of the East naturally gave. To the former part he must inevitably agree. That the act of 1784 gave to the board of controul complete authority, had always been his opinion. For that reason he had opposed it: but, entertaining that opinion, he must justify the present bill, which in his mind was a true declaration of the fact. He could not but equally approve of the restraints that were proposed upon the exercise of patronage. Patronage was inseparable from power. But when he saw the in-

Company. industry with which it was limited, and ministers were tied down from the abuse of it; when he saw that it was not to be used otherwise than for the good of the service, he could not view the present measure with the same jealousy with which he was accustomed to regard propositions for extending the power of the crown.

The bill, however, underwent a severe discussion in this as it had done in the other house; but at length passed.

In May following a petition was presented to the house of commons by the company, stating certain pecuniary embarrassments which they apprehended to take place on the first of March 1790, owing to the arrears of the war, to the government claim of L. 500,000, to the debt incurred in China, and to the advances necessary to be made for the purposes of the China trade. In compliance with their petition, Mr Pitt moved on the following day that they should be empowered to borrow a sum not exceeding L. 1,200,000. He at the same time observed, that in all probability the company in 1791 would have upwards of L. 3,000,000 Sterling more than sufficient to discharge their debts. The measure was carried thro' both houses without opposition.

3. *Hudson's Bay Company.* The vast countries which surround Hudson's Bay abound with animals whose furs and skins are excellent, being far superior in quality to those found in less northerly regions. In 1670, a charter was granted to a company, which does not consist of above nine or ten persons, for the exclusive trade to this bay; and they have acted under it ever since with great benefit to themselves. The company employ four ships and 130 seamen. They have several forts, viz. Prince of Wales's fort, Churchill river, Nelson, New Severn, and Albany, which stand on the west side of the bay, and are garrisoned by 186 men. The French, in May 1782, took and destroyed these forts, and the settlements, &c. valued at 500,000 l. They export commodities to the value of 16,000 l. and bring home returns to the value of 29,340 l. which yield to the revenue 3734 l. This includes the fishery in Hudson's Bay. This commerce, small as it is, affords immense profits to the company, and even some advantages to Great Britain in general; for the commodities we exchange with the Indians for their skins and furs, are all manufactured in Britain; and as the Indians are not very nice in their choice, such things are sent of which we have the greatest plenty, and which, in the mercantile phrase, are drugs with us. Though the workmanship too happens to be in many respects so deficient that no civilized people would take it off our hands, it may be admired among the Indians. On the other hand, the skins and furs we bring from Hudson's Bay, enter largely into our manufactures, and afford us materials for trading with many nations of Europe to great advantage. These circumstances tend to prove incontestably the immense benefit that would redound to Great Britain, by throwing open the trade to Hudson's Bay, since even in its present restrained state it is so advantageous. This company, it is probable, do not find their trade so advantageous now as it was before we got possession of Canada. The only attempt made to trade with La-

brador has been directed towards the fishery, the annual *Company.* produce of which exceeds 49,000 l.

THE above are the principal trading companies presently subsisting in Great Britain; but to the number might have been added one of vast importance, the *Scottish Darien Company*, had it not been for the crooked and pusillanimous policy of the English ministry at the time. For an account of which, see the article *DARIEN*.

Greenland COMPANY. See *GREENLAND*.

Banking COMPANIES. See *BANK*.

OF establishments similar to the above in other countries, the following, belonging to the Dutch and French, may be mentioned as the most important.

I. *Dutch Companies.* 1. Their East India company had its rise in the midst of the struggle which that people had for their liberty: for the Spaniards having forbidden all commerce with them, and shut up all their ports, necessity inspired some Zealanders to seek a new north-east passage to China.

This enterprize proving unsuccessful to three several armaments in 1594, 1595, and 1596, a second company was formed, under the name of the *Company of remote Parts*: which, in 1595, took the ordinary route of the Portuguese to the Indies, and returned in two years and a half's time with little gain but good hopes.

This company, and a new one just established at Amsterdam, being united, equipped other fleets; and these occasioned other companies at Amsterdam, Rotterdam, in Zealand, &c. inasmuch that the states soon began to apprehend they might be prejudicial to each other. Under this concern, they called all the directors of the several companies together, who all consented to an union, the treaty whereof was confirmed by the States in 1602; a very remarkable epocha, as being that of the most solid and celebrated establishment of commerce that ever was in the world.

Its first capital was six millions six hundred thousand guilders. It had sixty directors, divided into several chambers; twenty in that of Amsterdam, twelve in that of Zealand, fourteen in that of Delft and Rotterdam, and a like number in those at Sluys and Horn. As each grant expires, the company is obliged to procure a new one, which it has already done five times since the first, paying a considerable sum each time. The last application was in 1773, when the company, after stating that its trade had declined, solicited the states-general to grant a diminution of the sum formerly paid for the renewal of the charter. Upon this representation, their high mightinesses, in order to have time to inquire into the matter, prolonged the charter for three years, upon the old establishment; and finding, upon examination, that the company had really sustained great losses, and its trade considerably declined, they acted with the spirit of a wise commercial commonwealth, by complying with the company's request. They therefore, in 1776, granted them a new charter for 30 years, on the same terms as the former, on the immediate payment of 2,000,000 of florins, instead of 3,000,000 which they paid before, and the sum of 360,000 florins yearly; which annual pay-

Company. payment they were allowed to make either in money or merchandize. In consequence of this indulgence, the stock of the company rose in a short time no less than 19 per cent.

Their factories, residences, &c. in the East Indies, are very numerous; reaching from the Persian gulph to the coast of China: the principal is that of Batavia, the centre of their commerce: here resides their general, with the state and splendor of a sovereign prince; making war and peace with the eastern kings and emperors at pleasure.

The other more considerable factories are, Taiouam on the coast of China, Nangisac in Japan, Malacca, Surat, Amboyna, Banda, Siam, Moluccas, &c. several on the coast of Coromandel, and at Ispahan, Cape of Good Hope, &c. in all, they number 40 factories and 25 fortresses. They have the whole trade of the spicery in their own hands.

2. Their *West India Company* was established in 1621, with an exclusive privilege to trade 24 years along the coasts of Africa, between the tropic of Cancer and the Cape of Good Hope; and in America from the south point of Newfoundland, through the straits of Magellan, that of Le Maire, or others, to the straits of Anian, both in the North and South Sea. The directors are divided into five chambers (as in the East India company), out of which 19 are chosen for the general direction of affairs. In 1647, the company renewed its grant for 25 years; but it was scarce able to hold out the term, on account of its great losses and expences in taking the bay of Todos los Santos, Fernambuc, and the greatest part of Brasil, from the Portuguese. The weakness of this company, which had several times in vain attempted to be joined to that of the East Indies, occasioned its dissolution at the expiration of its grant.

In 1674, a new company, composed of the ancient proprietors and their creditors, was settled in the same rights and establishment with the former; and still subsists, though considerably decayed. Their first capital was about six millions of florins. Its principal establishments are, one at Cape Verd, another on the Gold Coast of Africa, at Tobago, Curassao, &c. in America.

II. FRENCH COMPANIES. 1. Their *East India Company* was established in 1664, with an exclusive privilege to trade for 50 years in all the seas of the East Indies and South Sea. No adventurer to be admitted without 1000 livres in stock; and foreigners who have 20,000 livres in stock to be reputed regnicoles.

The patent grants them the island of Madagascar; and the king to be at one-fifth of the expence of the three first armaments, without interest: the principal to be refunded in ten years; or, if the company find it loses on the whole, the loss to fall on the king's side.

The capital fund of the company, which was mostly furnished by the king, was seven or eight millions of livres, but was to have been fifteen millions.

In effect, though no means were wanting to support the company, yet it still drooped and still struggled; till having subsisted ten years without any change in its form, and being no longer able to discharge its engagements, there were new regulations concerted, but

to little purpose. At length, things not being disposed for a new East India company, nor much good to be expected from the old one, in 1708 the ministry allowed the directors to treat with the rich traders of St Malo, and resign to them their privilege under certain conditions. In the hands of these last, the company began to flourish. See *India Company*, below.

Its chief factory is at Pondicherry, on the coast of Coromandel. This is the residence of the director-general; the other factories are inconsiderable. The merchandizes which the company brings into France are, silks, cottons, spices, coffee, rice, saltpetre; several kinds of gums and drugs, wood, wax, printed calicoes, muslins, &c.

2. Their *West India Company* was established in 1664. Their charter gave them the property and feigniory of Canada, Acadia, the Antilles islands, Ile of Cayenne, and the Terra Firma of America, from the river of the Amazons to that of Oroonoko; with an exclusive privilege for the commerce of those places, as also of Senegal and the coasts of Guinea, for 40 years, only paying half the duties. The stock of the company was so considerable, that in less than six months 45 vessels were equipped; wherewith they took possession of all the places in their grant, and settled a commerce: yet this only subsisted nine years. In 1674, the grant was revoked, and the countries above reunited to the king's dominions as before; the king reimbursing the actions of the adventurers. This revocation was owing partly to the poverty of the company, occasioned by its losses in the wars with England, which had necessitated it to borrow above a million, and even to alienate its exclusive privilege for the coasts of Guinea: and partly to its having in good measure answered its end; which was to recover the commerce of the West Indies from the Dutch, who had torn it from them: for the French merchants, being now accustomed to traffic to the Antilles, by permission of the company, were so attached to it, that it was not doubted they would support the commerce after the dissolution of the company.

3. Their *Mississippi Company* was first established in 1684 in favour of the Chevalier de la Salle; who having projected it in 1660, and being appointed governor of the fort of Frontignac at the mouth of that river, travelled over the country in the year 1683, and returned to France to solicit the establishment. This obtained, he set sail for his new colony with four vessels loaden with inhabitants, &c. but entering the Gulph of Mexico, he did not, it seems, know the river that had cost him so much fatigue, but settled on another river unknown, where his colony perished by degrees; so that in 1685 there were not 100 persons remaining. Making several expeditions to find the Mississippi, he was killed in one of them by a party who mutinied against him; whereupon the colony was dispersed and lost. M. Hiberville afterwards succeeded better. He found the Mississippi, built a fort, and settled a French colony there; but he being poisoned, it is said, by the intrigues of the Spaniards, who feared such a neighbour, in 1712 M. Crozat had the whole property of trading to the French territories called *Louisiana* granted him for 15 years.

4. *Company of the West*. In 1717, the Sieur Crozat surrendered his grant; and in the same year a new

Company. company was erected under the title of *Company of the West*: to which, besides every thing granted to the former company, was added the commerce of beaver, enjoyed by the Canada company from the year 1706, but expiring in 1717. In this establishment, an equal view was had to the finances and the commerce of the nation; and, accordingly, part of the conditions of its establishment regarded the settling a colony, a trade, &c. the other the vending part of the bills, called *bills of state*, which could no longer subsist on their present footing. The former are no more than are usual in such establishments: for the latter, the actions are fixed at 500 livres, each payable in bills of state; the actions to be esteemed as merchandize, and in that quality to be bought, sold, and trafficked. The bills of state, which make the fund of the actions, to be converted into yearly revenue. To put the finishing hand to the company, in 1717 its fund was fixed at an hundred millions of livres; which being filled, the cash was shut up.

5. *India Company.* The junction of the former company with that of Canada was immediately followed by its union with that of Senegal, both in the year 1718, by an arret of council; which at the same time granted the new company the commerce of beavers, and made it mistress of the negro or Guinea trade to the French colonies in America.

Nothing was now wanting to its perfection but an union with the East India company, and with those of China and St Domingo; which was effected, with the two first in 1719, and with the third in 1720. This union of the East India and China company with the company of the West, occasioned an alteration of the name; and it was henceforth called the *India Company*.

The reasons of the union were, the inability of the two former to carry on their commerce; the immense debts they had contracted in the Indies, especially the East company, complaints whereof had been sent to court by the Indians, which discredited the company so that they durst not appear any longer at Surat; the little care they took to discharge their engagements; and their having transferred their privilege to the private traders of St Malo, in consideration of a tenth in the profits of the returns of their ships.

The ancient actions of the company of the West, which were not at par when this engraftment was projected, before it was completed, were risen to 300 *per cent.*; which unexpected success gave occasion to conclude the new actions of the united companies would not bear less credit. The concourse of subscribers was so great, that in a month's time there were above fifty millions subscribed for: the first twenty-five million actions which were granted to the India company, beyond the hundred millions of stock allowed the company of the West, being filled as soon as the books were opened; to satisfy the earnestness of the subscribers, the stock was increased by several arrets to three hundred millions. Credit still increasing, the new actions rose to 1200 *per cent.* and those of the ancient company of the West to 1900 *per cent.*; an exorbitant price, to which no other company ever rose. Its condition was now so flourishing, that in 1719 it offered the king to take a lease of all his farms for nine years,

at the rate of three millions five hundred thousand livres *per annum* more than had been given before; and also to lend his majesty twelve hundred millions of livres to pay the debts of the state. These offers were accepted; and the king, in consideration hereof, granted them all the privileges of the several grants of the companies united to that company to the year 1770; on condition, however, of discharging all the debts of the old East India company, without any deduction at all. The loan of twelve hundred millions not being sufficient for the occasions of the state, was augmented, three months afterwards, with three hundred millions more; which, with the former loan, and another of one hundred millions before, made sixteen hundred millions, for which the king was to pay interest at the rate of three *per cent.*

The Duke of Orleans, in February 1720, did the company the honour to preside in their assembly, where he made several proposals to them on the part of the king: the principal of these was, that they should take on them the charge and administration of the royal bank. This was accepted of; and Mr Law, comptroller-general of the finances, was named by the king inspector-general of the India company and bank united.

This union, which, it was proposed, should have been a mutual help to both those famous establishments, proved the fatal point from whence the fall of both commenced: from this time, both the bank bills and the actions of the company began to fall. In effect, the first perished absolutely, and the other had been drawn along with it but for the prudent precautions taken for its support.

The first precaution was the revoking the office of inspector-general, and the obliging Mr Law to quit the kingdom: the ancient directors were discarded, and new ones substituted; and, to find the bottom of the company's affairs, it was ordered they should give an account of what they had received and disbursed, both on the account of the company and of the bank, which they had had the management of near a year. Another precaution to come at the state of the company was, by endeavouring to distinguish the lawful actionaries from the Mississippi extortioners; whose immense riches, as well as their criminal address in realizing their actions either into specie or merchandize, were become so fatal to the state; in order, if possible, to secure the honest adventurers in their stock. To this end, an inquisition was made into their books, &c. by persons appointed by the king; and the new directors, or, as they were called, *regisseurs*, began seriously to look about for their commerce abroad. Their affairs, however, declined, and at length sunk into a ruined and bankrupt state about the year 1769. The king immediately suspended their exclusive privileges, and laid the trade to the east open to all his subjects; consigning, at the same time, the affairs of the company to the care of the ministry to adjust and settle. But the various schemes which were then formed for the restoration of the old company, and the establishment of a new one, were accompanied with such unfurmountable difficulties, as to prove wholly ineffectual. Nor was the laying open of the trade attended immediately with the success that was expected; the merchants being very slow in engaging in it, though the king, by way of

Company. encouragement, lent them some of his own ships to convey their commodities to the East; and the garrison and civil establishments continued to be supported in their existing form by the crown. The measure, however, proved in time successful; so that for a course of years previous to 1785, the annual importation from India was considerably greater than during any former period. But whether it were that they regarded this prosperity as precarious; or that they aimed at a more extensive success; or that they wished, in imitation of Britain, for territorial acquisitions in that climate, and believed an incorporated society the best instrument of obtaining them; the French court was induced to listen to proposals for establishing a new East India company. Their privilege was for seven years, with the special proviso, that years of war which might occur in the interim should be excluded from the computation.

In the preamble of the act of the 14th April 1785, by which the scheme was adopted, it was alleged, "that the commodities of Europe not having of late years been regulated by any common standard, or proportioned to the demands of India, had on the one hand sold at a low price; while, on the other, the competition of the subjects of France had raised the price of the objects of importation: that, upon their return home, a want of system and assortment had been universally complained of, the market being glutted with one species of goods, and totally destitute of another: that these defects must necessarily continue as long as the trade remained in private hands; and that, on their account, as well as that of the capital required, the establishment of a new company was absolutely necessary."

These reasonings did not appear altogether satisfactory to the persons principally interested. France has been so far enlightened by the discussions of the excellent writers she has produced upon questions of politics and commerce, as not to be prepared to behold the introduction of monopolies with a very favourable eye. By many persons it was remarked, that the arguments of the preamble did not apply more to the trade of India than to any other trade; and that, if they were admitted in their entire force, they were calculated to give a finishing blow to the freedom of commerce. The capital of the new company, which amounted to L. 830,000, was ridiculed as altogether inadequate to the magnitude of the undertaking. The privileges with which it was indulged were treated as enormous. The monopoly of East India goods imported into France from any part of Europe, was granted to them for two years, as well as the monopoly of East India goods imported from the place of their growth. It was said, that during that period they would fit out no adventures for India; that they hoped to obtain a prolongation of this injurious indulgence; and that, of consequence, their incorporation was in reality a conspiracy to prevent all future communication between France and the sources of commerce in Asia. A provision in the act, directing that the prices of East India goods in the islands of Mauritius and Bourbon should be regulated by a tariff to be fixed by the court of Versailles, excited still louder exclamations. In this instance, it was said, the first principles of commerce were trampled upon in a man-

ner the most wanton and absurd. Instead of suffering it to find its own level by the mutual collision of the wants of one party and the labour of another, it was arbitrarily to be fashioned by a power whose extreme distance must necessarily render its decisions ill-timed and inapplicable. The very mode in which the monopoly was introduced was a subject of complaint. It was determined by a resolution of the king in council; a proceeding totally inadequate to the importance of the subject, and which was to be regarded as clandestine and surreptitious. In all former instances such measures assumed the form of edicts, and were registered in the parliaments. It was the prerogative of these courts to verify them; that is, to inquire into the facts which had led to their adoption. The injured parties had an opportunity of being heard before the privilege assumed the form of a law; not privately by the ministers of the sovereign, but publicly by the most considerable bodies in the kingdom, and in the face of the nation.

The act of council establishing a new East India company, was followed on the tenth of July by another declaration, intended still farther to promote their interest; by which it was expressly forbidden to import cottons, printed linens, and muslins, except thro' the medium of the company. The arret proceeds upon the same principles of monopoly as in the former instance. It sets out indeed with a declaration, "that nothing can appear more desirable to the king, or better accord with the sentiments of his heart, than a general liberty, that freeing at once the circulation of commodities from every species of restraint, should seem to make of all the people of the world but one nation with respect to commerce." But it adds, "that the period of this liberty is not yet arrived: that it must either be, with respect to the nations of Europe, unlimited and reciprocal, or that it cannot be admitted: that the revocation of the former indulgence respecting cottons and linens was become necessary on account of the opportunities it created for contraband trade; and because the competition of the East India company and private traders would occasion a surplus in the market, and the admission of foreign manufactures would decrease and annihilate the national industry."

The provisions that were made for carrying this law into effect were considered as unjust and severe. The merchants possessing any of the prohibited commodities were allowed twelve months to dispose of them; but upon the express condition, that the commodities were to bear a stamp, importing that they were vendible only to a certain period, a circumstance that must necessarily depreciate their value. It was also enacted, that the house of any trader might be entered by day or by night, at the solicitation of the directors, to search for prohibited goods, which were to be confiscated to the use of the company. These kinds of visits of the officers of revenue, hitherto unauthorised in France, were represented as peculiarly obnoxious, when they were made for the sole benefit of a privileged monopoly.

COMPANY, in military affairs, a small body of foot, commanded by a captain, who has under him a lieutenant and ensign.

Company.

The number of centinels or private soldiers in a company is from 50 to 100; and a battalion or regiment consists of 9, 10, or 11, such companies: one of which is always grenadiers, and posted on the right; next them stands the colonel's company, and on the left the light infantry company. Companies not incorporated into regiments are called *irregulars*, or *independent companies*.

Artillery COMPANY. See ARTILLERY.

COMPANY of Ships, a fleet of merchantmen, who make

a charter party among themselves; the principal conditions whereof usually are, that certain vessels shall be acknowledged admiral, vice-admiral, and rear-admiral; that such and such signals shall be observed; that those which bear no guns shall pay so much *per cent.* of their cargo; and in case they be attacked, that what damages are sustained shall be reimbursed by the company in general. In the Mediterranean, such companies are called *conserves*.

Company.

COMPARATIVE ANATOMY,

IS that branch of anatomy which considers the secondary objects, or the bodies of other animals; serving for the more accurate distinctions of several parts, and supplying the defect of human subjects.

It is otherwise called *the anatomy of beasts*, and sometimes *zootomy*; and stands in contradistinction to human anatomy, or that branch of the art which considers the human body the primary object of anatomy. See ANATOMY.

INTRODUCTION.

1
The uses of Comparative anatomy.

THE principal advantages of comparative anatomy are the following: First, it furnishes us with a sufficient knowledge of the different parts of animals, to prevent our being imposed upon by those authors who have delineated and described several parts from brutes as belonging to the human body. Secondly, it helps us to understand several passages in the ancient writers in medicine, who have taken many of their descriptions from brutes and reasoned from them. The third and great use we reap from this science, is the light it casts on several functions in the human economy, about which there have been so many disputes among anatomists.

2
How the action of muscles is determined.

In this view it is altogether needless to insist on those parts whose use is usually understood when once their structure is unravelled: Thus, for instance, if we be acquainted with the action of the muscles in general, it will not be difficult to determine the use of any particular muscle whose origin and insertion is known, if we at the same time consider the various connections of the bones to which it is fixed, and the different degree of mobility they have with respect to each other. In the same manner, if we know the use of the nerves in general, we can easily assign the use of those nerves which are distributed to any particular part. There is then no occasion for a complete osteology, myology, &c. of the several animals we shall treat of, nor need we trouble ourselves about the structure of any of the parts, unless when it serves to illustrate some of the fore-mentioned purposes.

That the first use we proposed from examining the structure of the parts in brutes is real and of consequence, is evident from looking into the works of some of the earliest and greatest masters of anatomy, who for want of human subjects have often borrowed their descriptions from other animals. The great Vesalius, although he justly reproves Galen for this fault, is guilty of the same himself, as is plain from his delineations of the kidneys, uterus, the muscles of the eye;

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and some other parts. Nor is antiquity only to be charged with this, since in Willis's *Anatomia Cerebri* (the plates of which were revised by that accurate anatomist Dr Lower) there are several of the pictures taken from different brutes, especially the dog, besides those he owns to be such. We shall give several examples of the second use in the sequel of the work.

The animal kingdom, as well as the vegetable, contains the most surprising variety, and the descent in each is so gradual, that the little transitions and deviations are almost imperceptible. The bat and flying-squirrel, though quadrupeds, have wings to buoy themselves up in the air. Some birds inhabit the waters; and there are fishes that have wings, and are not strangers to the airy regions: the amphibious animals blend the terrestrial and aquatic together.

As there is then such a vast variety, it is not only needless, but impossible, to consider all of them particularly. We shall take only some of the most remarkable genera; and hope, from what will be said of them, any of the intermediate degrees may be understood.

In treating of quadrupeds, we shall divide them into the carnivorous, *i. e.* those that feed indifferently on animal and vegetable substances, and granivorous: as an instance of these last we shall take the ruminant kind. The fowls we shall also divide into those that feed on grain, and those that feed on flesh. The distinction we shall make in treating of fishes, shall be of those that have lungs, and those that have them not. The first indeed are with difficulty procured, and at the same time differ very little from quadrupeds. The structure of insects and worms is so very minute, that little assistance for the ends proposed by the present subject has been expected from their anatomical investigation. As they constitute, however, one of the great classes into which animals are divided, and as every advance in knowledge, with respect to the structure of any one animal, must either directly or indirectly cast some light on the structure of some part of every other, we have thought proper to add a few particulars concerning them.

In inquiring into the structure of different animals, we ought to be previously acquainted with the form of their body, manner of life, kind of food; or, in short, with their natural history; which will lead us to account for the reason of their different structure, and hence explain the actions of the human body. Of all those particulars a detail will be found under the titles of the different subjects in their alphabetical order.

I i

CHAP.

3
The variety and uniformity observable in nature.

4
Division of animals into quadrupeds, volatiles, fishes, and insects.

CHAP. I. *Anatomy of Quadrupeds.*SECT. I. *General Observations.*

5
Whether
man is nat-
urally a
biped or a
quadruped.

A QUESTION has been started by some fanciful philo-
sophers, "Whether man is naturally a *biped* or a
quadruped?" and much ingenuity has been employed
to establish the latter opinion. But it is presumed
that few of their readers have been made converts to
such an opinion, and that not many of ours will require
much argument to persuade them of their erect desti-
nation. It may therefore suffice to observe, that this
erect position is best adapted to the conformation of
the human head, and the ponderous quantity of hu-
man brains:—that the articulation of the *os occipitis*
with the first vertebræ of the neck, is differently con-
structed from that of quadrupeds, with the obvious
design that man should be able to move his head in
every direction with the greatest facility:—that the
human species (and also monkies) are destitute of that
strong ligament or tendinous aponeurosis, vulgarly
called *paswax*, which quadrupeds possess (as a kind of
stay-tape), to prevent the head from sinking to the
earth; to which, from its natural position, it must be
very prone:—and that our eyes and ears are, fortunate-
ly, not placed as those of the quadrupeds. The axis of
the human eye is nearly perpendicular with a vertical
section of the head; whereas, in the brute creation
(the larger ape excepted), the position of the eyes
forms an acute angle:—nature has also furnished other
animals with a *suspensorium oculi*, a muscle which the *erect*
attitude renders needless, though highly necessary in
the *prone*; consequently, whoever tries the experi-
ment will find that, in the inclined direction, both his
eyes and his ears are in the most unfavourable situation
possible for quick hearing or extensive vision. In fine,
the shape, breadth, strength of the vertebræ of the
back and loins, are all coincident with the erect atti-
tude of the trunk.

ALL quadrupeds have a covering of hair, wool, &c.
to defend them from the injuries of the weather, which
varies in thickness according to the season of the year
and difference of the climate: thus in Russia and the
northern countries, the furs are very thick and warm,
while the little Spanish lap-dogs, and Barbary cows,
have little or no hair at all.

6
Cuticula,
cutis, pan-
niculus car-
nosus.

The cutis and cuticula in quadrupeds are disposed
much in the same way as the human, only more elastic;
immediately under this, there is a very thin cuta-
neous muscular substance called *panniculus carnosus*,
which is common to all quadrupeds, the porcine kind
excepted; this principally covers the trunk, serving
to shrivel the skin, in order to drive off insects, their
tails and heads not being sufficient for this purpose,
while their extremities are employed in their support
and progression.

7
Whence
the notion
of the pan-
niculus car-
nosus, &c.

It has probably been from observing some muscles
of the human body, such as the *platysma myoides*, *cre-
master*, and *frontales*, and the collapsed *tunica cellulosa*
of emaciated subjects, to resemble this thin muscle, that
some of the older anatomists reckoned such a *panniculus*
among the common teguments of the human body.
This Carolus Stephanus has well observed.

8
Why most
quadrupeds
want cla-
vicles.

Most part of quadrupeds want clavicles, whereby
their anterior extremities fall upon their chest, so as

to make their thorax proportionally narrower than the
human. This small distance of their anterior extre-
mities is very necessary for their uniform progression:
apes indeed and squirrels have clavicles to allow them
a more full use of their extremities in climbing; but
when they walk on all-fours, they move but indif-
ferently.

Of Qua-
drupeds.

SECT. II. *Of the Orang Outang.*

WHILE some philosophers, as above noticed, have
endeavoured to level man to the rank of quadrupeds,
others have attempted to elevate certain of the brute
creation to the same class with their reputed lords.
The *orang outang* is ranged by Linnæus as congenerous
with man, (See *HOMO*); and some theorists have even
considered him as the original stock of the human race,
pretending that he has been the *man of the woods* for
many ages before *gardens* were ever thought of. His
claims to humanity are founded on his being able to
walk upright occasionally, being furnished with a com-
petent share of muscles requisite for the purpose. The
form of his heart, lungs, breast, brains, intestines, are
similar to those of men; the *cæcum* has also its *appendix*
vermiformis: he can sit upright with great ease; shows
more design in his plans than his associates in the fo-
rests; and can handle a stick on occasion with tolerable
dexterity. His disqualifications are the following:
The position of the *foramen magnum occipitis*, which is
farther backward than in the human species, and the
sockets of his lower jaw, made to receive the *dentes in-
cisores* of the upper, indicate his relationship to the
monkey breed. He has also *thirteen ribs* on each side;
his arms, feet, and toes, are much longer than those of
the human species, &c. and although his foot does
not so closely resemble a hand as that of the ape, yet
the *pollex pedis*, or the great toe, is placed at a greater
distance from the other toes, which gives it the ap-
pearance and uses of a *thumb*. These differences indi-
cate, that, although the *ouran* can occasionally act the
biped, yet he is much better qualified to walk on his
fore-feet, and to climb trees, than the generality of
the modern race of men. But an objection to his
claims, still weightier than any of the differences stated
above, arises from his want of *speech*. For there is no
nation of men, however savage, that is destitute of
speech; though individuals, secluded from society,
may in time lose the faculty. No instances are known
in which a company of ten or twelve men have been
without a language; but upwards of thirty of the
orang species have been found in a herd, without
showing the smallest traces of this faculty. It has
been suggested by Rousseau, that they may have lost
the power from their neglect of using it; but it
is very singular that they alone should lose this power,
and not that race of men to whom they are supposed
to be so nearly related. This point, however, has been
completely decided by the discoveries of professor
Camper; who in a paper in the *Philosophical Transac-
tions*† has demonstrated, by an anatomical dissection of
the organ of the voice, that articulation is rendered
impossible in these animals in consequence of the struc-
ture of that organ. From the nature and situation of
those parts in the *orang* (as well as in the ape and in
the monkey) he has proved, that no modulation of the
voice resembling human speech can be produced in
these creatures; because the air, passing through the

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rima glottidis, is immediately lost in two ventricles or hollow bags in the neck (which are sometimes united into one), with which all these animals are furnished, and which have a communication with the mouth through the said *rima* or slit; so that the air must return from thence, without any force or melody, within the throat and mouth of these creatures.

SECT. III. *The Anatomy of a Dog.*

WE may first observe of this animal, as indeed of most *quadrupeds*, that its legs are much shorter in proportion to its trunk than in man, the length of whose steps depends entirely on the length of his inferior extremities; however, to balance this, the trunk of the animal is proportionally longer and smaller, his spine more flexible, by which he is able at each step to bring his posterior extremities nearer to his anterior. His common teguments are much a-kin to those of other *quadrupeds*, only they allow little or no passage for sweat; but when he is over-heated, the superfluous matter finds an exit by the salivary glands, for he lolls out his tongue and flavers plentifully. We are not, however, to suppose, that because a dog does not sweat, he has no insensible perspiration. That a dog perspires is evident, because one of these animals can trace another by the scent of his footsteps; which could not happen if a large quantity of perspirable matter was not constantly going off.

The pyramidal muscles are wanting, to supply which the *rectus* is inserted fleshy into the *os pubis*.

The omentum reaches down to the *os pubis*, which considering the posture of the animal we will find to be a wise provision, since its use is to separate an oily liquor for lubricating the guts and facilitating their peristaltic motion; so in our erect posture the natural gravity of the oil will determine it downward, but in the horizontal position of these creatures, if all the intestines were not covered, there would be no favourable derivation of the fluid to the guts lying in the posterior part of the abdomen, which is the highest; and besides, had the omentum reached much farther down in us, it would not only have supplied too great a quantity of oil to the lower part of the abdomen, but we would have been in continual danger of *herniæ*; and even at present the omentum frequently passes down with some of the other viscera, and forms part of these tumors. To these, however, the dog is not subject, as his viscera do not press so much on the rings of the abdominal muscles, and besides are prevented from passing through by a pendulous flap of fat, mentioned n^o 35. The inferior and anterior lamella of the omentum is fixed to the spleen, fundus of the stomach, pylorus, liver, &c. in the same way as the human; but the superior having no colon to pass over, goes directly to the back-bone. This serves to explain the formation of the small omentum in the human body; which is nothing but the large omentum, having lost its fat, passing over the stomach and colon, where it re-assumes its pinguedo, so proceeds, and is firmly attached to the liver, spine, &c. The stræ of fat are pretty regularly disposed through it, accompanying the distribution of the blood-vessels to guard them from the pressure of the superincumbent viscera.

This animal's stomach, though pretty much resem-

bling the human in its shape, is somewhat differently situated. It lies more longitudinal, as indeed all the other viscera do, to accommodate themselves to the shape of the cavity in which they are contained; that is, its inferior orifice is much farther down with respect to the superior than the human: by this means the gross food has an easier passage into the duodenum. Again, the fundus of the human stomach, when distended, stands almost directly forwards, which is occasioned by the little omentum tying it so close down to the back-bone, &c. at its two orifices; but it not being fixed in that manner in the dog, the fundus remains always posterior: this also answers very well the shape of the different cavities, the distance betwixt the *cardia* and *fundus* being greater than that betwixt the two sides. It seems to be much larger in proportion to the bulk of the animal than the human, that it might contain a greater quantity of food at once; which was very necessary, since this animal cannot at any time get its sustenance as men do. The turbillion is not so large, nor is there any coarction forming the *antrum Willefii*, as in the stomach of man. It is considerably thicker and more muscular than ours, for breaking the cohesion of their food, which they swallow without sufficient chewing. Hence it is evident the force of the stomach is not so great as some would have it, nor its contraction so violent: otherwise that of dogs would be undoubtedly wounded by the sharp bones, &c. they always take down; for the contraction here is still greater than in the human stomach, which is much thinner. The rugæ of the *tunica villosa* are neither so large, nor situated transversely, as in the human, but go from one orifice to the other: the reason of which difference is, perhaps, that they might be in less danger of being hurt by the hard substances this creature frequently feeds upon; and for the same reason there is not the like coarction at their pylorus.

The intestines of this animal are proportionally much shorter than ours; for the food which these creatures mostly use, soon dissolves, and then putrifies; on which account there was no occasion for a long tract of intestines, but on the contrary that it should be quickly thrown out of the body. The same is to be observed of all the carnivorous animals. The muscular coat of the intestines is also thicker and stronger than the human, to protrude the contents quickly and accurately.

The *valvulæ conniventes* are less numerous, and in a longitudinal direction; and the whole tract of the alimentary canal is covered with a slime, which lubricates the intestines, saves them from the acrimony of the excrementitious part, and facilitates its passage.

The *duodenum* differs considerably in its situation from the human. For in man it first mounts from the pylorus upwards, backwards, and to the right-side; then passes down by the gall-bladder; and, marching over the right kidney and superior part of the *psoas* muscles, makes a curvature upwards; and passes over the back-bone and *vena cava inferior*, to the left hypochondrium, where it gets through the omentum, mesentery, and mesocolon, to commence the *jejunum*, being firmly tied down all the way, the biliary and pancreatic ducts entering at its most depending part: Whereas, in the dog, the duodenum is fixed at the pylorus to the

Of Quad-
drupeds.
I
Ventricu-
lus.

I 2
Intestines.

I 3
Duodenum;

9
Abdomen,
musculi py-
ram.

10
Omentum.

Of Qua-
drupeds.14
Jejunum.

concave surface of the liver, and hangs loose and pendulous with the mesentery backwards into the cavity of the abdomen; then turning up again, is fixed to the back bone, where it ends in the jejunum; the bile and pancreatic juice are poured into it at the most depending part. Therefore the same intention seems to have been had in view in the formation of this part in both, viz. the giving the chyle, after the liquors of the liver and pancreas are poured into it, a disadvantageous course, that so it might be the more intimately blended with the humours before its entry into the jejunum, where the lacteals are very numerous: And thus, by reason of their different posture, the same design (tho' by a very different order of the parts) is brought about in both.

15
Intestina
tenua.

The other small guts are much the same with ours, only shorter. The great guts are also shorter and less capacious than in the human body; and we take it for a general rule, that all animals that live on vegetable food, have not only their small guts considerably longer, but also their great guts more capacious, than such creatures as feed on other animals. Hence man, from this form of his intestines, and that of the teeth, seems to have been originally designed for feeding on vegetables chiefly; and still the most of his food, and all his drink, is of that class.

The reason of this difference seems to be, that as animal food is not only much more easily reduced into chyle, but also more prone to putrefaction, too long a remora of the juices might occasion the worst consequences. So it was necessary that their receptacles should not be too capacious; but on the contrary, being short and narrow, might conduce to the seasonable discharge of their contents. Whereas vegetable food being more difficultly dissolved and converted into an animal nature, there was a necessity for such creatures as fed on it to be provided with a long intestinal canal; that this food in its passage might be considerably retarded, and have time to change its indoles into one more agreeable to our nature. Besides which there is another advantage which accrues to man in particular, from having his great guts very capacious: for as he is a rational being, and mostly employed in the functions of social life, it would have been very inconvenient as well as unbecoming for him to be too frequently employed in such ignoble exercises; so that, having this large reservoir for his fæces alvinæ, he can retain them for a considerable time without any trouble.

16
Appendix
vermiformis.

The *appendix vermiformis* justly enough deserves the name of an *intestinum cæcum* in this subject, though in the human body it does not; and it has probably been from the largeness of this part in this and some other animals, that the oldest anatomists came to reckon that small appendicle in man as one of the great guts. On its internal surface we observe a great number of mucous glands. As all these throw out slime, their principal office would seem to be the procuring a sufficient quantity of that matter for the purposes above mentioned. Still, however, there seems to be some unknown use for this organ in other animals; for the *appendicula vermiformis* in them is either of great size or of great length. In a rat, it is rather larger than the stomach; in others, as swine, and some of the ani-

mals which live on vegetables, it has long convolutions, so that the food must be lodged in it for a long time. Thus, probably, some change takes place in the food, which requires a considerable time to effectuate, and, though unknown to us, may answer very useful purposes to the animal.

The *colon* has no longitudinal ligaments; and consequently this gut is not purged up into different bags or cells as the human: nor does this intestine make any circular turn round the abdomen; but passes directly across it to the top of the os sacrum, where it gets the name of *rectum*.

At the extremity of the *intestinum rectum*, or verge of the anus, there are found two bags or pouches, which contain a most abominable fetid mucus of a yellow colour, for which we know no use, unless it serves to lubricate the strained extremity of the rectum, and defend it against the asperity of the fæces, or to separate some liquor that might otherwise prove hurtful to their bodies. There is nothing analogous to those sacs in the human subject, unless we reckon the mucilaginous glands that are found most frequent and largest about the lower part of the rectum.

The *mesentery* is considerably longer than in the human body; that, in his horizontal situation, the intestines may rest securely on the soft cushion of the abdominal muscles. The fat is here disposed in the same way, and for the same reason, as in the omentum. The interstices betwixt the fat are filled with a fine membrane. Instead of a great number of glandular vagæ to be found in the human mesentery, we find the glands few in number, and those are closely connected together; or there is only one large gland to be observed in the middle of the mesentery of a dog, which, from its imagined resemblance to the pancreas and the name of its discoverers, is called *pancreas Asellii*; but the resemblance, if there is any, depends chiefly on the connection, the structure being entirely different. The reason why this in man is as it were subdivided into many smaller ones, may possibly be, that as the guts of a human body are proportionally much longer than those of this creature, it would have been inconvenient to have gathered all the *lactæa primi generis* into one place; whereas, by collecting a few of these vessels into a neighbouring gland, the same effect is procured much more easily. Whether the food in this animal needs less preparation in its passage through these glands, is a matter very much unknown to us; though it is certain that some changes really do take place.

The *pancreas* in man lies across the abdomen, tied down by the peritonæum; but the capacity of this creature's abdomen not allowing of that situation, it is disposed more longitudinally, being tied to the duodenum, which it accompanies for some way. Its duct enters the duodenum about an inch and a half below the ductus communis.

The *spleen* of this animal differs from ours very much, both in figure and situation. It is much more oblong and thin, and lies more according to the length of the abdomen, like the pancreas. Though the spleen of this creature is not firmly tied to the diaphragm (which was necessary in our erect posture to hinder it from falling downwards), yet by the animal's prone position,

Of Qua-
drupeds.17
Colon.18
Rectum.19
Mesentery.20
Pancreas 2-
felli.21
Pancreas.22
Spleen.

Of Quadrapeds.

23
Liver.

tion, its posterior parts being rather higher than the anterior, it comes to be always contiguous to this muscle, and is as effectually subjected to an alternate pressure from its action as the human spleen is.

The human liver has no fissures or divisions, unless you please to reckon that small one betwixt the two *pyle*, where the large vessels enter: Whereas in a dog, and all other creatures that have a large flexion in their spine, as lions, leopards, cats, &c. the liver and lungs are divided into a great many lobes by deep sections, reaching the large blood-vessels, which in great motions of the back-bone may easily shuffle over one another; and so are in much less danger of being torn or bruised, than if they were formed of one entire piece, as we really see it is in horses, cows, and such creatures as have their back-bone stiff and immoveable. There is here no *ligamentum latum* connecting the liver to the diaphragm, which in our situation was necessary to keep the viscus in its place: Whereas in this creature, it naturally gravitates forwards, and by the horizontal position of the animal is in no danger of pressing against the vena cava; the preventing of which is one use generally assigned to this ligament in man. Had the liver of the dog been thus connected to the diaphragm, the respiration must necessarily have suffered; for, as we shall see afterwards, this muscle is here moveable at the centre as well as at the sides: But in man the liver is fixed to the diaphragm, mostly at its tendinous part; that is, where the pericardium is fixed to it on the other side; so that it is in no danger of impeding the respiration, being suspended by the mediastinum and bones of the thorax. In consequence of this viscus being divided into so many lobes, it follows, that the hepatic ducts cannot possibly join into one common trunk till they are quite out of the substance of the liver; because a branch comes out from every lobe of the liver; all of which, by their union, form the hepatic duct: whence we are led to conclude, that the hepato-cystic ducts, mentioned by former authors, do not exist. The gall-bladder itself is wanting in several animals, such as the deer, the horse, the ass, &c.; but in place of it, in such animals, the hepatic duct, at its beginning, is widened into a reservoir of considerable size, which may answer the same purpose in them that the gall-bladder does in others.

We come next, after having examined the chylopoietic viscera, to discourse of those organs that serve for the secretion and excretion of urine. And first of the kidneys: Which in this animal are situated much in the same way as in the human subject; but have no fat on their inferior surface, where they face the abdomen, and are of a more globular form than the human. The reason of these differences will easily appear, if you compare their situation and posture in this animal with those in a man who walks erect. They are placed in this subject in the inferior part of the body, so are not subject to the pressure of the viscera, which seems to be the principal cause of the fatness of those organs in us, and perhaps may likewise be the cause of our being more subject to the stone than other animals. Hence there is no need of any cellular substance to ward off this pressure where there would necessarily be fat collected; but the superior part of their kidneys is pretty well covered with fat, lest they

24
Kidneys.

should suffer any compression from the action of the ribs and spine.

In the internal structure there is still a more considerable difference: For the *papillæ* do not here send out single the several *tubuli uriniferi*; but being all united, they hang down in form of a loose pendulous flap in the middle of the pelvis, and form a kind of septum medium; so that a dog has a pelvis formed within the substance of the kidney. The only thing that is properly analogous to a pelvis in man is that sac or dilatation of the ureters formed at the union of the *ductus uriniferi*. The external part of the kidney of a dog somewhat resembles one of the lobes of the kidney of a human fœtus: but in a human adult the appearance is very different; because, in man, from the continual pressure of the surrounding viscera, the lobes, which in the fœtus are quite distinct and separated, concrete, but the original cortical substance is still preserved in the internal parts of the kidney. The reason of these particularities may probably be, that the liquors of this animal, as of all those of the carnivorous kind, being much more acrid than those that live on vegetable food, its urine must incline much to an alkalescency, as indeed the smell and taste of that liquor in dogs, cats, leopards, &c. evidently show, being fetid and pungent, and therefore not convenient to be long retained in the body. For this end it was proper that the secreting organs should have as little impediment as possible by pressure, &c. in the performing their functions; and for that design, the mechanism of their kidneys seems to be excellently adapted: We have most elegant pictures in Eustachius of the kidneys of brutes, delineated as such, with a view to show Vesalius's error in painting and describing them for the human.

The *glandule* or *capsula atrabiliaris* are thicker and rounder than the human, for the same reason as the *trabiliaris* kidneys.

The *ureters* are more muscular than the human, because of the unfavourable passage the urine has through them; they enter the bladder near its fundus.

The bladder of urine differs considerably from the human; and first in its form, which is pretty much pyramidal or pyriform. This shape of the dog's bladder is likewise common to all quadrupeds, except the ape and those of an erect posture. In man it is by no means pyriform, but has a large sac at its posterior and inferior part: this form depends entirely on the urine gravitating in our erect posture to its bottom, which it will endeavour to protrude; but as it cannot yield before, being contiguous to the os pubis, it will naturally stretch out where there is the least resistance, that is, at the posterior and lateral parts; and were it not for this sac, we could not so readily come at the bladder to extract the stone either by the lesser or lateral operation of lithotomy. Most anatomists have delineated this wrong: so much, that I know of none who have justly painted it, excepting Mr Cowper in his *Myotomia*, and Mr Butty. It has certainly been from observing it in brutes and young children, that they have been led into this mistake. The same cause, *viz.* the gravity of the urine, makes the bladder of a different form in brutes: In their horizontal position the cervix, from which the urethra is continued, is higher than its fundus; the urine must therefore dif-

Of Quadrapeds.

25
Papillæ.26
Pelvis.27
Capsula atrabiliaris.28
Ureters.29
Vesica urinaria.

Of Quad-
rupeds.

dilend and dilate the most depending part by its weight.

Of Quad-
rupeds.

30
Con-
nec-
tion.

As to its *connexion*, it is fastened to the abdominal muscles by a process of the peritoneum, and that membrane is extended quite over it; whereas in us its superior and posterior parts are only covered by it: hence in man alone the high operation of lithotomy can be performed without hazard of opening the cavity of the abdomen. Had the peritoneum been spread over the bladder in its whole extent, the weight of the viscera in our erect posture would have bore upon it, that they would not have allowed any considerable quantity of urine to be collected there; but we must have been obliged to discharge its contents too frequently to be consistent with the functions of a social life: Whereas by means of the peritoneum, the urine is now collected in sufficient quantity, the viscera not gravitating this way.

31
Why the
human
bladder but
in part co-
vered by the peri-
toneum.

It may be taken for a general rule, that those creatures that feed upon animal-food have their bladder more muscular and considerably stronger, and less capacious, than those that live on vegetables, such as horses, cows, swine, &c. whose bladder of urine is perfectly membranous, and very large. This is wisely adapted to the nature of their food: For in these first, as all their juices are more acrid, so in a particular manner their urine becomes exalted; which, as its remora might be of very ill consequence, must necessarily be quickly expelled. This is chiefly effected by its stimulating this viscus more strongly to contract, and so to discharge its contents, though the irritation does not altogether depend upon the stretching, but likewise arises from the quality of the liquor. That a stimulus is one of the principal causes of the excretion of urine, we learn from the common saline diuretic medicines that are given, which are dissolved into the serum of the blood, and carried down by the kidneys to the bladder: The same appears likewise from the application of cantharides; or without any of these, when the parts are made more sensible, as in an excoriation of the bladder, there is a frequent desire to make water. Accordingly we find these animals evacuate their urine much more frequently than man, or any other creature that lives on vegetable food. And if these creatures, whose fluids have already a tendency to putrefaction, are exposed to heat or hunger, the liquids must for a considerable time undergo the actions of the containing vessels, and frequently perform the course of the circulation, without any new supplies of food; by which the fluids becoming more and more acrid, the creature is apt to fall into feverish and putrid diseases: And in fact, we find that fatal and melancholy distemper the *rabies canina*, *vulpina*, &c. frequent in these animals; whereas those that feed on vegetable food seldom or never contract those diseases but by infection.

32
A stimulus
proved to
be a prin-
cipal cause
of the eva-
cuation of
the bladder.

33
Causes af-
signed for
the rabies
canina, &c.

That the causes commonly assigned for the rabies canina are insufficient to produce it in dogs and other animals of that kind, is denied in a dissertation on this disease by Dr Heysham. That heat is insufficient, he proves from the disease being totally unknown in South America, where the heat is much greater than in this country. Putrid aliment he also says is taken in great quantity by dogs without any inconvenience; and as it seems in this state to be most agreeable to them,

the rabies canina cannot with any probability be ascribed to it. As to want of water, he observes that the disease often originates among dogs that are plentifully supplied with that element, while others long deprived of it have remained perfectly free. In short, Dr Heysham totally denies, not only the efficacy of the causes commonly assigned for the rabies canina, but the nature of the distemper itself; and conjectures that the cause of it is not a *putrescency* but an *acidity* of the fluids.

Their *spermatic vessels* are within the peritoneum, which is spread over them, and from which they have a membrane like a mesentery, so hang loose and pendulous in the abdomen: whereas, in us, they are contained in the cellular part of the peritoneum, which is tensely stretched over them. At their passage out of the lower belly, there appears a plain perforation, or holes; hence the adult quadruped, in this respect, resembles the human foetus. And from observing this in quadrupeds, has arisen the false notion of *hernia* or *rupture* among authors. This opening, which leads down to the testicle, is of no disadvantage to them, but evidently would have been to us; for from the weight of our viscera, and our continually gravitating upon these holes, we must have perpetually laboured under enterocoeles. This they are in no hazard of, since in them this passage is at the highest part of their belly, and, in their horizontal posture, the viscera cannot bear upon it: And, to prevent even the smallest hazard, there is a loose pendulous semilunar flap of fat; which serves two uses, as it both hinders the intestines from getting into the passage, and also the course of the fluids from being stopped in the vessels, which is secured in us by the cellular substance and tense peritoneum: And it may be worth while to observe, that this process remains almost unaltered, even after the animal has been almost exhausted of fat.

34
Vasa sper-
matica.

35
Whence
the false
notion of
hernia or
rupture.

There is next a passage quite down into the cavity where the testicles lie. Had the same structure obtained in man, by the constant drilling down of the liquor which is secreted for the lubricating of the guts, we should always have laboured under a hydrocele; but their posture secures them from any hazard of this kind: indeed your very fat lap-dogs, who consequently have an overgrown omentum, are sometimes troubled with an epiplocele.

The *scrotum* is shorter and not so pendulous as the human in all the dog kind that want the *vesiculae seminales*, that the seed at each copulation might the sooner be brought from the testes, thus in some measure supplying the place of the *vesiculae seminales*; for the course of the seed through the *vasa deferentia* is thus shortened, by placing the secreting vessels nearer the excretory organs. Perhaps its passage is likewise quickened by the muscular power of the *vasa deferentia*, which is stronger in this creature than in man. The want of *vesiculae seminales* at the same time explains the reason why this creature is so tedious in copulation. But why these bodies are absent in the dog kind more than in other animals, is a circumstance we know nothing of.

36
Scrotum.

37
The vesi-
culae semi-
nales, how
supplied.

The structure of the *testicles* is much the same with the human; as are likewise the *corpus pyramidale*, *varicosum*, or *pampiniforme*, and the *epididymis* or excretory vessel of the testicle. The *vasa deferentia* enter the

38
Testes.

Of Quadrapeds. the abdomen where the blood-vessels come out; and, passing along the upper part of the bladder, are inserted a little below the bulbous part of the urethra.

39
Penis.

The præputium has two muscles fixed to it: one that arises from the sphincter ani, and is inserted all along the penis; and this is called *retractor præputii*: But the other, whose office is directly contrary to this, is cutaneous; and seems to take its origin from the muscles of the abdomen, or rather to be a production of their tunica carnosæ. The *corpora cavernosa* rise much in the same way as the human: but these soon terminate; and the rest is supplied by a triangular bone, in the inferior part of which there is a groove excavated for lodging the urethra. There are upon the penis two protuberant bulbous fleshy substances, resembling the glans penis in man, at the back of which are two veins, which by the *erectores penis* and other parts are compressed in the time of coition; and the circulation being stopped, the blood distends the large cavernous bodies. After the penis is thus swelled, the vagina by its contraction and swelling of its corpus cavernosum, which is considerably greater than in other animals, grips it closely; and so the male is kept in action some time contrary to his will, till time be given for bringing a quantity of seed sufficient to impregnate the female: and thus, by that *orgasmus veneris* of the female organs, the want of the *vesiculae seminales* are in some measure supplied. But as it would be a very uneasy posture for the dog to support himself solely upon his hinder feet, and for the bitch to support the weight of the dog for so long a time; therefore, as soon as the bulbous bodies are sufficiently filled, he gets off and turns averse to her. Had, then, the penis been pliable as in other animals, the urethra must of necessity have been compressed by this twisting, and consequently the course of the seed intercepted; but this is wisely provided against by the urethra's being formed in the hollow of the bone. After the emission of the seed, the parts turn flaccid, the circulation is restored, and the bulbous parts can be easily extracted.

41
Prostata.

The *prostata* seems here divided into two, which are proportionably larger than the human, and afford a greater quantity of that liquid.

42
Uterus.

The *uterus* of multiparous animals is little else but a continuation of their vagina, only separated from it by a small ring or valve. From the *uterus* two long canals mount upon the loins, in which the fœtus are lodged: these are divided into different sacs, which are strongly constricted betwixt each fœtus; yet these constrictions give way in the time of birth. From these go out the *tube Fallopiana*, so that the ovaria come to lodge pretty near the kidneys.

43
Diaphragm.

We ought next to examine the structure of the thorax and its contents. But first it may not be amiss to remark of the *diaphragm* in its natural situation, that it is in general more loose and free than the human; which is owing to its connection with the neighbouring parts in a different manner from ours. The human *diaphragm* is connected to the pericardium; which again, by the intervention of the mediastinum, is tied to the sternum, spine, &c. but here there is some distance between the diaphragm and pericardium. We observe further, that its middle part is much more moveable, and the tendinous parts not so large. And indeed it was necessary their *diaphragm* should be some-

what loose, they making more use of it in difficult respiration than man. This we may observe by the strong heaving of the flanks of an horse or dog when out of breath; which corresponds to the rising of the ribs in us.

The disposition and situation of the *mammæ* vary as they bear one or more young. Those of the uniparous kind have them placed between the posterior extremities, which in them is the highest part of their bodies, whereby their young get at them without the inconvenience of kneeling: Nevertheless, when the creatures are of no great size, and their breast large, as in sheep, the young ones are obliged to take this posture. In multiparous animals, they must have a great number of nipples, that their several young ones may have room at the same time, and these disposed over both thorax and abdomen; and the creatures generally lie down when the young are to be suckled, that they may give them the most favourable situation. From this it does not appear to be from any particular fitness of the vessels at certain places for giving a proper nourishment to the child, that the breasts are so placed in women as we find them, but really from that situation being the most convenient both for mother and infant.

The *sternum* is very narrow, and consists of a great number of small bones, moveable every way; which always happens in creatures that have a great mobility in their spine. The ribs are straighter, and by no means so convex as the human; whereby in respiration the motion forward will very little enlarge their thorax, which is compensated by the greater mobility of their diaphragm: so our thorax is principally enlarged according to its breadth and depth, and theirs according to its length. The want of clavicles, and the consequent falling in of the anterior extremities upon the chest, may contribute somewhat to the straightness of the ribs.

The *mediastinum* in this creature is pretty broad. The pericardium is not here contiguous to the diaphragm, but there is an inch of distance betwixt them, in which place the small lobe of the lungs lodges; and by this means the liver, &c. of this animal, though continually pressing upon the diaphragm, yet cannot disturb the heart's motion.

The heart is situated with its point almost directly downwards, according to the creature's posture, and is but very little inclined to the left side. Its point is much sharper, and its shape more conoidal, than the human. Here the names of *right* and *left* ventricles are proper enough, though not so in the human; which ought rather to be called *anterior* and *posterior*, or *superior* and *inferior*. The animal has the *vena cava* of a considerable length within the thorax, having near the whole length of the heart to run over ere it gets at the *sinus Lowerianus dexter*. In men, as soon as it pierces the diaphragm, so soon it enters the pericardium, which is firmly attached to it, and immediately gets into the *sinus Lowerianus*; which sinus, in the human subject, by the oblique situation of the heart is almost contiguous to the diaphragm: and by this we discover, that several authors have taken their delineations of the human heart from brutes; which is easily detected by the shape and situation of the heart, and long vena cava, within the thorax. This was one of the faults of the curious wax-work that were shown at London and Paris, which were plainly taken from a cow.

Of Quadrapeds.

44
Thorax.
45
Mammæ.46
Sternum.47
Costæ.48
Mediastinum.49
Cor.50
Vena cava.

Of Quadrapeds.

This situation of the heart of the creature agrees best with the shape of its thorax, which is lower than the abdomen.

51
Aorta ascends, improperly so called.

The egress of the large blood-vessels from the heart is somewhat different from the human: For here the right subclavian comes off first: and as a large trunk runs some way upwards before it gives off the left carotid, and splits into the carotid and subclavian of the right side, then the left subclavian is sent off. So that neither here, properly speaking, is there an *aorta ascendens*, more than in the human; but this name has probably been imposed upon it from observing this in a cow, where indeed there is an ascending and descending aorta.

52
A mechanical account of the superior strength of the right arm, leg, &c.

From this specialty of the distribution of the vessels of the right side, which happens, though not in so great a degree, in the human subject, we may perhaps in some measure account for the general greater strength, readiness, or facility of motion, which is observable in the right arm. Upon measuring the sides of the vessels, the surface of the united trunk of the right subclavian and carotid is less than that of the left subclavian and carotid, as they are separated. If so, the resistance to the blood must be less in that common trunk than in the left subclavian and carotid: But if the resistance be smaller, the absolute force with which the blood is sent from the heart being equal, there must necessarily be a greater quantity of blood sent through them in a given time; and as the strength of the muscles is, *ceteris paribus*, as the quantity of blood sent into them in a given time, those of the right arm will be stronger than those of the left. Now children, being conscious of this superior strength, use the right upon all occasions; and thus from use comes that great difference which is so observable. That this is a sufficient cause, seems evident from fact; for what a difference is there betwixt the right and the left arm of one who has played much at tennis? View but the arms of a blacksmith and legs of a footman, and you will soon be convinced of this effect arising from using them. But if by any accident the right arm is kept from action for some time, the other from being used gets the better; and those people are left-handed: For it is not to be imagined, that the small odds in the original formation of the vessels should be sufficient to resist the effect of use and habit (instances of the contrary occur every day); it is enough for our present argument, that where no means are used to oppose it, the odds are sufficient to determine the choice in favour of the right. Now because it is natural to begin with the leg corresponding to the hand we have most power of, this is this what gives also a superiority to the right leg.

This difference is not peculiar to man, but is still more observable in those creatures in whom the same mechanism does obtain in a greater degree. Do but observe a dog at a trot, how he bears forward with his right side; or look at him when a-scraping up any thing, and you will presently see that he uses his right much oftener than he does his left foot. Something analogous to this may be observed in horses. It has been the opinion of some anatomists, that left-handed people, as well as those distinguished by the name of *ambidexter* (who use both hands alike), have the two carotid and subclavian arteries coming off in

N^o 87.

four distinct trunks from the arch of the aorta: but no appearance of this kind has ever been observed in such bodies as have been examined for this purpose; though indeed these have been but few, and more experience might throw greater light on the subject.

The *thymus* of this creature is proportionably much larger than ours: whereas the glandula thyroidea is much less, and is divided into two distinct parts, or there are two separate glands; which is not the case in man. The reason of this difference is unknown, as is likewise the use of the gland itself. It is generally remarked, that these two glands do thus always supply the place of each other; that is, in such animals as have a large thymus, the glandula thyroidea is smaller, and *vice versa*. Hence we are naturally led to ascribe the same use to both, *viz.* the separation of a thin lymph for diluting the chyle in the thoracic duct before it be poured into the blood; then if we consider the different formation of the thorax in both, we shall readily account for the variety in the bulk of these two glands. Respiration being chiefly performed in man by the widening of the chest, the lungs at every inspiration must press upon the thymus, and consequently diminish it: but the diaphragm yielding more in the dog's inspiration, this gland is not so much pressed by the lungs, and so will be larger; and hence the glandula thyroidea will be proportionably less. Again, from the posture of this creature, we shall see that it was much more convenient for a dog to have the most part of the diluting lymph supplied by the thymus, since the neck being frequently in a descending posture, the lymph of the thyroid gland would have a very disadvantageous course to get to the thoracic duct: whereas in the human body, the thymus is really below the lacteal canal, where it makes its curvature before it opens into the subclavian; and consequently there is a necessity of a considerable share of the diluting liquor being furnished by the thyroid gland, which is situated much higher; so that its lymph has the advantage of a perpendicular descent.

We may here observe, that the *thoracic duct* in a dog has no curvature before it enters the subclavian vein, the horizontal position of this animal allowing a favourable enough course to the chyle, so as not to need that turn to force its passage into the blood. It may likewise be observed, that such animals as walk horizontally have the valves of the thoracic duct fewer in number than others. The horse has only a single pair; while, on the contrary, the ape resembles man in having several valves. Thus the lymph is not only forwarded in its passage, but the weight of the column is diminished. The lungs of this creature are divided into more numerous lobes, and deeper, than they are in man, for the same reason as the liver. The left side of the thorax in this animal bears a greater proportion to the right than in man; the one being nearly as three to two, the other as four to three. In quadrupeds, as well as in man, the lungs are closely applied to the containing parts; although this has been denied by some.

We look on it as a general rule, that all quadrupeds, as having occasion to gather their food from the ground, are provided with longer necks than man: but as a long neck not only gives the advantage of too long a lever to the weight of the head, but also, when the animal is gathering his food, makes the brain in danger

Of Quadrapeds.

53
Thymus.
54
Glandula thyroidea.

55
Ductus thoracicus.

56
Neck.

Of being oppressed with too great a quantity of blood, by the liquor in these arteries having the advantage of a descent, while that in the veins must remount a considerable way contrary to its own gravity; it was therefore necessary that a part of the length of the neck should be supplied by the length of the jaws. Thus we see horses, cows, &c. who have no occasion for opening their mouths very wide, yet have long jaws. Bulldogs, indeed, and such animals as have occasion for very strong jaws, must of necessity have them short; because the longer they are, the resistance to be overcome acts with a longer lever. Another exception to this general rule, is such animals as are furnished with something analogous to hands to convey their food to their mouths, as cats, apes, &c. The teeth of this creature plainly show it to be of the carnivorous kind; for there are none of them made for grinding its food, but only for tearing and dividing it. It has six remarkable sharp teeth before, and two very long tusks behind; both of which the ruminating animals want. These are evidently calculated for laying very firm hold of substances, and tearing them to pieces; and the vast strength of the muscles inserted into the lower jaw, assists greatly in this action; while the molars have sharp cutting edges, calculated for cutting flesh, and breaking the hardest bones. Even its posterior teeth are not formed with rough broad surfaces as ours are; but are made considerably sharper, and press over one another when the mouth is shut, that so they may take the firmer hold of whatever comes betwixt them.

The tongue, in consequence of the length of the jaws, is much longer than ours; and as this creature feeds with his head in a depending posture, the bolus would always be in danger of falling out of the mouth, were it not for several prominences or papillæ placed mostly at the root of the tongue, and crooked backwards in such a manner as to allow any thing to pass easily down to the jaws, but to hinder its return. By the papillæ also the surface of the tongue is increased, and a stronger impression is made on the sensation of taste. In some animals who feed on living creatures, these tender-hooks are still more conspicuous; as in several large fishes, where they are almost as large as their teeth in the forepart of their mouth, and near as firm and strong.

When we open the mouth, we see the amygdalæ very prominent in the posterior part of it; so that it would appear at first view, that these were inconveniently placed, as being continually exposed to injuries from the hard substances this creature swallows: but upon a more narrow scrutiny, we find this provided for by two membranous capsulæ, into which the amygdalæ, when pressed, can escape, and remove themselves from such injuries.

The *velum pendulum palati* is in this creature considerably longer than in man, to prevent the food from getting into his nose; which would happen more frequently in this animal than in man, because of its situation while feeding.

In this subject, as well as in other quadrupeds, there is no *uvula*; but then the *epiglottis*, when pressed down, covers the whole rima entirely, and naturally continues so: there is therefore a ligament, or rather muscle, that comes from the os hyoides and root of the tongue, that is inserted into that part of the epiglottis where it

is articulated with the cricoid cartilage, which serves to raise it from the rima, though not so strongly but that it may with a small force be clapped down again.

It may be asked, however, Why the uvula is wanting here, and not in man? This seems to be, that the uvula in quadrupeds, who swallow their food in an horizontal situation, have no occasion for an uvula, though it is necessary in man on account of his erect situation.

In the upper part of the pharynx, behind the cricoid cartilage, there is a pretty large gland to be found, which serves not only for the separation of a mucous liquor to lubricate the bolus as it passes this way, but also supplies the place of a valve, to hinder the food from regurgitating into the mouth, which it would be apt to do by reason of the descending situation of the creature's head. In man, the muscle of the epiglottis is wanting, its place being supplied by the elasticity of the cartilage.

The *oesophagus* is formed pretty much in the same way as the human. Authors indeed generally allege, that quadrupeds have their gullet composed of a double row of spiral fibres decussating one another; but this is peculiar to ruminating animals, who have occasion for such a decussation of fibres. The action of these you may easily observe in a cow chewing her cud.

The *nose* is generally longer than in man, and its external passage much narrower. The internal structure is also better adapted for an acute smelling, having a larger convoluted surface on which the *membrana scheidariana* is spread; and this is to be observed in most quadrupeds, who have the *ossa spongiosa* commonly large, and these too divided into a great number of excessively fine thin lamellæ. The sensibility seems to be increased in proportion to the surface; and this will also be found to take place in all the other senses. The elephant, which has a head pretty large in proportion to its body, has the greatest part of it taken up with the cavity of the nose and frontal sinuses; which last extend almost over their whole head, and leave but a small cavity for their brains. A very nice sense of smelling was not so absolutely necessary for man, who has judgment and experience to direct him in the choice of his food; whereas brutes, who have only their senses, must of necessity have these acute, some having one sense in greater perfection than others, according to their different way of life. We not only conclude *a priori* from the large expanded *membrana scheidariana*, that their sense of smelling is very acute, but we find it so by cows and horses distinguishing so readily betwixt noxious and wholesome herbs, which they do principally by this sense.

The external *ear* in different quadrupeds is differently framed, but always calculated to the creature's manner of life. In shape it commonly resembles the oblique section of a cone from near the apex to the basis. Hares, and such other animals as are daily exposed to insults from beasts of prey, have large ears directed backwards, their eyes warning them of any danger before; rapacious animals, on the other hand, have their ears placed directly forwards, as we see in the lion, cat, &c. The slow hounds, and other animals that are designed to hear most distinctly the sounds coming from below, have their ears hanging downwards; or their ears are flexible, because they move

Of Quadrupeds.

57 Jaws.

58 Teeth.

59 Tongue.

60 Amygdals.

61 Velum pendulum palati.

62 Glottis.

63 Epiglottis.

Of Quadrupeds.

64 The use of the uvula in man.

65 Oesophagus.

66 Organ of smell.

67 Auris.

Of Quadrupeds.

their head for the most part with greater difficulty than man. Man, again, who must equally hear sounds coming from all quarters, but especially such as are sent from about his own height, has his external ear placed in a vertical manner, somewhat turned forward. In short, wherever we see a specialty in the make of this organ in any creature, we shall, with very little reflection, discover this form to be more convenient for that creature than another. The animal also has the power of directing the cone of the ear to the sonorous body without moving the head. There are some differences to be observed in the structure of the internal ear in different animals; but we know so very little of the use of the particular parts of that organ in the human subject, that it is altogether impossible to assign reasons for these variations in other creatures.

68
Membrana nictitans.

All quadrupeds have at the internal canthus of the eye a strong firm membrane with a cartilaginous edge, which may be made to cover some part of their eye; and this is greater or less in different animals as their eyes are more or less exposed to dangers in searching after their food. This *membrana nictitans*, as it is called, is not very large in this animal. Cows and horses have it so large as to cover one half of the eye like a curtain, and at the same time is transparent enough to allow abundance of the rays of light to pass through it. Fishes have a cuticle always over their eyes, as they are ever in danger in that inconstant element. In this then we may also observe a sort of gradation,

69
Musculus suspensorius.

All quadrupeds have a seventh muscle belonging to the eye, called *suspensorius*. It surrounds almost the whole optic nerve, and is fixed into the sclerotic coat as the others are. Its use is to sustain the weight of the globe of the eye, and prevent the optic nerve from being too much stretched, without obliging the four straight muscles to be in a continual contraction, which would be inconvenient; at the same time this muscle may be brought to assist any of the other four, by causing one particular portion of it to act at a time.

70
Pupilla.

The next thing to be remarked is the figure of the *pupil*, which is different in different animals, but always exactly accommodated to the creature's way of life, as well as to the different species of objects that are viewed. Man has it circular, for obvious reasons: an ox has it oval, with the longest diameter placed transversely, to take in a larger view of his food: cats, again, have theirs likewise oval, but the longest diameter placed perpendicularly; they can either exclude a bright light altogether, or admit only as much as is necessary. The pupil of different animals varies in wideness, according as the internal organs of vision are more or less acute: Thus cats and owls, who seek their prey in the night, or in dark places (and consequently must have their eyes so formed as that a few rays of light may make a lively impression on the retina), have their pupils in the day-time contracted into a very narrow space, as a great number of rays would oppress their nice organs; while in the night, or where the light is faint, they open the pupil, and very fully admit the rays. In the same way, when the retina is inflamed, a great number of rays of light would occasion a painful sensation; therefore the pupil is contracted: on the contrary, in dying people, or in

a beginning amaurosis, it is generally dilated, as the eyes on such occasions are very difficultly affected, and as it were insensible.

71
Tapetum.

The posterior part of the choroid coat, which is called *tapetum*, is of different colours in different creatures. For oxen, feeding mostly on grass, have this membrane of a green colour, that it may reflect upon the retina all the rays of light which come from objects of that colour, while other rays are absorbed: Thus the animal sees its food better than it does other objects. Cats and owls have their tapetum of a whitish colour; and for the same reasons have the pupil very dilatible, and their organs of vision acute: And we shall find, that all animals see more or less distinctly in the dark, according as their tapetum approaches nearer to a white or black colour. Thus dogs, who have it of a greyish colour, distinguish objects better in the night than man, whose tapetum is dark brown; and who, it is believed, sees worst in the dark of any creature: it being originally designed that he should rest from all kinds of employment in the night-time. The difference then of the colour of the tapetum, as indeed the fabric of any other part in different creatures, always depends on some particular advantage accruing to the animal in its peculiar manner of life from this singularity.

72
Cerebrum.

We shall now proceed to the brain, which we remark in the first place is proportionally much smaller in all quadrupeds than the human; but, as in man, it is divided into cerebrum and cerebellum, and these two parts bear nearly the same proportion to one another as in us. There was no such occasion for so great a quantity of brain in those animals as in man; seeing in them all its energy is employed in their progression, while man has a great waste of spirits in the exercise of his reason and intellectual faculties. And besides all this, a great bulky brain would be inconvenient to these creatures, in so far as it would add considerably to the weight of the head; which having the advantage of a long lever to act with, would require a much greater force to support it than now it does; for the heads of the greatest part of quadrupeds are not near so heavy as they would at first seem to be, from the *sinus frontales* being produced a great way upwards to enlarge the organs of smelling.

The pits in the anterior part of their skulls are much more conspicuous than in the human cranium; which may be occasioned by the depending posture of these creatures heads while they gather their food: the brain at this time gravitating much on the bones while they are as yet soft, will gradually make impressions upon them at these places where it rises into eminences. This is prevented in man mostly by his erect posture.

The *falx* is not near so large in quadrupeds as in man, as they have little occasion to lie on either side, and the two hemispheres of the brain are in a great measure hindered from justling against one another in violent motions, by the brain's insinuating itself into the above mentioned pits.

73
Falx.

The second process of the *dura mater*, or *tentorium cerebello super-expansum*, is considerably thicker and stronger in most quadrupeds than in man; especially in such of them as are very swift of foot, as hares and rabbits, and that most when they are old. This membrane

⁷⁴ Of Quadru-
peds. brane is generally ossified, or we find the place of it supplied by a bone, that it may the more effectually keep off the superincumbent brain from the cerebellum in their rapid motions, which otherwise would be of bad consequence.

⁷⁴ Processus
manillaris. The olfactory nerves are very large, and justly deserve the name of *processus manillares*. They are hollow, and consist of a medullary and cineritious substance, and at first sight appear to be the anterior ventricles of the brain produced; but in man they are small, and without any discernible cavity. The reason of this is pretty evident, if we consider how this animal's head is situated; for the lymph continually gravitating upon the inferior part of the ventricles, may thus elongate and produce them; but from this very inferior part the olfactory nerves rise, and are sent immediately through the os ethmoides into the nose. Hence the ancients, thinking they were continued hollow into the nose, believed they were the emunctories of the brain: in the brain of sheep, which by its firm texture is the best subject of any for searching into the structure of this part, we evidently see, that the name of the *sigmoid cavity* was very properly applied by the ancients to the lateral ventricles of the brain; which are really of a greater extent than they are ordinarily painted by the anatomists, reaching farther backwards, and forwards again under the substance of the brain. The cortical and medullary parts, as well as the corpus callosum, are similar to those parts in man.

⁷⁵ Nates
Testes. The *nates* and *testes* deserve this name much better here than in the human body, with respect to each other. They are larger in the quadruped; and hence we perceive that there is no great reason for ascribing the different operations to any particular size or shape of these parts. They are here also of different colours; the *nates* being of the colour of the cortical, and the *testes* of the medullary substance of the brain; whereas in man they are both of one colour. The reason of these differences, and others of the like nature to be met with, we shall not pretend to determine; for we have hitherto such an imperfect knowledge of the brain itself, that we are entirely ignorant of the various uses of its different parts. We may in general conclude, that the varying in one animal from what it is in another, is fitted to the creature's particular way of living.

⁷⁶ Rete mira-
bile Galeni. The *rete mirabile Galeni*, situated on each side of the *fella turcica*, about which there has been so much dispute, is very remarkable in most quadrupeds. This plexus of vessels is nothing else than a continuation of the internal carotid arteries, which, entering the skull, divide into a vast number of minute branches running along the side of the sella turcica; and, uniting afterwards, are spent on the brain in the common way. Galen seems with justice to suppose, that this plexus of vessels serves for checking the impetuosity of the blood destined for the brain.

The structure of the brain differing but very little in all quadrupeds, it will be needless to examine it in any other.

SECT. IV. *The Anatomy of a Cow.*

⁷⁷ THE next species of quadrupeds we proposed to consider was the ruminant kind, of which we have an

example in a cow; and accordingly shall take the focus of the animal *in utero*, that we may first remark some things that are peculiar to it in that state, and afterwards proceed to examine its viscera as a ruminant animal. First, then, as a fetus.—However, before we begin our enquiry, it may be worth our observation, that from the ovarium something essentially necessary for the production of the fetus is derived, as well as in the human species.

The form of a cow's *uterus* differs from the human, in having two pretty large cornua. This is common to it with other brutes; for a bitch has two long *cornua uteri*: But these again differ (as being multiparous and uniparous) in this, that in the bitches cornua the fetus are contained; whereas here there is only part of the secundines, being mostly the allantois with the included liquor. The muscular fibres of the uterus are more easily discovered; its internal surface has a great number of spongy, oblong, protuberant, glandular bodies fixed to it. These are composed of vessels of the uterus terminating here. In an impregnated uterus, we can easily press out of them a chylous mucilaginous liquor; they are composed of a great many processes or digituli, and deep caverns, answering to as many caverns and processes of the placenta. Their resemblance has occasioned the name of *papilla* to be given them; and hence it was that Hippocrates was induced to believe that the fetus sucked *in utero*. The *papillae* are found in all the different stages of life, in the various stages of pregnancy, and likewise in the unimpregnated state. It is not easy to determine whether the uterus grows thicker or thinner in the time of gestation. The membranes, it is plain (by the stretching of the parts), must be made thinner; but then it is as evident, that the vessels are at that time enlarged, upon which principally the thickness of any part depends; so there seems to be as much gained the one way as lost the other.

The *os uteri* is entirely shut up by a glutinous mucilaginous substance, that is common to the females of all creatures when with young: by this the external air is excluded, which would soon make the liquors corrupt: it also prevents the inflammation of the membranes, and the hazard of abortion. By this means also the lips of the womb are kept from growing together, which otherwise they would certainly at this time do. There are mucous glands placed here to secrete this gluten, which on the breaking of the membranes with the contained waters make a sapo that lubricates and washes the parts, and makes them easily yield. The first of the proper involucre of the fetus is the chorion.

The *chorion* is a pretty strong firm membrane, on whose external surface are dispersed a great many red fleshy bodies of the same number, size, and structure, with the *papillae*, with which they are mutually indented. They have been called *cotyledones*, from *κοτυλη*, "cavity." This is greatly disputed by some as a name very improper; but we think without reason, since the surface that is connected to the *papillae* is concave, though when separated it appears rather convex. To shun all dispute, they may be called properly enough *placentulae*, since they serve the same use as the placenta in women. The separation of these from the *papillae* without any laceration, and our not being able

Of Quadru-
peds.

⁷⁸ Uterus.

⁷⁹ Cornua u-
teri.

⁸⁰ Uterus if
thicker in
time of ge-
station.

⁸¹ Chorion.

⁸² Cotyledo-
nes.

Of Quadru-
peds.

to inject coloured liquors from the vessels of the glands of the uterus into the placentulæ, seem to prove beyond a reply, that there can be here no anastomoses betwixt the vessels; on their coats run a great number of vessels that are sent to the several placentulæ, on the external side next to the uterus; whereas in creatures that have but one placenta, as in the human subject, cats, dogs, &c. the adhesion is somewhat firmer: The placentæ are likewise joined to the papillæ in the cornua uteri. We shall next give the history of the *allantois*.

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Allantois.

This is a fine transparent membrane contiguous to the former. It is not a general involucrium of the fœtus in the mother, for it covers only a small part of the amnios. It is mostly lodged in the cornua uteri. In mares, bitches, and cats, it surrounds the amnios, being every where interposed betwixt it and the chorion. In sheep and goats it is the same as in this animal; and in swine and rabbits it covers still less of the amnios. This sac is probably formed by the dilatation of the urachus, which is connected at its other end to the fundus of the bladder, through which it receives its contents; and a great quantity of urine is commonly found in it. The membrane is doubled at the extremity of the canal, to hinder the return of the urine back into the bladder. Its vessels are so excessively fine and few, that we cannot force an injected liquor farther than the beginning of this coat. This membrane is so far analogous to the cuticula, as not to be liable to corruption, or easily irritated by acrid liquors. The existence of this membrane in women has been very warmly disputed on both sides. Those who are against its existence deny they could ever find it; and, allowing it were so, allege, that since the urachus is impervious, as appears by our not being able to throw liquors from the bladder into it, or *vice versa*, it cannot serve the use that is agreed by all it does serve in beasts; and therefore in the human body there is no such thing. But if we consider, on the other hand, first, that there seems to be the same necessity for such a reservoir in man as in other animals: secondly, that we actually find urine contained in the bladder of the human fœtus: thirdly, that urine has been evacuated at the navel when the urethra was stopped, which urine without this conduit would have fallen into the cavity of the abdomen: fourthly, that midwives have pretended to remark two different sorts of waters come away at the time of birth: and, lastly, that Dr Littre and Dr Hale have given in this membrane of an human subject, with all the other secundines curiously prepared, the one to the royal academy at Paris, the other to the royal society at London; by which societies their respective accounts are attested; not to mention Verheyen, Heister, Keill, &c. who affirm their having seen it; and Mr Albinus, that famous anatomist, professor at Leyden, is said to have shown to his college every year a preparation of it: On all these accounts it seems most probable, that there is such a membrane in the human body.

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The argu-
ments for
and against
the human
allantois.

The third proper integument of the fœtus is the *amnios*. It is thinner and firmer than the chorion; it has numerous ramifications of the umbilical vessels spread upon it, the lateral branches of which separate a liquor into its cavity. This is the proper liquor of the am-

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Amnios.

nios: which at first is in a small quantity, afterwards increases for some months, then again decreases; and in a cow near her time, the quantity of this liquor is not above a pound. This membrane does not enter the *cornua uteri* in this creature, being confined to the body of the uterus; whereas the allantois occupies chiefly its cornua. But for what further relates to the structure of the involucria, with the nature of the liquors contained in them, we must refer to the second volume of Medical Essays, from page 121, where you have the sum of all we know of this matter.

There are here two *vena umbilicales*, and but one in the human subject; because the extreme branches coming from the several placentulæ could not unite so soon as they would have done had they come all from one cake as in the human.

There is a small round fleshy body that swims in the urine of this creature, mares, &c. which is the *hippomanes* of the ancients. Several idle opinions and whims have been entertained as to its use; but that seems to be still unknown, or how it is generated or nourished, for it has no connection with the fœtus or placentulæ.

Having thus considered the several involucria of this animal in a fœtus state, let us next observe the specialities in its internal structure peculiar to a fœtus.

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The umbilical vein joins the *vena portarum* in the *capsula Glissoniana*, without sending off any branches as it does in the human subject.

Vena umbi-
licalis.

This vein soon after birth turns to a ligament; yet there are some instances where it has remained pervious for several years after birth, and occasioned a hæmorrhage. We may next observe the duct called *canalis venosus*, going straight from the *capsula Glissoniana* to the *vena cava*; this turns also afterwards to a ligament. The umbilical arteries rise at acute angles from the internal iliacs, whatever some may say to the contrary; these also become impervious.

87

Canalis ve-
nosus.

The pulmonary artery coming from the right ventricle of the heart divides into two; the largest, called *canalis arteriosus*, opens into the descending aorta; the other divides into two, to serve the lungs on each side. The *foramen ovale* is placed in the partition betwixt the right and left auricles. At the edge of the hole is fixed a membrane, which when much stretched will cover it all over; but more easily yields to a force that acts from the right auricle to the left, than from the left to the right. After what has been said, we may easily understand how the circulation is performed in a fœtus. The blood, being brought from the placenta of the mother, is thrown into the *capsula Glissoniana*, where it is intimately blended with the blood in the *vena portarum*: then part of this blood goes directly into the *vena cava* by the *ductus venosus*; the rest passes through the liver. First, then, the whole is sent from the *vena cava* into the right auricle, from whence part of it is sent by the *foramen ovale* into the left auricle; the rest passes into the right ventricle, then into the pulmonary artery; then the greatest share it receives is sent immediately into the descending aorta by the *canalis arteriosus*, and the remainder circulates through the lungs, and is sent back by the pulmonary veins into the left auricle; which, with the blood brought there by the *foramen ovale*, is sent into the left ventricle, from whence it is driven by the aorta through

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Foramen
ovale.

The circulation, how performed in a fœtus.

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The circula-
tion, how
performed
in a fœtus.

the

the body. The great design of this mechanism is, that the whole mass of blood might not pass through the collapsed lungs of the foetus; but that part of it might pass through the *foramen ovale* and *canalis arteriosus*, without circulating at all through the lungs.

This was the opinion that universally prevailed till the end of the last century, when it was violently opposed by Monsieur Mery, who is very singular in several of his opinions. He will not allow that the foramen ovale transmits blood from the right to the left auricle; but on the contrary from the left to the right; and that for no other reason but because he observed the pulmonary artery in a foetus larger than the aorta. Mr Winslow endeavours to reconcile these two opinions, by saying the blood may pass either way, and that it is here as it were blended: his reason is, that on putting the heart in water, the foramen ovale transmits it any way. Mr Rohault, professor of anatomy at Turin, and formerly one of Mery's scholars, strongly defends his master, and criticises Mr Winslow. What he principally builds on, is the appearance this foramen has in some dried preparations: This Mr Winslow will not allow as a proof. After all, the common opinion seems most probable; and that for the following reasons: First, the pulmonary artery being larger signifies nothing, since its coats are not only thinner and will be more easily distended, but also the resistance to the blood in the pulmonary artery from the collapsed lungs is greater than the resistance to the blood in the aorta. Secondly, if we should allow any of these two uncommon opinions, we should have the right ventricle vastly more capacious than the left: For if we suppose the *foramen ovale* to be capable of transmitting one-third of the whole mass of blood in any given time, and the *canalis arteriosus* as much in the same time, then you will find, that, according to Mr Mery's opinion, the whole mass of blood being driven from the right ventricle into the pulmonary artery, one-third passes by the *canalis arteriosus* into the descending aorta, two thirds passing through the lungs and returning into the left auricle; one-half of which portion, or one-third of the whole mass, passes by the *foramen ovale* into the right auricle; and the other, or the last third, will be sent into the left ventricle, and thence expelled into the aorta; which third, with that from the pulmonary artery by the *canalis arteriosus*, circulating through the body, are returned into the right auricle, where meeting with the other third from the *foramen ovale*, with it they are sent into the right ventricle to undergo the same course. Thus the whole mass is expelled by the right ventricle, and only one-third by the left. If this was the case, why is not the right ventricle three times as large and strong as the left?

Then if, according to Mr Winslow's system, the *foramen ovale* transmits equal quantities from both auricles, this comes to the same as if there was no *foramen ovale* at all: that is to say, the whole mass going from the right auricle into the right ventricle and pulmonary artery, one-third of the whole mass passes into the aorta through the *canalis arteriosus*; the other two-thirds, passing through the lungs, return to the left auricle and ventricle. Thus the right ventricle expels the whole mass; the left, only two-thirds.

But if, according to the common opinion, we suppose the *foramen ovale* to convey the blood from the right to

the left auricle, then one-third passes this way into the left ventricle; the other two-thirds are sent by the right ventricle into the pulmonary artery: from whence one-third passes by the *canalis arteriosus* into the aorta descending; the other third circulates through the lungs, and is returned into the left ventricle; where meeting with that from the *foramen ovale*, it is therewith expelled into the aorta, and with the one-third transmitted by the *canalis arteriosus* returns into the right auricle to run the same race as before. Thus we conclude, that two-thirds are expelled by each ventricle, and the whole circulates through the body; and hence they come to be of pretty equal dimensions. In all this calculation no regard has been had to the blood discharged from the umbilical vessels; but the greater quantity returned by the veins, than sent out by the arteries, still argues for the common opinion.

The kidneys in the foetus are composed of different lobes, which serve to give us an idea of the kidneys being a congeries of different glands; these lobes being kept contiguous by the external membrane, are pressed by the other viscera, till at length they unite.

We now come to consider the creature as a ruminant animal. There are no *dentes incisores* in the upper jaw; but the gums are pretty hard, and the tongue rough. This roughness is occasioned by long sharp pointed papillæ, with which the whole substance of it is covered. These papillæ are turned towards the throat; so that by their means the food, having once got into the mouth, is not easily pulled back. The animals therefore supply the defect of teeth by wrapping their tongue round a tuft of grass; and so, pressing it against the upper jaw, keep it stretched, and cut it with the teeth of the under jaw; then, without chewing, throw it down into the œsophagus, which in these creatures consists of a double row of spiral fibres decussating one another. All animals which ruminate must have more ventricles than one; some have two, some three; our present subject has no less than four. The food is carried directly down into the first, which lies upon the left side, and is the largest of all; it is called *γαστρικόν*, *ventriculus*, and *κοιλία*, by way of eminence.

It is what is called by the general name of *paunch* by the vulgar. There are no rugæ upon its internal surface; but instead of these there are a vast number of small blunt-pointed processes, by which the whole has a general roughness, and the surface is extended to several times the size of the paunch itself. The food, by the force of its muscular coat, and the liquors poured in here, is sufficiently macerated; after which it is forced up hence by the œsophagus into the mouth, and there it is made very small by mastication; this is what is properly called *chewing the cud*, or *rumination*; for which purpose the *dentes molares* are exceedingly well fitted: for instead of being covered with a thin crust, the enamel on them consists of perpendicular plates, between which the bone is bare, and constantly wearing faster than the enamel, so that the tooth remains good to extreme old age; and by means of these teeth the rumination is carried on for a long time without any danger of spoiling them. After rumination, the food is sent down by the gullet into the second stomach; for the œsophagus opens indifferently into both. It ends exactly where the two stomachs meet; and there is a smooth gutter with

Of Quadru-
peda.91
The kid-
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The history
of it as a
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animal.93
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stomachs.94
Their
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description.

Of Quadru-
peds.

ping edges which leads into the second stomach, from thence to the third, and also to the fourth: however, the creature has a power to direct it into which it will. Some tell us, that the drink goes into the second; but that might be easily determined by making them drink before slaughter. The second stomach, which is the anterior and smaller, is called *κεκυραλος*, *reticulum*, *honeycomb*, the *bonnet*, or *king's-hood*. It consists of a great number of cells on its internal surface, of a regular pentagonal figure, like to a honeycomb. Here the food is farther macerated; from which it is protruded into the third, called *εχιυος* or *omasum*, *vulgo* the *manyplies*, because the internal surface rises up into a great many plicæ or folds, and *stratum super stratum*, according to the length of this stomach. Some of these plicæ are farther produced into the stomach than others; *i. e.* first two long ones on each side, and within these two shorter in the middle, &c. There are numberless glandular grains like millet-seeds dispersed on its plicæ, from which some authors call this stomach the *millet*. From this it passes into the fourth, whose names are *χιυος*, *abomasum*, *caillè*, or the *red*, which is the name it commonly has because of its colour. This much resembles the human stomach, or that of a dog; only the inner folds or plicæ are longer and looser: and it may also be observed, that in all animals there is only one digestive stomach, and that has the same coagulating power in the fœtus as the fourth stomach in this animal; whence this might not improperly be called the only true stomach. *Caillè* signifies *curdled*; and hence the French have given that as a name to this fourth stomach, because any milk that is taken down by young calves is there curdled. It is this fourth stomach, with the milk curdled in it, that is commonly taken for making runnet; but after the bile and pancreatic juice enter, this coagulation is not to be found, which shows the use of these liquors. There are other creatures which use the same food, that have not such a mechanism in their digestive organs. Horses, asses, &c. have but one stomach, where grass is macerated, and a liquor for their nourishment extracted, and the remainder sent out by the anus very little altered. From this different structure of the stomach in these creatures, a ruminant animal will be served with one-third less food than another of equal bulk: graziers are sufficiently acquainted with this. The reason is, that ruminating animals have many and strong digestive organs; all their food is fully prepared, and almost wholly converted into chyle: But a horse's stomach is not fitted for this; so that he requires a much greater quantity of food to extract the same nourishment.

95
Intestina.

The guts of these creatures are of a considerable length in proportion to the bulk of the body; and this confirms what we said formerly on the subject of the intestines of a dog, *viz.* that the length and capacity of the guts were different in different animals, according to the nature of their food.

96
Duode-
num.

The *duodenum* is formed here much the same way as in a dog, and the general intention kept in view with regard to the mixture of the bile and pancreatic lymph. The great guts here hardly deserve that name, their diameter differing very little from that of the small ones; but to compensate this, they are much longer pro-

portionally than a dog's are, being convoluted as the small guts are. The cæcum is very large and long. The digestion of the cow, as well as some other animals, is accompanied with a peculiar kind of action called *rumination*; the intention of which seems to be, that the food may be sufficiently comminuted, and thus more fully acted upon by the stomach: for it is not observed that a calf ruminates as long as it is fed only upon milk, though the action takes place as soon as it begins to eat solid food. But it is to be observed, that as long as a calf feeds only upon milk, the food descends immediately into the fourth stomach (which, as has been already mentioned, seems only capable of performing the operation of digestion) without stopping in any of the first three. The rumination does not take place till after the animal has eaten a pretty large quantity: after which she lies down, if she can do it conveniently, and begins to chew; though the operation will take place in a standing posture, if she cannot lie down. In this action a ball is observed to rise from the stomach with great velocity, almost as if shot from a musket. This ball the animal chews very accurately, and then swallows it again, and so on alternately, till all the food she has eaten has undergone this operation. This is easily explained from the structure of the œsophagus, which has one set of fibres calculated for bringing up the grass, and another for taking it down.

By means of rumination, the cow extracts a much larger proportion of nourishment from her food than those animals which do not ruminate; and hence she is contented with much worse fare, and smaller quantities of it, than a horse; hence also the dung of cows, being much more exhausted of its fine parts than horse-dung, proves much inferior to it as a manure.

The *spleen* differs not much either in figure or situation from that of a dog's; but it is a little more firmly fixed to the diaphragm, there not being here so much danger of this viscus's being hurt in the flexions of the spine.

The *liver* is not split into so many lobes in this creature as either in a man or dog; which depends on the small motion this creature enjoys in its spine, which made such a division needless. This also confirms what we formerly advanced on this head.

Their *vesica urinaria* is of a pyramidal shape. It is very large, and more membranaceous: for the urine of these creatures not being so acrid as that of carnivorous animals, there was no such occasion for expelling it so soon.

The male is provided with a loose pendulous *scrotum*, and consequently with *vesicula feminales*. The female organs differ from those of a bitch, mostly as to the form of the cornua uteri, which are here contorted in form of a snail. In this, and all uniparous animals, they contain only part of the secundines; but in bitches, and other multiparous animals, they run straight up in the abdomen, and contain the fœtus themselves.

The situation of the *heart* is pretty much the same with that of a dog, only its point is rather sharper: In us, the heart beating continually against the ribs, and both ventricles going equally far down to the con-

Of Quadru-
peds.97
Spleen.98
Liver.99
Bladder.100
Scrotum,
Vesiculae
feminales.101
Cor.

Of Fowls. It is very obtuse : but here the apex is made up only of the left ventricle, so is more acute.

102 Aorta ascending and descending. The aorta in this creature is justly divided into ascending and descending, though this division is illfounded either in a dog or man ; and it has certainly been from this subject that the older anatomists took their descriptions when they made this division ; for here the aorta divides into two, the ascending and descending.

CHAP. II. Of Fowls.

THE next class of animals we come to consider are of the feathered kind ; which are divided into the granivorous and carnivorous. But before we go on to consider the specialties in the viscera of each kind, we must observe what both species agree in.

SECT. I. Of Fowls in general.

103 Their covering. FOWLS have a particular covering of feathers different from all other creatures, but exactly well suited to their manner of life : for it not only protects them from the injuries of the weather, but serves them in their progression through that thin aerial element they are for the most part employed in ; and as some fowls live much in the water, their feathers being continually besmeared with an oily liquor, keeps the water from soaking into their skins, and so prevents the bad effects which it would infallibly otherwise produce.

104 Their wings, how furnished. FOWLS have the strongest muscles of their whole body inserted into their wings ; whence by the way we may observe, that it is altogether impossible for man to buoy himself up into the air like birds, even though he had proper machines in place of wings, unless he were likewise provided with muscles strong enough for moving them, which he has not. In the next place, their wings are not placed in the middle of their bodies, but a good deal further forwards ; whence it would at first view appear, that their heads would be erect, and their posterior parts most depending when raised in the air : but by stretching out their heads which act upon the lever of a long neck, they alter their centre of gravity pretty much ; and also by filling the sacs or bladders in the inside of their abdomen with air, and expanding their tail, they come to make the posterior part of their bodies considerably higher ; and thus they fly with their bodies nearly in an horizontal situation. Hence we find, that if their necks are kept from being stretched out, or if you cut away their tails, they become incapable of flying any considerable way.

105 Why not placed in the middle of the body. The largeness of the wings in different fowls varies according to the occasions of the creature. Thus birds of prey, who must fly a considerable way to provide their food, have large strong wings ; whereas domestic birds, who find their nourishment almost every where, have very short and but small wings. Their tail is of use in assisting to raise them in the air ; though the chief purpose of it is to serve as a rudder in guiding their flight, whilst they use their wings as we do oars in putting forward a boat. The best account of this manner of progression of fowls is given by Alfonso Borellus, in his treatise *De Motu Animalium* ; and in the *Religious Philosopher* we have Borelli's doctrine stripped pretty much of its mathematical form. The posterior

extremities are situated so far back, as to make us at first think they would be in continual hazard of falling down forwards when they walk : but this is prevented by their holding up their heads and neck, so as to make the centre of gravity fall upon the feet ; and when they have occasion for climbing up a steep place, they stretch out their heads and necks forward, especially if they are short-legged, the better to preserve properly the balance of the body. Thus we may observe a goose entering a barn-door, where generally there is an ascending step, to stretch out its neck, which before was raised, and incline its body forwards. This is laughed at by the common people, who ascribe it to a piece of folly in the goose, as if afraid of knocking its head against the top of the door.

106 A peculiar mechanism in the toes of fowls. Carnivorous animals are provided with strong crooked claws for the catching their prey : water-fowls use them for swimming : and, principally for this purpose, have a strong firm membrane interposed betwixt the toes. There is a beautiful mechanism to be observed in the toes of fowls, which is of considerable use to them. For their toes are naturally drawn together, or bended, when the foot is bended : this is owing to the shortness of the tendons of the toes, which pass over them, which is analogous to our heel ; and that the toes are set in the circumference of a circle, as our fingers are : Hence, when the foot is bended, the tendons must consequently be much stretched ; and, since they are inserted into the toes, must of necessity bend them when the foot is bended ; and when the foot is extended, the flexors of the toes are again relaxed, and they therefore expanded. This is also of great use to different kinds of fowls : thus the hawk descending with his legs and feet extended, spreads his talons over his prey ; and the weight of his body bending his feet, the toes are contracted, and the prey is seized by the talons. This is also of great use to water-fowls : for had there been no such contrivance as this, they must have lost as much time when they pulled their legs in as they had gained by the former stroke ; but, as the parts are now framed, whenever the creature draws in its foot, the toes are at the same time bended and contracted into less space, so that the resistance made against the water is not near so great as before : on the contrary, when they stretch their foot, their toes are extended, the membrane betwixt them expanded, and consequently a greater resistance made to the water. Again, such fowls as live mostly in the air, or have occasion to sustain themselves on branches of trees in windy weather, and even in the night-time when asleep, while all their muscles are supposed to be in a state of relaxation ; such have no more to do but lean down the weight of their bodies, and their toes continue bended without any muscles being in action ; and whenever they would disentangle themselves, they raise up their bodies, by which their feet, and consequently their toes, are extended.

107 The variety of the beaks of fowls, &c. The rostrum, bill, or beak of fowls, is composed of two mandibulæ ; and, as in quadrupeds, the upper one has no motion but what it possesses in common with the head. But parrots are an exception to this rule ; for they can move the upper mandible at pleasure : this is exceeding convenient, as it enables them to lay hold of whatever comes in their way. Carnivorous fowls

Of Fowls.

106 A peculiar mechanism in the toes of fowls.

107 The variety of the beaks of fowls, &c.

Of Fowls. fowls have their beaks long, sharp, and crooked; the domestic fowls, such as the hen-kind, &c. have strong short beaks, commodiously fitted to dig up and break their food; the water-fowls, again, have long or very broad scoop-like beaks, which is most convenient for them. The sternum of fowls is much larger proportionally than the human, and has a ridge rising in its middle for the more commodious origin of the muscles that move the wings. It is also less moveable than ours; for had it been very moveable, a great deal of the force employed for moving the wings would at every contraction of the muscles have been lost, or else some other muscles must have come in play to keep firm the sternum; but this additional weight would have been inconvenient for their progression.

What other things are most remarkable in the structure of the several viscera, we shall consider in that common domestic animal the cock or hen, and afterwards observe the difference of their viscera chylipoietica from a carnivorous fowl.

SECT. II. Anatomy of the Domestic Cock.

THOUGH this kind of birds live upon food somewhat similar to that of man, yet as they have no teeth to separate or break down this food, we would expect to find something to compensate for the want of teeth, something remarkable in the organs of digestion: we shall therefore begin with these parts.

108
Œsophagus.
Ingluvies.

The *œsophagus* of this creature runs down its neck, somewhat inclined to the right side; and terminates in a pretty large membranous sac, which is the *ingluvies* or crop, where the food is macerated and dissolved by a liquor separated by the glands, which are easily observed every where on the internal surface of this bag. The effect of this maceration may be very well observed in pigeons, who are sometimes in danger of being suffocated by the pease, &c. they feed upon, swelling to such an immense bulk in their *ingluvies*, that they can neither get upwards nor downwards. If it be a favourite fowl, it might be preserved by opening the sac, taking out the pease, and sewing up the wound.

109
Ventriculus
succenturiatus seu infundibulum.

The food getting out of this sac goes down by the remaining part of the *œsophagus* into the *ventriculus succenturiatus*, or *infundibulum Peyerii*, which is a continuation of the gullet with more numerous glands, which separate a liquor to dilute the food still more, which at length gets into the true stomach or gizzard, *ventriculus callosus*, which consists of two very strong muscles covered externally with a tendinous aponeurosis, and lined on the inside by a very thick firm membrane, which we evidently discover to be a production of the cuticula. This might have been proved in some measure *à priori*, from taking notice, that this membrane, which in chicks is only a thin slight pellicle, by degrees turns thicker and stronger the more attrition it suffers: but there is no other animal-substance, so far as we know, which grows more hard and thick by being subjected to attrition, excepting the cuticula.—

110
Epidermis invests the internal surface of all the cavities and vessels of the human body.

Hence may be drawn some kind of proof of what has been affirmed concerning the tunica vellosa of the stomach and intestines in the human body, viz. that it was in part a continuation of the epidermis; nay, all the hollow parts of the body, even arteries, veins, &c. seem to be lined with a production of this membrane, or one analogous to it. The use of the internal coat

Of Fowls. of the stomach of fowls is to defend the more tender parts of that viscus from the hard grains and little stones those creatures take down. The use of the gizzard is to compensate for the want of teeth; and it is well fitted for this purpose from the great strength it possesses.

The digestion of these animals is performed merely by attrition, as is evinced by many experiments; and it is further assisted by the hard bodies they swallow. We see them daily take down considerable numbers of the most solid rugged little flints they find; and these can serve for no other purpose than to help the trituration of their aliments. After these pebbles, by becoming smooth, are unfit for this office, they are thrown up by the mouth. Hence fowls that are long confined, though ever so well fed, turn lean for want of these stones to help their digestion. This was put beyond all dispute by Mr *Tauvry*, who gave a species of metal to an ostrich, convex on one side and concave on the other, but carved on both; and opening the creature's body some time after, it was found, that the carving on the convex side was all obliterated, while the engraved character remained the same as before on the concave side, which was not subjected to the stomach's pressure: which could not have happened had digestion been performed by a menstruum, or any other way whatsoever; but may be easily solved by allowing a simple mechanical pressure to take place. We are, however, by no means to conclude from this, as some have too rashly done, that in the human body digestion is performed by simple attrition; otherwise we may, with equal strength of reason, by as good arguments drawn from what is observed in fishes, prove that the aliments are dissolved in our stomachs by the action of a menstruum. But this method of reasoning is very faulty; nor can it ever bring us to the true solution of any philosophical or medical problem. It is very plain, since the structure of the parts of the human stomach are so very different from that of this creature, that it is foolish and unreasonable to imagine both of them capable of producing the same effects. At each end of the stomach, there are as it were two particular sacs of a different texture from the rest of the stomach, not consisting of strong muscular fibres; they seem to be receptacles for the stones (especially at the end which is farthest from the orifice), while the digested aliment is protruded into the intestines.

Spallanzani, however, has lately found, that pebbles are not at all necessary to the trituration of the food of these animals. At the same time, he does not deny, that when put in motion by the gastric muscles, they are capable of producing some effect on the contents of the stomach; but is inclined to believe, that they are not sought for and selected by design, as many suppose, but because they frequently happen to be mixed with the food.

The *duodenum* begins pretty near the same place at which the *œsophagus* enters; yet notwithstanding the vicinity of these two tubes, the aliments are in no danger of getting out before they are perfectly digested, by reason of a protuberance, or *septum medium*, betwixt the orifices; and in those creatures who have such a strong muscular stomach, it is a matter of great indifference whether the entry of the *œsophagus* or *pylorus* be

Of Fowls. be highest, provided that the entry from the œsophagus does not allow the food to regurgitate, since the force of the stomach can easily protrude it towards the duodenum. This gut is mostly in the right side, and hangs pendulous in their abdomen, having its two extremities fixed to the liver. The *ductus choledochus* enters near its termination, where it mounts up again to be fixed to the liver; and left, by the contraction of the intestines, the bile should pass over without being intimately blended with the chyle, that duct enters downwards, contrary to the course of the food, and contrary to what is observed in any of the animals we have yet mentioned. But still the general intention is kept in view, in allowing these juices the fairest chance of being intimately blended with the food.

112
Ductus choledochus.

The *small guts* are proportionally longer than those of carnivorous birds, for the general cause already assigned. At the end of the ilium they have two large *intestina cæca*, one on each side, four or five inches long, coming off from the side of the rectum, and ascending; and we find them containing part of the food: These serve as reservoirs to the feces; which, after some remora, there regurgitate into what soon becomes the rectum; which, together with the excretories of urine and organs of generation, empties itself into the common cloaca. The small intestines are connected by a long loose mesentery, which has little or no fat accompanying the blood-vessels, there being no hazard of the blood's being stopped.

113
Intestina tenuia.

The *pancreas* in the creature lies betwixt the two folds of the duodenum, and sends two or three ducts into this gut pretty near the biliary.

116
Pancreas.

The *spleen* is here of a round globular figure, situated between the liver and stomach; and betwixt these and the back-bone it enjoys the same properties as in other animals, viz. large blood-vessels, &c. All its blood is sent into the *vena portarum*, and has a perpetual conqassation. It has no excretory, as far as we know. Their *liver* is divided into two equal lobes by a pellucid membrane, running according to the length of their body: and hence we may observe, that it is not proper to that bowel to lie on the right side; which is still more confirmed by what we observe in fishes, where the greatest part of it lies in the left side.

117
The spleen.

118
Liver.

The shape of their *gall-bladder* is not much different from that of quadrupeds; but is thought to be longer in proportion to the size of the animal, and is farther removed from the liver.

119
Vesica fellea.

The principal difference to be remarked in their *heart*, is the want of the *valvula tricuspidis*, and their place being supplied by one fleshy flap.

120
Cor.

The *lungs* are not loose within the cavity of the thorax, but fixed to the bone all the way; neither are they divided into lobes, as in those animals that have a large motion in their spine. They are two red spongy bodies, covered with a membrane that is pervious, and which communicates with the large vesicles or air-bags that are dispersed over their whole abdomen; which vesicles, according to Dr Monro, serve two very considerable uses. The one is to render their bodies specifically light, when they have a mind to ascend and buoy themselves up when flying, by distending their lungs with air, and also straiten their *trachea arteria*, and so return the air. Secondly, they supply the place of a muscular *diaphragm* and strong abdominal muscles;

121
Pulmones, their structure and uses.

122
The use of the vesicles in the abdomen.

producing the same effects on the several contained viscera, as these muscles would have done, without the inconvenience of their additional weight; and conducting as much to the exclusion of the egg and feces.

Of Fowls.
123
The diaphragm, how supplied.

Dr Hunter hath lately made some curious discoveries relative to these internal receptacles of air in the bodies of birds. Some of them are lodged in the fleshy parts, and some in the hollow bones; but all of them communicate with the lungs. He informs us, that the air-cells which are found in the soft parts have no communication with the cellular membrane which is common to birds as well as other animals. Some of them communicate immediately with each other; but all of them by the intervention of the lungs as a common centre. Some of them are placed in cavities, as the abdomen; others in the interstices of parts, as about the breast. The bones which receive air are of two kinds; some of them divided into innumerable cells; others hollowed out into one large canal. They may be distinguished from such as do not receive air, by having less specific gravity; by being less vascular; by containing little oil; by having no marrow nor blood in their cells; by having less hardness and firmness than others; and by the passage for the air being perceivable.

The mechanism by which the lungs are fitted for conveying air to these cavities is, their being attached to the diaphragm, and connected also to the ribs and sides of the vertebræ. The diaphragm is perforated in several places by pretty large holes, allowing a free passage of air into the abdomen. To each of these holes is attached a distinct membranous bag, thin and transparent. The lungs open at their anterior part into membranous cells, which lie upon the sides of the pericardium, and communicate with the cells of the sternum. The superior parts of the lungs open into cells of a loose net-work, through which the trachea and œsophagus pass. When these cells are distended with air, it indicates passion, as in the case of the turkey-cock, pouting-pigeon, &c.

These cells communicate with others in the axilla, and under the large pectoral muscle; and those with the cavity of the os humeri, by means of small openings in the hollow surface near the head of that bone. Lastly, The posterior edges of the lungs have openings into the cells of the vertebræ, ribs, os sacrum, and other bones of the pelvis, from which the air finds a passage to the cavity of the thigh-bone.

Concerning the use of these cavities the doctor conjectures, that they are a kind of appendage to the lungs; and that, like the bags continued through the bellies of amphibious animals, they serve as a kind of reservoirs of air. They assist birds during their flight, which must be apt to render frequent respiration difficult. He farther insinuates, that this construction of the organs of respiration may assist birds in singing; which, he thinks, may be inferred from the long continuance of song between the breathings of a canary-bird. On tying the trachea of a cock, the animal breathed through a canula introduced into his belly; another through the os humeri, when cut across; and a hawk through the os femoris. In all these cases the animals soon died. In the first, the doctor ascribes the death to an inflammation of the bowels; but in the last, he owns it was owing to difficult breathing.

Of Fowls. What took place, however, was sufficient to show that the animals really did breathe through the bone.

When we examine the upper end of the *trachea*, we observe a *rima glottidis* with muscular sides, which may act in preventing the food or drink from passing into the lungs; for there is no *epiglottis* as in man and quadrupeds.

124
Trachea ar-
teria.

The *trachea arteria*, near where it divides, is very much contracted; and their voice is principally owing to this contraction. If you listen attentively to a cock crowing, you will be sensible that the noise does not proceed from the throat, but deeper; nay, this very pipe, when taken out of the body, and cut off a little after its division, and blown into, will make a squeaking noise, something like the voice of these creatures. On each side, a little higher than this contraction, there is a muscle arising from their sternum, which dilates the trachea. The cartilages, of which the pipe is composed in this animal, go quite round it; whereas in men and quadrupeds they are discontinued for about one-fourth on the back-part, and the intermediate space is filled up by a membrane. Neither is the trachea so firmly attached to their vertebræ as in the other creatures we have examined. This structure we shall find of great service to them, if we consider, that had the same structure obtained in them as in us, their breath would have been in hazard of being stopped at every flexion or twisting of their neck, which they are frequently obliged to. This we may be sensible of by bending our necks considerably on one side, upon which we shall find a great straitness and difficulty of breathing; whereas their trachea is better fitted for following the flexions of the neck by its loose connection to the vertebræ.

In place of a *muscular diaphragm*, this creature has nothing but a thin membrane connected to the pericardium, which separates the thorax and abdomen. But besides this, the whole abdomen and thorax are divided by a longitudinal membrane or *mediastinum* connected to the lungs, pericardium, liver, stomach, and to the fat lying over their stomach and guts, which is analogous to an *omentum*, and supplies its place.

125
Lymphatic
system.

The *lymphatic system* in birds consists, as in man, of lacteal and lymphatic vessels, with the thoracic duct.

The lacteals indeed, in the strictest sense, are the lymphatics of the intestines; and, like the other lymphatics, carry only a transparent lymph; and instead of one thoracic duct, there are two, which go to the jugular veins. In these circumstances, it would seem that birds differ from the human subject, so far at least as we may judge from the dissection of a *goose*, the common subject of this inquiry, and from which the following description is taken.

The lacteals run from the intestines upon the mesenteric vessels: those of the duodenum pass by the side of the pancreas; afterward they get upon the cæliac artery, of which the superior mesenteric is a branch. Here they are joined by the lymphatics of the liver, and then they form a plexus which surrounds the cæliac artery. Here also they receive a lymphatic from the gizzard, and soon after another from the lower part of the œsophagus. At the root of the cæliac artery they are joined by the lymphatics from the glandulæ renales, and near the same part by the lac-

teals from the other small intestines, which vessels accompany the lower mesenteric artery; but, before they join those from the duodenum, receive from the rectum a lymphatic, which runs from the blood-vessels of that gut. Into this lymphatic some small vessels from the kidneys seem to enter at the root of the cæliac artery. The lymphatics of the lower extremities probably join those from the intestines. At the root of the cæliac artery and contiguous part of the aorta, a net-work is formed by the vessels above described. From this net-work arise two thoracic ducts, of which one lies on each side of the spine, and runs obliquely over the lungs to the jugular vein, into the inside of which it terminates, nearly opposite to the angle formed by the vein and this subclavian one. The thoracic duct of the left side is joined by a large lymphatic, which runs upon the œsophagus. The thoracic ducts are joined by the lymphatics of the neck, and probably by those of the wings where they open into the jugular veins. The lymphatics of the neck generally consist of two large branches, on each side of the neck, accompanying the blood-vessels; and these two branches join near the lower part of the neck, and form a trunk which runs close to the jugular vein, and opens into a lymphatic gland; from the opposite side of this gland a lymphatic comes out, which ends in the jugular vein.

On the left side, the whole of this lymphatic joins the thoracic duct of the same side: but, on the right one, part of it goes into the inside of the jugular vein a little above the angle; whilst another joins the thoracic duct, and with that duct forms a common trunk, which opens into the inside of the jugular vein, a little below the angle which that vein makes with the subclavian. This system in birds differs most from that of quadrupeds, in the chyle being transparent and colourless, and in there being no visible lymphatic glands, neither in the course of the lacteals, nor in that of the lymphatics of the abdomen, nor near the thoracic ducts.

126

Kidneys.

The *kidneys* lie in the hollow excavated in the side of the back-bone, from which there is sent out a bluish-coloured canal running along by the side of the *vas deferens*, and terminating directly in the common cloaca. This is the *ureter*, which opens by a peculiar aperture of its own, and not at the penis. Fowls having no *vesica urinaria*, it was thought by some they never passed any urine, but that it went to the nourishment of the feathers: but this is false; for that whitish substance that you see their greenish fæces covered with, and which turns afterwards chalky, is their urine. Let us next consider the organs of generation of both sexes, and first those of the male.

127

The organs
of genera-
tion in the
male.

The *testicles* are situated one on each side of the back-bone; and are proportionally very large to the creature's bulk. From these run out the *vasa seminfera*; at first straight; but after they recede farther from the body of the testicle, they acquire an undulated or convoluted form, as the epididymis in man. These convolutions partly supply the want of *vesiculae seminales*, their coition being at the same time very short: These terminate in the penis, of which the cock has two, one on each side of the common cloaca, pointing directly outwards. They open at a distance from each other, and are very small and short; whence they have escaped the notice of anatomists, who have often denied their existence. In birds there is no prostate

Of Fowls. 128
 Vitellarium. state gland. This is what is chiefly remarkable in the organs of the male.

Of Fowls.

128
 Vitellarium. The *racemus vitellorum*, being analogous to the ovaria in the human subject, are attached by a proper membrane to the back-bone. This is very fine and thin, and continued down to the uterus. Its orifice is averse with respect to the ovaria; yet notwithstanding, by the force of the *orgasmus veneris*, it turns round and grasps the *vitellus*, which in its passage through this duct, called the *infundibulum*, receives a thick gelatinous liquor, secreted by certain glands. This, with what it receives in the uterus, composes the white of the egg. By this tube then it is carried into the uterus. The shell is lined with a membrane; and in the large end there is a bag full of air, from which there is no outlet.

132
 Cranium.

129
 Uterus. The *uterus* is a large bag, placed at the end of the *infundibulum*, full of wrinkles on its inside; here the egg is completed, receiving its last involucre, and is at last pushed out at an opening on the side of the common cloaca. From the testes in the male being so very large in proportion to the body of the creature, there must necessarily be a great quantity of semen secreted; hence the animal is salacious, and becomes capable of impregnating many females. The want of the *vesiculae seminales* is in some measure supplied by the convolutions of the *vasa deferentia*, and by the small distance betwixt the fecerating and excretory organs. The two *penes* contribute also very much to their short coition; at which time the opening of the uterus into the cloaca is very much dilated, that the effect of the semen on the vitelli may be the greater.

130
 The want of the vesiculae seminales, how supplied.

A hen will of herself indeed lay eggs; but these are not impregnated, and yet appear entirely complete, except that the small black spot, which comes afterwards to be the rudiments of the chick, is not here to be observed.

After having observed the contents of the abdomen and thorax, we next proceed to examine the parts about the neck and head.

These creatures, as was observed of fowls in general, have no teeth. Some, indeed, have an appearance of teeth; but these are only small processes or serræ rising out from the mandible, without any socket, &c. which would have been needless, as they swallow their food entire. But their *tongue* is made pretty firm, lest it should be hurt by the sharp points of the grain they feed on. It is of a triangular figure, and pointed before; and as by their depending posture their meat is in hazard of falling out of their mouths, to prevent this there are several small pointed papillæ standing out upon their tongue and palate, with their points inclined backwards, allowing an easy passage to the food, but hindering it to return.

131
 Tongue, its form.

We have here no *velum palatinum*, *uvula*, or *epiglottis*; and in place of two large holes opening into the nose, there is only a long narrow rima supplied with pretty strong muscles, and such another supplies the place of a glottis. The creature has a power of shutting both at pleasure; and the nature of their food seems not only to exempt them from the hazard of its getting into the nose or trachea, but its sharp points would hurt an uvula, or epiglottis, if they had any.

Hence we see with what difficulty they swallow dough or other sort of food that can be easily moulded into any form. When we examine the upper end of the trachea, we observe a rima glottidis with muscular sides, which may act in preventing the food or drink from passing into the lungs, for there is no epiglottis as in man and quadrupeds.

Their *cranium* is more cellular and cavernous than ours. By this means their heads are light, yet strong enough to resist external injuries; for the enlarging the diameter of bones contributes to their strength. By this cavernous cranium the organ of smelling is supposed to be considerably enlarged; and further, singing birds, as is observed by Mr Ray and Mr Derham, have this cavernous structure of the brain still more observable: and we are told that the cavity of the tympanum communicates with the cells: but this seems rather founded on theory than matter of fact. Their brain is covered with the common membranes, but its external surface is not formed into so many gyræ or convolutions as ours. Its anterior part is quite solid, of a cineritious colour, and so far has a resemblance of the *corpora striata* as to give rise to the olfactory nerves. The whole of it appears to us as imperfect, and we can scarce determine whether there be any thing analogous to a third or fourth ventricle: neither the *corpus callosum*, *fornix*, *nates*, or *testes*, &c. can be observed here; which parts therefore cannot be imagined as absolutely necessary for the functions of life, since we find these creatures perform them sufficiently well. We may perhaps think these serve a particular use in man, who is a rational creature; but then quadrupeds enjoy them in common with men. These protuberances, &c. seem rather to depend on the different disposition of the several parts, being variously connected and meeting in different directions in different places, than their being absolutely necessary for any particular use; and the uses that have been assigned to different parts of the brain by authors, seem to have no foundation but in the author's fancy.

133
 The organ of smelling.

Their organ of *smelling* is very large, and well provided with nerves; hence they have this sensation very acute. Ravens and other birds of prey give a sure proof of this, by their being able to find out their prey, though concealed from their sight and at a considerable distance.

Those birds that grope for their food in the waters, mud, &c. have large nerves, which run quite to the end of their bills, by which they find out and distinguish their food.

The anterior part of their *eyes* (instead of having the sclerotic coat continued, so as to make near a sphere as in us) turns all of a sudden flat; so that here the sclerotic makes but half a sphere; and the cornea rises up afterwards, being a portion of a very small and distinct sphere: so that in these creatures there is a much greater difference betwixt the sclerotic and cornea than in us. Hence their eyes do not jut out of their heads, as in man and quadrupeds. As most of these creatures are continually employed in hedges and thickets, therefore, that their eyes might be secured from these injuries, as well as from too much light when flying in the face of the sun, there is a very elegant mechanism in their eyes. A membrane rises from the internal can-

134
 Eye.

Of Fowls.

thus, which at pleasure, like a curtain, can be made to cover the whole eye; and this by means of a proper muscle that rises from the sclerotic coat, and passing round the optic nerves, runs through the *musculus oculi attollens* (by which however the optic nerves are not compressed) and palpebra, to be inserted into the edge of this membrane. Whenever this muscle ceases to act, the membrane by its own elasticity again discovers the eye. This covering is neither pellucid nor opaque, both which would have been equally inconvenient; but, being somewhat transparent, allows as many rays to enter as to make any object just visible, and is sufficient to direct them in their progression. By means of this membrane it is that the eagle is said to look at the sun. Quadrupeds also, as we mentioned before, have a small *membrana nictitans*.

135 Bourfe noire. Its description and uses.

Besides, all fowls have another particularity, the use of which is not so well understood; and that is, a pretty long black triangular purse, rising from the bottom of their eye just at the entry of the optic nerve, and stretched out into their vitreous humour, and one would imagine it gave some threads to the crystalline. To this the French (who probably were the first who took notice of it in their dissections before the Royal Academy) gave the name of *bourse noire*. This may possibly serve to suffocate some of the rays of light, that they may see objects more distinctly without hurting their eyes. It has a connection with the vitreous, and seems to be joined also to the crystalline humours. If we suppose it to have a power of contraction (which may be as well allowed as that of the iris), it may so alter the position of the vitreous and crystalline humours, that the rays from any body may not fall perpendicularly upon the crystalline; and this seems to be necessary in them, since they cannot change the figure of the anterior part of their eye so much as we can do: and as this animal is exposed often to too great a number of rays of light, so they have no tapetum, but have the bottom of their eye wholly black on the retina; and in consequence of this, fowls see very ill in the dark.

136 Organ of hearing.

They have no external ear; but in place thereof a tuft of very fine feathers covering the *meatus auditorius*, which easily allows the rays of sound to pass them, and likewise prevents dust or any insect from getting in. An external ear would have been inconvenient in their passing through thickets, and in flying, &c. A liquor is separated in the external part of the ear, or *meatus auditorius*, to lubricate the passage, and further prevent the entrance of any insects, &c. The *membrana tympani* is convex externally; and no muscles are fixed to the bones of their ear, which are rather of a cartilaginous consistence: any tremulous motions impressed on the air are communicated in these creatures merely by the spring and elasticity of these bones; so, probably, the membrane is not so stretched as in the human ear by muscles. The semicircular canals are very distinct, and easily prepared.

SECT. III. Anatomy of a Carnivorous Bird.

WE come next to the birds of prey, and for an example shall take a stannel or small hawk. The principal difference to be observed in them, is in their chylipoietic viscera, which may be accounted for from their different way of life.

Immediately under their clavicles, you will observe the œsophagus expanded into their *ingluvies*, which is proportionally less than in the granivorous kind, since their food does not swell so much by maceration; and for the same reason, there is a less quantity of a menstruum to be found here.

Of Aqueous Animals. 137 Ingluvies.

They have also a *ventriculus succenturiatus*, plentifully stored with glands, situated immediately above their stomach, which we see here is thin and musculo-membranous, otherwise than in the granivorous kind: and this difference, which is almost the only one we shall find betwixt the two different species of fowls, is easily accounted for from the nature of their food, which requires less attrition, being easier of digestion than that of the other kind; nevertheless, it seems requisite it should be stronger than the human, to compensate the want of abdominal muscles, which are here very thin.

138 Ventriculus succenturiatus.

The same mechanism obtains in this creature's *duodenum* that we have hitherto observed. As being a carnivorous animal, its guts are proportionally shorter than those of the granivorous kind; for the reason first given, viz. its food being more liable to corrupt, therefore not proper to be long detained in the body; and for that reason it has no *intestina cæca*, of which the other species of fowls have a pair. The difference in their wings, backs, and claws, are obvious; and have been already in some measure observed.

139 Intestina.

CHAP. III. The Anatomy of Aqueous Animals.

SECT. I. Of the Amphibious Tribe.

AQUEOUS animals are generally divided into such as have lungs; and such as want them. The first species differ so inconsiderably from an ox or any other quadruped, that a few observations may be sufficient to give an idea of their internal structure; for this purpose, we shall first examine that species of them which most resembles man in the internal structure, the tortoise.

140

1. *Tortoise*. The covering of this animal is composed of a shell so remarkably hard and firm in its texture, that a loaded waggon may go over it without hurting the shell or the animal within it. In the young animal, this shell grows harder in proportion as its contents expand; and this creature never changes its shell as some others do: hence it was necessary for it to be made up of different pieces; and these are more or less distinct in different animals. Their feet are small and weak; and they are exceedingly slow in motion.

141 Their shell or covering, &c.

It has neither tongue nor teeth; to make up for which, their lips are so hard as to be able to break almost the hardest bodies.

The alimentary canal very much resembles that of the former class.

The principal difference is in the circulation of the blood. The heart has two distinct auricles, without any communication; and under these, there is the appearance of two ventricles similar in shape to those of the former class: but they may be considered as one cavity; for the ventricle sends out not only the pulmonary artery, but likewise the aorta; for there is a passage in the septum, by which the ventricles communicate freely, and the blood passes from the left into

quous
imals.
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into the right one. From the aorta the blood returns into the right auricle, while that from the pulmonary artery returns to the left auricle, from which it is sent to the left ventricle, &c. so that only a part of the blood is sent to the lungs, the rest going immediately into the aorta; hence the animal is not under the necessity of breathing so often as otherwise it would be.

42
d-vel-

From the base of the right ventricle goes out the pulmonary artery and aorta. The pulmonary artery is spent upon the lungs. The aortæ may be said to be three in number: for the aorta sinistra ascends through the pericardium in company with the pulmonary artery; and afterwards turns down, and sends off a considerable branch, which splits into two; one of which joins the right aorta, while the other is distributed upon the liver, stomach, intestines, &c. What remains of this aorta runs to the kidneys or posterior extremities of that side. An aorta descendens, &c. after piercing the pericardium, runs down and communicates with the branch already mentioned, is distributed upon the right kidney and inferior extremity, and also upon the bladder and parts of generation. An aorta ascendens, after getting out of the pericardium, supplies the fore-legs, neck, and head. The blood in the superior part of the body returns to the right auricle by two jugular veins, which unite after perforating the pericardium. From the inferior part, it returns to the same auricle by two large veins; one on the right side receives the blood in the right lobe of the liver; the other on the left side receives the blood in the left lobe, and also a trunk which corresponds with the inferior vena cava in other animals. The pulmonary vessels run in the left auricle in the common way.

The absorbent system in the turtle, like that in the former class, consists of lacteals and lymphatics, with their common trunks the thoracic ducts; but differs from it in having no obvious lymphatic glands on any part of its body, nor plexus formed at the termination in the red veins.

143
cticals.

The *lacteals* accompany the blood-vessels upon the mesentery, and form frequent net-works across these vessels: near the root of the mesentery a plexus is formed, which communicates with the lymphatics coming from the kidneys and parts near the anus. At the root of the mesentery on the left side of the spine, the lymphatics of the spleen join the lacteals; and immediately above this a plexus is formed, which lies upon the right aorta. From this plexus a large branch arises, which passes behind the right aorta to the left side, and gets before the left aorta, where it assists in forming a very large receptaculum, which lies upon that artery.

From this receptaculum arise the thoracic ducts. From its right side goes one trunk, which is joined by that large branch that came from the plexus to the left side of the right aorta, and then passes over the spine. This trunk is the thoracic duct of the right side; for having got to the right side of the spine, it runs upwards, on the inside of the right aorta, towards the right subclavian vein; and when it has advanced a little above the lungs, it divides into branches, which near the same place are joined by a large branch, that comes up on the outside of the aorta. From this part

upwards, those vessels divide and subdivide, and are afterwards joined by the lymphatics of the neck, which likewise form branches before they join those from below. So that between the thoracic duct and the lymphatics of the same side of the neck, a very intricate net-work is formed; from which a branch goes into the angle between the jugular vein and the lower part or trunk of the subclavian. This branch lies therefore on the inside of the jugular vein, while another gets to the outside of it, and seems to terminate in it, a little above the angle, between that vein and the subclavian.

144
Lympha-
tics.

Into the above mentioned receptaculum the lymphatics of the stomach and duodenum likewise enter. Those of the duodenum run by the side of the pancreas, and probably receive its lymphatics and a part of those of the liver. The lymphatics of the stomach and duodenum have very numerous anastomoses, and form a beautiful net-work on the artery which they accompany. From this receptaculum likewise (besides the trunk already mentioned, which goes to the right side) arise two other trunks pretty equal in size; one of which runs upon the left side, and the other upon the right side of the left aorta, till they come within two or three inches of the left subclavian vein; where they join behind the aorta, and form a number of branches which are afterwards joined by the lymphatics of the left side of the neck; so that here a plexus is formed as upon the right side. From this plexus a branch issues, which opens into the angle between the jugular and subclavian vein.

145
Circulation
in serpents,
&c.

2. *Serpent and Crocodile.* The circulation in these is similar to that of the turtle; but we find only one ventricle. The blood goes from the right auricle to the ventricle which sends out the pulmonary artery and aorta; the blood from the pulmonary artery returns to the left auricle, that from the aorta going to the right auricle, and both the auricles opening into the ventricle.

3. *Frog and Lizard.* These differ from the former animals, in having only one auricle and a ventricle: and besides, the ventricle sends out a single artery, which afterwards splits into two parts; one to supply the lungs, the other runs to all the rest of the body: from the lungs and from the other parts, the blood returns into the auricle.

SECT. II. Anatomy of Fishes.

146
Cuticula;
of likeness to
the human.

OF these we may first observe, that they have a very strong thick *cuticle*, covered with a great number of scales, laid one on another like the tiles of houses. This among other arguments is supposed to prove the human epidermis to be of a squamous structure: but the scales resemble the hairs, wool, feathers, &c. of the creatures that live in air; and below these we observe their proper *cuticula* and *cutis*.

The generality of fishes, particularly those shaped like the cod, haddock, &c. have a line running on each side. These lines open externally by a number of ducts, which throw out a mucous or slimy substance that keeps them soft and clammy, and seems to serve the same purpose with the mucous glands or ducts which

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swimming;
how per-
formed.
Several uses
of their
for their progression is performed in a different way, fins, tail, air-
bags, &c.

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Animals

from either of those species of animals: for this purpose they are provided with machines, properly consisting of a great number of elastic beams, connected to one another by firm membranes, and with a tail of the same texture; their spine is very moveable towards the posterior part, and the strongest muscles of their bodies are inserted there. Their tails are so framed as to contract to a narrow space when drawn together to either side, and to expand again when drawn to a straight line with their bodies; so, by the assistance of this broad tail, and the fins on their sides, they make their progression much in the same way as a boat with oars on its sides and rudder at its stern. The perpendicular fins situated on the superior part of their body keep them in *aequilibrio*, hindering the belly from turning uppermost: which it would readily do, because of the air bag in the abdomen rendering their belly specifically lighter than their back; but by the resistance these fins meet with when inclined to either side, they are kept with their backs always uppermost.

The best account of this matter, we have in the treatise before mentioned, viz. *Borellius de Motu Animalium*, cap. 23.

It may be next observed, that these creatures have nothing that can be called a *neck*, seeing they seek their food in an horizontal way, and can move their bodies either upwards or downwards, as they have occasion, by the contraction or dilatation of the air-bag; a long neck, as it would hinder their progression, would be very disadvantageous in the element they live in.

The *abdomen* is covered on the inferior part with a black-coloured thin membrane resembling our peritoneum. It is divided from the thorax by a thin membranous partition, which has no muscular appearance; so that we have now seen two different sorts of animals that have no muscular diaphragm.

These creatures are not provided with *teeth* proper for breaking their aliment into small morsels, as the food they use is generally small fishes, or other animals that need no trituration in the mouth, but spontaneously and gradually dissolve into a liquid chyle. Their teeth serve to grasp their prey, and hinder the creatures they have once caught from escaping again. For the same purpose, the internal cartilaginous basis of the bronchi, and the two round bodies situated in the posterior part of the jaws, have a great number of tenter-hooks fixed into them, in such a manner as that any thing can easily get down, but is hindered from getting back. The water that is necessarily taken in along with their food in too great quantities to be received into their jaws in deglutition, passes betwixt the interstices of the bronchi and the flap that covers them. The compression of the water on the bronchi is of considerable use to the creature, as we shall explain by and by.

The *oesophagus* in these creatures is very short, and scarcely distinguished from their stomach, seeing their food lies almost equally in both. The stomach is of an oblong figure. There are commonly found small fishes in the stomach of large ones still retaining their natural form; but when touched, they melt down into a jelly. From this, and the great quantity of liquors poured into their stomachs, we may conclude, that digestion is solely brought about in them by the dissolving

power of a menstruum, and that no trituration happens here.

The *guts* in these animals are very short, making only three turns; the last of which ends in the common cloaca for the feces, urine, and semen, situated about the middle of the inferior part of their bodies.

To what we call *pancreas*, some give the name of *intestulina caeca*: it consists of a very great number of small threads, like so many little worms, which all terminate at last in two larger canals that open into the first gut, and pour into it a viscid liquor much about the place where the biliary ducts enter. That kind of pancreas formed of *intestulina caeca* is peculiar to a certain kind of fishes; for the cartilaginous, broad, and flat kind, as the skate, sole, flounder, &c. have a pancreas resembling that of the former class of animals. Their intestines are connected to the back-bone by a membrane analogous to a mesentery.

Their *liver* is very large, of a whitish colour, and lies almost in the left side wholly, and contains a great deal of fat or oil.

The *gall-bladder* is situated a considerable way from their liver; and sends out a canal, the cystic duct, which joins with the hepatic duct just at the entry into the gut. Some fibres being observed stretched from the liver to the gall-bladder, but without any apparent cavity, the bilé was supposed not to be carried into the gall-bladder in the usual way, but that it must either be secreted on the sides of the sac, or regurgitate into it from the canalis choledochus. It is certain, however, that hepato-cystic ducts exist in fish as well as in fowls. This, for example, is very obvious in the salmon, where large and distinct ducts run from the biliary ducts of the liver, and open into the gall-bladder.

The *spleen* is placed near the back-bone, and at a place where it is subjected to an alternate pressure from the constriction and dilatation of the air-bag, which is situated in the neighbourhood. Since, in all the different animals we have dissected, we find the spleen attached to somewhat that may give it a compression; as in the human subject and quadrupeds, it is contiguous to the diaphragm; in fowls, it is placed betwixt the back-bone, the liver, and stomach; in fishes, it lies on the *saccus aërius*: and since we find it so well served with blood-vessels, and all its blood returning into the liver; we must not conclude the spleen to be an *inutile pondus*, only to serve as a balance to the animal *pro aequilibrio*, but particularly designed for preparing the blood to the liver.

The only *organs of generation* in this animal are two bags situated in the abdomen uniting near the podex. These in the male are filled with a whitish firm substance called the *milt*; and in the female with an infinite number of little ova clustered together, of a reddish yellow colour, called the *roe*. Both these at spawning-time we find very much distended; whereas at another time the male organs can scarce be distinguished from the female; nor is there any proper instrument in the male for throwing the seed into the organs of the female, as in other creatures. We shall not take upon us to determine the way whereby the female sperm is impregnated: but we find that the spawn of frogs consists in the small specks wrapped up in a whitish glutinous liquor; these specks are the rudiments of the young frogs, which are nourished in that liquor till

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Teeth. for
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149
Digestion
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Intestines

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Pancreas

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Liver, g
bladder,
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till they are able to go in search of their food. In the same way, the ova of fishes are thrown out and deposited in the sand, the male being for the most part ready to impregnate them, and they are incubated by the heat of the sun. It is curious enough to remark with what care they seek for a proper place to deposit their ova, by swimming to the shallow, where they can better enjoy the sun's rays, and shun the large jaws of other fishes. The river-fishes, again, spawn in some creek free from the hazard of the impetuous stream. But whether this mixture be brought about in fishes by a simple application of the genitals to each other, or if both of them throw out their liquors at the same time in one place, and thus bring about the desired mixture, it is not easy to determine. Spallanzani has found, that the eggs of frogs, toads, and water mewts, are not fecundated in the body of the female; that the male emits his semen upon the spawn while it is flowing from the female; and that the fœtus pre-exists in the body of the female: but whether impregnation takes place in the same manner in fishes, he has not yet been able to determine, though he seems to think it probable. These creatures are so shy, that we cannot easily get to observe their way of copulation, and are consequently but little acquainted with their natural history. Frogs, it is very evident, do not copulate; at least no farther than to allow both sexes an opportunity of throwing their sperm. Early in the spring the male is found for several days in close contact upon the back of the female, with his fore legs round her body in such a manner that makes it very difficult to separate them, but there is no communication. At this time the female lays her spawn in some place that is most secure, while the male emits his sperm upon the female spawn.

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bladder,
its
After raising up the black peritoneum in fishes, there comes in view an oblong white membranous bag, in which there is nothing contained but a quantity of elastic air. This is the *swimming-bladder*: it lies close to the back-bone; and has a pretty strong muscular coat, whereby it can contract itself. By contracting this bag, and condensing the air within it, they can make their bodies specifically heavier than water, and so readily fall to the bottom; whereas the muscular fibres ceasing to act, the air is again dilated, and they become specifically lighter than water, and so swim above. According to the different degrees of contraction and dilatation of this bladder, they can keep higher or lower in the water at pleasure. Hence flounders, soles, raia or skate, and such other fishes as want this sac, are found always groveling at the bottom of the water: it is owing to this that dead fishes (unless this membrane has been previously broke) are found swimming a-top, the muscular fibres then ceasing to act, and that with their bellies uppermost; for the back-bone cannot yield, and the distended sac is protruded into the abdomen, and the back is consequently heaviest at its upper part, according to their posture. There is here placed a glandular substance, containing a good quantity of red blood; and it is very probable that the air contained in the swimming bladder is derived from this substance. From the anterior part of the bag go out two *processes* or *appendices*, which, according to the gentlemen of the French academy, ter-

156
process-
or com-
munication
th the
tricular.

minate in their fauces: In a variety of other fishes we find communications with some parts of the alimentary canal, particularly the œsophagus and stomach. The salmon has an opening from the fore end of the air-bag into the œsophagus, which is surrounded by a kind of muscular fibres. The herring has a funnel-like passage leading from the bottom of the stomach into the air-bag; but it is not determined whether the air enters the air-bag by this opening, or comes out by it: the latter, however, seems to be the more probable opinion, as the glandular body is found in all fishes, whereas there are several without this passage of communication.

Of Aqueous
Animals.

At the superior part of this bag there are other red-coloured bodies of a glandular nature, which are connected with the kidneys. From them the *ureters* go down to their insertion in the *vesica urinaria*, which lies in the lower part of the abdomen; and the *urethra* is there produced, which terminates in the podex.

157
Ureters vo-
fica urina-
ria.
Urethra.

These last-mentioned parts have not hitherto been observed in some species of fishes; whence authors too hastily denied them in all. These creatures have a *membranous diaphragm*, which forms a sac in which the heart is contained. It is very tense, and almost perpendicular to the vertebræ.

158
Diaphragm.

The *heart* is of a triangular form, with its base downwards, and its apex uppermost; which situation it has because of the *branchiæ*. It has but one *auricle* and one *ventricle*, because they want lungs; and one great artery. The size of the auricle and that of the ventricle are much the same; the artery sends out numberless branches to the *branchiæ* or gills. And what is rather curious, this artery, instead of supporting all parts as in the frog, is distributed entirely upon the gills; every branch terminating there, and becoming so extremely small as at last to escape the naked eye.

159
The heart
has but one
auricle and
one ven-
tricle.

The *branchiæ* lie in two large slits at each side of their heads, and seem to be all they have that bears any analogy to lungs. Their form is semicircular; they have a vast number of red fibrillæ standing out on each side of them like a fringe, and very much resemble the vane of a feather. These *branchiæ* are perpetually subjected to an alternate motion and pressure from the water; and we may here remark, that we have not found any red blood but in places subjected to this alternate pressure. This observation will help us in explaining the action of the lungs upon the blood. Over these gills there is a large flap, allowing a communication externally; by which the water they are obliged to take into their mouths with their food finds an exit without passing into their stomach: it is owing to these flaps coming so far down that the heart is said commonly to be situated in their heads. The blood is collected again from the gills by a vast number of small veins, somewhat in the same manner as in our pulmonary vein; but instead of going back to the heart a second time, they immediately unite, and form an *aorta descendens*, without the intervention of an auricle and ventricle. Hence a young anatomist may be puzzled to find out the power by which the blood is propelled from the gills to the different parts of the body; but the difficulty will be considerably lessened when we consider the manner in which the blood is

160
The bran-
chiæ.
Their struc-
ture and
use.

Of Aqueous
Animals.

carried through the liver from the intestines in man and quadrupeds. The aorta in fishes sends off branches which supply all the parts of the body excepting the gills. From the extremity of those branches the blood returns to the heart somewhat in the same manner as in the former class of animals; only there are two inferior venæ cavæ, whereas the former has but one.

Absorbent System in Fishes. We shall take the haddock as a general example: for the other fishes, particularly those of the same shape, will be found in general to agree with it.

167
Lymphatic
vessels.

On the middle of the belly of a haddock, immediately below the outer skin, a lymphatic vessel runs upwards from the anus, and receives branches from the parietes of the belly, and from the fin below the anus: near the head this lymphatic passes between the two pectoral fins; and having got above them, it receives their lymphatics. It then goes under the symphysis of the two bones which form the thorax, where it opens into a net-work of very large lymphatics, which lie close to the pericardium, and almost entirely surrounds the heart. This net-work, besides that part of it behind the heart, has a large lymphatic on each side, which receives lymphatics from the kidney, runs upon the bone of the thorax backwards; and when it has got as far as the middle of that bone, it sends off a large branch from its inside to join the thoracic duct. After detaching this branch, it is joined by the lymphatics of the thoracic fins, and soon after by a lymphatic which runs upon the side of the fish. It is formed of branches, which give it a beautiful penniform appearance.

Besides these branches, there is another set deeper which accompanies the ribs. After the large lymphatic has been joined by the above-mentioned vessels, it receives lymphatics from the gills, orbit, nose, and mouth. A little below the orbit, another net-work appears, consisting in part of the vessels above described, and of the thoracic duct. This net-work is very complete, some of its vessels lie on each side of the muscles of the gills; and from its internal part a trunk is sent out which terminates in the jugular vein.

162
The lacteals

The lacteals run on each side of the mesenteric arteries, anastomosing frequently across those vessels. The receptaculum into which they enter is very large, in proportion to them; and consists at its lower part of two branches, of which one lies between the duodenum and stomach, and runs a little way upon the pancreas, receiving the lymphatics of the liver, pancreas, those of the lower part of the stomach, and the lacteals from the greatest part of the small intestines. The other branch of the receptaculum receives the lymphatics from the rest of the alimentary canal. The receptaculum formed by these two branches lies on the right side of the upper part of the stomach, and is joined by some lymphatics in that part, and also by some from the sound and gall-bladder, which in this fish adheres to the receptaculum. This thoracic duct takes its rise from the receptaculum, and lies on the right side of the œsophagus, receiving lymphatics from that part; and running up about half an inch, it divides into two ducts, one of which passes over the œsophagus to the left side, and the other goes straight upon the right side, passes by the upper part of the kidney, from which it receives some small branches,

N^o 87.

and soon afterwards is joined by a branch from the large lymphatic that lies above the bone of the thorax, as formerly mentioned: near this part it likewise sends off a branch to join the duct of the opposite side; and then, a little higher, is joined by those large lymphatics from the upper part of the gills, and from the fauces.

Of Aqueous
Animals.

The thoracic duct, after being joined by these vessels, communicates with the net-work near the orbit, where its lymph is mixed with that of the lymphatics from the posterior part of the gills, and from the superior fins, belly, &c. and then from this net-work, a vessel goes into the jugular vein just below the orbit. This last vessel, which may be called the termination of the whole system, is very small in proportion to the net-work from which it rises; and indeed the lymphatics of the part are so large, as to exceed by far the size of the sanguiferous vessels.

The thoracic duct from the left side, having passed under the œsophagus from the right, runs on the inside of the vena cava of the left side, receives a branch from its fellow of the opposite side, and joins the large lymphatics which lie on the left side of the pericardium, and a part of those which lie behind the heart; and afterwards makes, together with the lymphatics from the gills, upper fins, and side of the fish, a net-work, from which a vessel passes into the jugular vein of this side. In a word, the lymphatics of the left side agree exactly with those of the right side above described. Another part of the system is deeper seated, lying between the roots of the spinal processes of the back-bone. This part consists of a large trunk that begins from the lower part of the fish, and as it ascends receives branches from the dorsal fins and adjacent parts of the body. It goes up near the head, and sends a branch to each thoracic duct near its origin.

163
Cerebrum

The brain in fishes is formed pretty much in the same way as that of fowls; only we may observe, that the posterior lobes bear a greater proportion to the anterior.

164
Organ of smell.

Their organ of smelling is large; and they have a power of contracting and dilating the entry into their nose as they have occasion. It seems to be mostly by their acute smell that they discover their food: for their tongue seems not to have been designed for a very nice sensation, being of a pretty firm cartilaginous substance; and common experience evinces, that their sight is not of so much use to them as their smell in searching for their nourishment. If you throw a fresh worm into the water, a fish shall distinguish it at a considerable distance; and that this is not done by the eye, is plain from observing, that after the same worm has been a considerable time in the water and lost its smell, no fishes will come near it: but if you take out the bait, and make several little incisions into it, so as to let out more of the odoriferous effluvia, it shall have the same effect as formerly. Now it is certain, had the creatures discovered this bait with their eyes, they would have come equally to it in both cases. In consequence of their smell being the principal means they have of discovering their food, we may frequently observe their allowing themselves to be carried down with the stream, that they may ascend again leisurely against the current of the water; thus the odoriferous particles swimming in that medium, being

ap-

Of Aqueous Animals. applied more forcibly to their smelling organs, produce a stronger sensation.

165
Optic nerves.

The *optic nerves* in these animals are not confounded with one another in their middle progress betwixt their origin and the orbit, but the one passes over the other without any communication; so that the nerve that comes from the left side of the brain goes distinctly to the right eye, and *vice versa*.

Indeed it would seem not to be necessary for the optic nerves of fishes to have the same kind of connection with each other as those of man have: for their eyes are not placed in the fore-part, but in the sides of their head; and of consequence, they cannot so conveniently look at any object with both eyes at the same time.

166
The crystalline humour a complete sphere, and why.

The *lens crystallina* is here a complete sphere, and more dense than in terrestrial animals, that the rays of light coming from water might be sufficiently refracted.

As fishes are continually exposed to injuries in the uncertain element they live in, and as they are in perpetual danger of becoming a prey to the larger ones, it was necessary that their eyes should never be shut; and as the cornea is sufficiently washed by the element they live in, they are not provided with palpebræ: but then, as in the current itself the eye must be exposed to several injuries, there was a necessity it should be sufficiently defended; which in effect it is by a firm pellucid membrane, that seems to be a continuation of the cuticula, being stretched over here. The epidermis is very proper for this purpose, as being insensible and destitute of vessels, and consequently not liable to obstructions, or, by that means, of becoming opaque. In the eye of the skate tribe, there is a digitated curtain which hangs over the pupil, and may shut out the light when the animal rests, and it is similar to the tunica adnata of other animals.

167
Organs of hearing.

Although it was formerly much doubted whether fishes possessed a sense of hearing, yet there can be little doubt of it now; since it is found that they have a complete organ of hearing as well as other animals, and likewise as the water in which they live is proved to be a good medium. Fishes, particularly those of the skate kind, have a bag at some distance behind the eyes, which contains a fluid and a soft cretaceous substance, and supplies the place of vestibule and cochlea. There is a nerve distributed upon it, similar to the portio mollis in man. They have three semicircular canals, which are filled with a fluid, and communicate with the bag: they have likewise, as the present professor of anatomy at Edinburgh has lately discovered, a meatus externus, which leads to the internal ear. The cod fish, and others of the same shape, have an organ of hearing somewhat similar to the former; but instead of a soft substance contained in the bag, there is a hard cretaceous stone. In this kind of fish no meatus externus has been yet observed: And Dr Monro is inclined to think that they really have not one, from the consideration that the common canal or vestibule, where the three semicircular canals communicate, is separated from the cavity of the cranium by a thin membrane only; that this cavity, in the greater number of fishes, contains a watery liquor in considerable quantity; and that, by the thinness of the cranium, the tremor excited by a sonorous body may readily and easily be transmitted

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through the cranium to the water within it, and so to the ear.

Of Insects

CHAP. IV. *The Anatomy of Insects.*

As insects and worms are so exceedingly numerous, it would be endless to examine all the different kinds, nor would it serve any useful purpose to the anatomist. We shall therefore be content with making a few general observations, and these chiefly on the structure of their body; leaving the variety of their colour, shape, &c. to the naturalists. Insects differ from the former classes, by their bodies being covered with a hard crust or scale, by their having feelers or antennæ arising from their head, and many of them breathing the air through lateral pores. As to the shape of their bodies, though it somewhat differs from that of birds, being in general not so sharp before to cut and make way through the air, yet it is well adapted to their manner of life. The base of their bodies is not formed of bone, as in many other animals, but the hard external covering serves them for skin and bone at the same time. Their feelers, beside the use of cleaning their eyes, are a guard to them in their walk or flight. Their legs and wings are well fitted for their intended service; but the latter vary so much in different insects, that from them naturalists have given names to the several orders of the class. As, first, the

Coleoptera, or beetle tribe, which have a crustaceous elytra or shell, that shuts together, and forms a longitudinal suture down their back.

Hemiptera—as in cimex, cockroach, bug, &c. which have the upper wings half crustaceous and half membranaceous; not divided by a longitudinal suture, but incumbent on each other.

Lepidoptera—as the butterfly, have four wings, covered with fine scales in the form of powder.

Neuroptera—as the dragon-fly, spring-fly, &c. have four membranaceous transparent naked wings, generally reticulated.

Hymenoptera—as wasps, bees, &c. have four membranaceous wings, and a tail furnished with a sting.

Diptera—as the common house-fly, have only two wings.

Aptera—as the lobster, crab, scorpion, spider, &c. have no wings.

The structure of the eye in many insects is a most curious piece of mechanism. The outer part is remarkably hard, to guard against injuries; and has commonly a reticular appearance, or the whole may be looked upon as an assemblage of smaller eyes; but whether they see objects multiplied before them, has not yet been determined.

Linnæus, and several others following him, deny the existence of a brain in these creatures. But it is certain, that at least a number of the larger kinds, as the lobster, crab, &c. have a soft substance similar to the brain, from which the optic and other nerves take their rise; besides, when this substance is irritated, the animal is thrown into convulsions: hence we would conclude, that insects have a brain as well as the former classes, although this is smaller in proportion to their bodies.

Their ear has been lately discovered to be placed at the root of their antennæ or feelers, and can be

M m di-

Of Insects. distinctly seen in some of the larger kinds, as the lobster.

They have a stomach, and other organs of digestion; and it is curious, that in some, as the lobster, the teeth are found in the stomach.

They have a heart and blood-vessels, and circulation is carried on in them somewhat as in the former class; but the blood is without red globules; or, as naturalists speak, is colourless. In the lobster, and others of the larger kind, when a piece of the shell is broken, the pulsation of the heart is seen distinctly, and that sometimes for several hours after it has been laid bare.

Lungs. The existence of these by some has been denied. But late experiments and observations show, that no species want them, or at least something similar to them; and in many insects, they are larger in proportion than in other animals: in most of them they lie on or near the surface of their body; and send out lateral pores or tracheæ, by which, if the animal is breathed with oil, it is instantly suffocated.

Generation. The same difference in sex exists in insects as in other animals, and they even appear more disposed to increase their species; many of them, when become perfect, seeming to be created for no other purpose but to propagate their like. Thus the silkworm, when it arrives at its perfect or moth-state, is incapable of eating, and can hardly fly; it endeavours only to propagate its species: after which the male immediately dies, and so does the female as soon as she has deposited her eggs.

Besides those of the male and female, a third sex exists in some insects, which we call *neuter*. As these have not the distinguishing parts of either sex, they may be considered as eunuchs or infertile. We know of no instance of this kind in any other class of animals; and it is only found among those insects which form themselves into societies, as bees, wasps, and ants: and here these eunuchs are real slaves, as on them lies the whole business of the economy. No hermaphrodites have as yet been discovered among insects.

Many have imagined that the generality of insects were merely the production of putrefaction, because they have been observed to arise from putrefied substances: but a contrary opinion is now more generally adopted; and it is pretty certain, that if putrid bodies be shut up in a close vessel, no insects are ever generated unless their ova have been originally deposited there. They are oviparous animals, and lay their eggs in places most convenient for the nourishment of their young; some in water, others in flesh; some in fruit and leaves: while others make nests in the earth or in wood, and sometimes even in the hardest stone. The

eggs of all insects first become (*larva*) caterpillar or *Of Worms.* maggot; from which they are changed into (*pupa*) chrysalis or aurelia, so named from their being enclosed in a case; and these dying, or seeming to die, the (*imago*) fly, or butterfly or perfect state, succeeds; and during each of these changes their appearance differs wonderfully.

CHAP. V. Of Worms.

WITH respect to this class of animals, they have characters corresponding with those of the former tribe, but are distinguished from them in having no antennæ, and in being furnished with tentacula.

Many of them, particularly those without shells, are remarkably tenacious of life, sometimes capable of being new formed from a part which may have been separated. By much the greater number of them are destitute of head, ears, nose, eyes, and feet.

Some of those in the first order, as the common round worms, have a vascular and nervous system, with the parts of generation, which can be distinctly seen. Some, as the cuttle fish, form a kind of connection between fishes and worms, in possessing gills but wanting fins, &c. while others, as those of the lowest order, or zoophyta, join the properties of the animal and vegetable kingdom together.

The class is divided by Linnæus, &c. into the following orders, viz.

Intestina—as the earth worm, leech, &c. which are the most simple animals, being perfectly naked, and without limbs of any kind.

Mollusca—as the naked snail, sea-star, cuttle fish; which are likewise simple animals without any shell, but they are brachiated or furnished with a kind of limbs.

Tellucea—as the snail, oyster, &c. which have the same characters as the former order, but are covered with a shell, and include the greater part of what we commonly call *shell-fish*.

Lithophyta—as corals, madrepors, &c. which are compound animals fixed upon a calcareous base, constructed by the creatures themselves.

Zoophyta—as the sponge, polypus, &c. These are likewise compound animals, furnished with a kind of flowers, and having a vegetating root and stem.

Some of these creatures inhabit the earth, others live on the rest of the animal or on the vegetable kingdom, and many are found in the hardest stones; while an innumerable tribe of them live in the waters. In general, they are said to be of the hermaphrodite and oviparous kind; while the lowest class, as the polypi, in a great measure resemble the vegetable kingdom in their manner of growth.

C O M

COMPARATIVE Degree, among grammarians, that betwixt the positive and superlative degrees, expressing any particular quality above or beneath the level of another.

COMPARISON, in a general sense, the consideration of the relation between two persons or things,

C O M

when opposed and set against each other, by which we judge of their agreement or difference.

COMPARISON of Ideas, an act of the mind, whereby it compares its ideas one with another, in respect of extent, degree, time, place, or any other circumstances. See *IDEA*.

Compari-
son.

Brutes seem not to have this faculty in any great degree: they have, probably, several ideas distinct enough; but cannot compare them farther than as to some sensible circumstances annexed to the objects themselves; the power of comparing general ideas, which we observe in men, we may probably conjecture they have not at all.

COMPARISON, in grammar, the inflection of the comparative degree. See GRAMMAR.

COMPARISON, in rhetoric, is a figure whereby two things are considered with regard to some third, which is common to them both.

Instruction is the principal, but not the only end of comparison. It may be employed with success in putting a subject in a strong point of view. A lively idea is formed of a man's courage by likening it to that of a lion; and eloquence is exalted in our imagination comparing it to a river overflowing its bank, and involving all in its impetuous course. The same effect is produced by contrast: a man in prosperity becomes more sensible of his happiness, by comparing his condition with that of a person in want of bread. Thus comparison is subservient to poetry as well as to philosophy.

Comparisons serve two purposes: when addressed to the understanding, their purpose is to instruct; when to the heart, their purpose is to please. Various means contribute to the latter: 1st, the suggesting some unusual resemblance or contrast*; 2d, the setting an object in the strongest light; 3d, the associating an object with others that are agreeable; 4th, the elevating an object; and 5th, the depressing it. And that comparisons may give pleasure by these various means, will be made evident by examples which shall be given, after premising some general observations.

Objects of different senses cannot be compared together; for such objects are totally separated from each other, and have no circumstance in common to admit either resemblance or contrast. Objects of hearing may be compared together, as also of taste, of smell, and of touch: but the chief fund of comparison are objects of sight; because, in writing or speaking, things can only be compared in idea, and the ideas of sight are more distinct and lively than those of any other sense.

When a nation emerging out of barbarity begins to think of the fine arts, the beauties of language cannot long lie concealed; and when discovered, they are generally, by the force of novelty, carried beyond all bounds of moderation. Thus, in the earliest poems of every nation, we find metaphors and similes founded on the slightest and most distant resemblances, which, losing their grace with their novelty, wear gradually out of repute; and now, by the improvement of taste, no metaphor nor simile is admitted into any polite composition but of the most striking kind. To illustrate this observation, a specimen shall be given afterward of such metaphors as we have been describing: with respect to similes take the following specimen:

“ Behold, thou art fair, my love: thy hair is as
“ a flock of goats that appear from Mount Gilead:
“ thy teeth are like a flock of sheep from the wash-
“ ing, every one bearing twins: thy lips are like
“ a thread of scarlet: thy neck like the tower of

Compari-
son.

“ David built for an armoury, whereon hang a
“ thousand shields of mighty men: thy two breasts
“ like two young roes that are twins, which feed
“ among the lilies: thy eyes like the fish-pools in
“ Hebron, by the gate of Bath-rabbin: thy nose
“ like the tower of Lebanon, looking toward Da-
“ mascus.”

Song of Solomon.

“ Thou art like snow on the heath; thy hair like
“ the mist of Cromla, when it curls on the rocks
“ and shines to the beam of the west: thy breasts
“ are like two smooth rocks seen from Branno of
“ the streams: thy arms like two white pillars in
“ the hall of the mighty Fingal.”

Fingal.

It has no good effect to compare things by way of simile that are of the same kind; nor to contrast things of different kinds. The reason is given in the article above cited on the margin, and shall be here illustrated by examples. The first is a comparison built upon a resemblance so obvious as to make little or no impression. Speaking of the fallen angels searching for mines of gold:

A numerous brigade hasten'd: as when bands
Of pioneers with spade and pick-ax arm'd,
Forerun the royal camp to trench a field
Or cast a rampart.

Milton.

The next is of things contrasted that are of different kinds.

Queen. What, is my Richard both in shape and
mind

Transform'd and weak? Hath Bolingbroke depos'd
Thine intellect? Hath he been in thy heart?
The lion, dying, thrusteth forth his paw,
And wounds the earth, if nothing else with rage
To be o'erpower'd: and wilt thou, pupil like,
Take thy correction mildly, kiss the rod,
And fawn on rage with base humility?

Richard II. act. 5. se. 1.

This comparison has scarce any force: a man and a lion are of different species, and therefore are proper subjects for a simile; but there is no such resemblance between them in general, as to produce any strong effect by contrasting particular attributes or circumstances.

A third general observation is, That abstract terms can never be the subject of comparison, otherwise than by being personified. Shakespear compares adversity to a toad, and slander to the bite of a crocodile; but in such comparisons these abstract terms must be imagined sensible beings.

To have a just notion of comparisons, they must be distinguished into two kinds; one common and familiar, as where a man is compared to a lion in courage, or to a horse in speed; the other more distant and refined, where two things that have in themselves no resemblance or opposition, are compared with respect to their effects. There is no resemblance between a flower-plot and a cheerful song; and yet they may be compared with respect to their effects, the emotions they produce in the mind being extremely similar. There is as little resemblance between fraternal concord and precious ointment; and yet observe how successfully they are compared with respect to the impressions they make.

“ Behold, how good and how pleasant it is for
“ brethren to dwell together in unity. It is like

M m 2

“ the

* See the
article
RESEM-
BLANCE
and Dissimi-
litude.

Compari-
son.

“ the precious ointment upon the head, that ran
“ down upon Aaron’s beard, and descended to the
“ skirts of his garment.” *Pſalm 133.*
For illustrating this ſort of compariſon, we ſhall add
ſome more examples :

“ Delightful is thy preference, O Fingal ! it is like
“ the ſun on Cromla, when the hunter mourns his
“ abſence for a ſeaſon, and ſees him between the
“ clouds.

“ Did not Oſſian hear a voice ? or is it the ſound
“ of days that are no more ? Often, like the evening-
“ ſun, comes the memory of former times on my
“ ſoul.

“ His countenance is ſettled from war ; and is
“ calm as the evening-beam, that from the cloud
“ of the weſt looks on Cona’s ſilent vale.” *Fingal.*

We now proceed to illuſtrate, by particular inſtan-
ces, the different means by which compariſons, whe-
ther of the one ſort or the other, can afford pleaſure ;
and, in the order above eſtabliſhed, we ſhall begin with
ſuch inſtances as are agreeable, by ſuggeſting ſome
unſual reſemblance or contraſt.

Sweet are the uſes of Adverſity,
Which, like the toad, ugly and venomous,
Wears yet a precious jewel in her head.

As you like it, act 2. ſc. 1.

See, how the Morning opens her golden gates,
And takes her farewel of the glorious ſun ;
How well reſembles it the prime of youth,
Trim’d like a yonker prancing to his love.

Second Part Henry VI. act. 2. ſc. 1.

Thus they their doubtful conſultations dark
Ended, rejoicing in their matchleſs chief :
As when from mountain tops, the duſky clouds
Aſcending, while the North-wind ſleeps, o’erſpread
Heav’n’s cheerful face, the lowering element
Scowls o’er the darken’d landſcape, ſnow, and
ſhower ;

If chance the radiant ſun with farewel ſweet
Extends his ev’ning-beam, the fields revive,
The birds their notes renew, and bleating herds
Atteſt their joy, that hill and valley rings.

Paradiſe Loſt, book 2.

None of the foregoing ſimiles tend to illuſtrate the
principal ſubject : and therefore the chief pleaſure they
afford muſt ariſe from ſuggeſting reſemblances that
are not obvious : for undoubtedly a beautiful ſubject
introduced to form the ſimile affords a ſeparate plea-
ſure, which is felt in the ſimiles mentioned, particular-
ly in that cited from Milton.

The next effect of a compariſon in the order men-
tioned, is to place an object in a ſtrong point of view ;
which effect is remarkable in the following ſimiles.

As when two ſcales are charg’d with doubtful loads,
From ſide to ſide the trembling balance nods,
(While ſome laborious matron, juſt and poor,
With nice exactneſs weighs her woolly ſtore),
Till poiſ’d aloft, the reſting beam ſuſpends
Each equal weight ; nor this nor that deſcends :
So ſtood the war, till Hector’s matchleſs might,
With fates prevailing, turn’d the ſcale of fight.
Ere as a whirlwind up the wall he flies,
And fires his hoſt with loud repeated cries.

Iliad, b. xii. 521.

Compari-
son.

————— She never told her love ;
But let concealment, like a worm i’ th’ bud,
Feed on her damask cheek : ſhe pin’d in thought ;
And with a green and yellow melancholy,
She fat like patience on a monument,
Smiling at grief. *Twelfth Night, act. 2. ſc. 6.*

“ There is a joy in grief when peace dwells with
“ the ſorrowful. But they are waſted with mourn-
“ ing, O daughter of Toſcar, and their days are
“ few. They fall away like the flower on which
“ the ſun looks in his ſtrength, after the mildew
“ has paſſed over it, and its head is heavy with the
“ drops of night.” *Fingal.*

————— Out, out, brief candle !
Life’s but a walking ſhadow, a poor player,
That ſtruts and frets his hour upon the ſtage,
And then is heard no more.

Macbeth, act 5. ſc. 5.

O thou goddeſs,
Thou divine nature ! how thyſelf thou blaſon’ſt
In theſe two princely boys ! they are as gentle
As zephyrs blowing below the violet,
Not wagging his ſweet head ; and yet as rough
(Their royal blood inchaſ’d) as the rud’ſt wind,
That by the top doth take the mountain-pine,
And make him ſtoop to th’ vale.

Cymbeline, act 4. ſc. 4.

“ Why did not I paſs away in ſecret, like the
“ flower of the rock that liſts its fair head unſeen,
“ and ſtrows its withered leaves on the blaſt ?”

Fingal.

As words convey but a faint and obſcure notion of
great numbers, a poet, to give a lively notion of the
object he deſcribes with regard to number, does well
to compare it to what is familiar and commonly known.
Thus Homer compares the Grecian army in point of
number to a ſwarm of bees : in another paſſage he
compares it to that profuſion of leaves and flowers
which appear in the ſpring, or of inſects in a ſummer’s
evening : And Milton,

————— As when the potent rod
Of Amram’s ſon in Egypt’s evil day
Wav’d round the coaſt, up call’d a pitchy cloud
Of locuſts, warping on the eaſtern wind,
That o’er the realm of impious Pharaoh hung
Like night, and darken’d all the land of Nile ;
So numberleſs were thoſe bad angels ſeen,
Hov’ring on wing under the cope of hell,
’Twiſt upper, nether, and ſurrounding fires.

Paradiſe Loſt, book 1.

Such compariſons have, by ſome writers, been con-
demned for the lowneſs of the images introduced :
but ſurely without reaſon ; for, with regard to num-
bers, they put the principal ſubject in a ſtrong light.

The foregoing compariſons operate by reſemblance ;
others have the ſame effect by contraſt.

York. I am the laſt of noble Edward’s ſons,
Of whom thy father, prince of Wales, was firſt ;
In war, was never lion rag’d more fierce ;
In peace, was never gentle lamb more mild ;
Than was that young and princely gentleman.
His face thou haſt, for even ſo look’d he,
Accompliſh’d with the number of thy hours.

But

But when he frown'd, it was against the French,
And not against his friends. His noble hand
Did win what he did spend; and spent not that
Which his triumphant father's hand had won.
His hands were guilty of no kindreds blood,
But bloody with the enemies of his kin.
Oh Richard, York is too far gone with grief,
Or else he never would compare between.

Richard II. act 2. sc. 3.

Milton has a peculiar talent in embellishing the principal subject, by associating it with others that are agreeable; which is the third end of a comparison. Similes of this kind have, beside, a separate effect: they diversify the narration by new images that are not strictly necessary to the comparison: they are short episodes, which, without drawing us from the principal subject, afford great delight by their beauty and variety.

He scarce had ceas'd, when the superior fiend
Was moving toward the shore; his pond'rous shield,
Ethereal temper, massy, large, and round,
Behind him cast: the broad circumference
Hung on his shoulders like the moon, whose orb
Through optic glass the Tuscan artist views
At evening from the top of Fesole,
Or in Valdarno, to descry new lands,
Rivers, or mountains, in her spotty globe.

Milton, book, 1.

————— Thus far these beyond
Compare of mortal prowess, yet observ'd
Their dread commander. He, above the rest,
In shape and stature proudly eminent,
Stood like a tow'r; his form had not yet lost
All her original brightness, nor appear'd
Less than archangel ruin'd, and th' excess
Of glory obscur'd: as when the sun new-risen
Looks through the horizontal misty air
Shorn of his beams; or, from behind the moon
In dim eclipse, disastrous twilight sheds
On half the nations, and with fear of change
Perplexes monarchs.

Milton, book 1.

As when a vulture on Imaus bred,
Whose snowy ridge the roving Tartar bounds,
Dislodging from a region scarce of prey
To gorge the flesh of lambs, or yearling kids,
On hills where flocks are fed, flies toward the springs
Of Ganges or Hydaspes, Indian streams,
But in his way lights on the barren plains
Of Sericana, where Chineses drive
With sails and wind their cany waggons light:
So on this windy sea of land, the fiend
Walk'd up and down alone, bent on his prey.

Milton, book 3.

Next of comparisons that aggrandise or elevate. These affect us more than any other sort: the reason of which will be evident from the following instances:

As when a flame the winding valley fills,
And runs on crackling shrubs between the hills,
Then o'er the stubble up the mountain flies,
Fires the high woods, and blazes to the skies,
This way and that, the spreading torrent roars;
So sweeps the hero through the wasted shores.

Around him wide, immense destruction pours,
And earth is delug'd with the sanguine show'rs.

Iliad. xx. 569.

Methinks, king Richard and myself should meet
With no less terror than the elements
Of fire and water, when their thund'ring shock,
At meeting, tears the cloudy cheeks of heaven.

Richard II. act. 3. sc. 5.

“As rusheth a foamy stream from the dark shady
“sleep of Cronla, when thunder is rolling above,
“and dark brown night rests on the hill: so fierce,
“so vast, so terrible, rush forward the sons of Erin.
“The chief, like a whale of ocean followed by all
“its billows, pours valour forth as a stream, rolling
“its might along the shore.”

Fingal, book 1.

“As roll a thousand waves to a rock, so Swa-
“ran's host came on; as meets a rock a thousand
“waves, so Inisfail met Swaran.”

Ibid.

The last article mentioned, is that of lessening or depressing a hated or disagreeable object; which is effectually done by resembling it to any thing low or despicable.

Thus Milton, in his description of the rout of the rebel-angels, happily expresses their terror and dismay in the following simile:

————— As a herd
Of goats or timorous flock together throng'd
Drove them before him thunder-struck, pursu'd
With terrors and with furies to the bounds
And crystal wall of heav'n, which opening wide,
Roll'd inward, and a spacious gap disclos'd
Into the wasteful deep; the monstrous sight
Struck them with horror backward, but far worse
Urg'd them behind; headlong themselves they threw
Down from the verge of heav'n.

Milton, book 6.

By this time the different purposes of comparison, and the various impressions it makes on the mind, are sufficiently illustrated by proper examples. This was an easy work. It is more difficult to lay down rules about the propriety or impropriety of comparisons; in what circumstances they may be introduced, and in what circumstances they are out of place. It is evident that a comparison is not proper upon every occasion: a man in his cool and sedate moments, is not disposed to poetical flights, nor to sacrifice truth and reality to the delusive operations of the imagination: far less is he so disposed, when oppress'd with care, or interested in some important transaction that occupies him totally. On the other hand, it is observable, that a man, when elevated or animated by any passion, is disposed to elevate or animate all his subjects: he avoids familiar names, exalts objects by circumlocution and metaphor, and gives even life and voluntary action to inanimate beings. In this warmth of mind, the highest poetical flights are indulg'd, and the boldest similes and metaphors relished. But without soaring so high, the mind is frequently in a tone to relish chaste and moderate ornament; such as comparisons that set the principal object in a strong point of view, or that embellish and diversify the narration. In general, when by any animating passion, whether pleasant or painful, an impulse is given to the imagination;

Comparison.

nation; we are in that condition disposed to every sort of figurative expression, and in particular to comparisons. This in a great measure is evident from the comparisons already mentioned; and shall be further illustrated by other instances. - Love, for example, in its infancy, rousing the imagination, prompts the heart to display itself in figurative language, and in similes:

Troilus. Tell me, Apollo, for thy Daphne's love,
What Cressid is, what Pandar, and what we?
Her bed is India, there she lies a pearl:
Between our Ilium, and where she resides,
Let it be call'd the wild and wandering flood;
Ourself the merchant, and this sailing Pandar
Our doubtful hope, our convoy, and our bark.

Troilus and Cressida, act. 1. sc. 1.

Again:

Come, gentle night; come, loving black-brow'd night!

Give me my Romeo; and, when he shall die,
Take him, and cut him out in little stars,
And he will make the face of heav'n so fine,
That all the world shall be in love with night,
And pay no worship to the garish sun.

Romeo and Juliet, act 3. sc. 4.

But it will be a better illustration of the present head, to give examples where comparisons are improperly introduced. Similes are not the language of a man in his ordinary state of mind, dispatching his daily and usual work: for that reason, the following speech of a gardener to his servant is extremely improper:

Go bind thou up yon dangling apricots,
Which, like unruly children, make their fire
Stoop with oppression of their prodigal weight:
Give some supportance to the bending twigs.
Go thou, and, like an executioner,
Cut off the heads of too-fast growing sprays,
That look too lofty in our commonwealth:
All must be even in our government.

Richard II. act. 3. sc. 7.

The fertility of Shakespeare's vein betrays him frequently into this error.

Rooted grief, deep anguish, terror, remorse, despair, and all the severe dispiriting passions, are declared enemies, perhaps not to figurative language in general, but undoubtedly to the pomp and solemnity of comparison. Upon this account, the simile pronounced by young Rutland, under terror of death from an inveterate enemy, and praying mercy, is unnatural:

So looks the pent-up lion o'er the wretch
That trembles under his devouring paws;
And so he walks insulting o'er his prey,
And so he comes to rend his limbs asunder.
Ah, gentle Clifford, kill me with thy sword
And not with such a cruel threat'ning look.

Third part Henry VI. act 1. sc. 5.

A man spent and dispirited after losing a battle, is not disposed to heighten or illustrate his discourse by similes.

York. With this we charg'd again; but out! alas,
We bodg'd again; as I have seen a swan
With bootless labour swim against the tide,
And spend her strength with over-matching waves.
Ah! hark, the fatal followers do pursue;

And I am faint and cannot fly their fury.

The sands are number'd that make up my life;
Here must I stay, and here my life must end.

Third part Henry VI. act 1. sc. 6.

Similes thus unseasonably introduced are finely ridiculed in the Rehearsal.

" Bayes. Now here she must make a simile.

" Smith. Where's the necessity of that, Mr Bayes?

" Bayes. Because she's surpris'd; that's a general rule; you must ever make a simile when you are surpris'd; 'tis a new way of writing."

A comparison is not always faultless, even where it is properly introduced. A comparison, like other human productions, may fall short of its end; of which defect instances are not rare even among good writers: and to complete the present subject, it will be necessary to make some observations upon such faulty comparisons. Nothing can be more erroneous than to institute a comparison too faint: a distant resemblance or contrast fatigues the mind with its obscurity, instead of amusing it; and tends not to fulfil any one end of a comparison. The following similes seem to labour under this defect.

K. Rich. Give me the crown.—Here, cousin, seize the crown,

Here, on this side, my hand; on that side, thine.

Now is this golden crown like a deep well,

That owes two buckets, filling one another;

The emptier ever dancing in the air,

The other down, unseen, and full of water;

That bucket down, and full of tears, am I,

Drinking my griefs, whilst you mount up on high.

Richard II. act. 4. sc. 3.

K. John. Oh! cousin, thou art come to set mine eye;

The tackle of my heart is crack'd and burnt;

And all the shrouds wherewith my life should sail,

Are turned to one thread, one little hair:

My heart hath one poor string to stay it by,

Which holds but till thy news be uttered.

King John, act 5. sc. 10.

York. My uncles both are slain in rescuing me:

And all my followers to the eager foe

Turn back, and fly like ships before the wind,

Or lambs pursu'd by hunger-starv'd wolves.

Third part Henry VI. act 1. sc. 6.

The latter of the two similes is good: the former, because of the faintness of the resemblance, produces no good effect, and crowds the narration with an useless image.

In an epic poem, or in any elevated subject, a writer ought to avoid raising a simile upon a low image, which never fails to bring down the principal subject. In general, it is a rule, that a grand object ought never to be resembled to one that is diminutive, however delicate the resemblance may be: for it is the peculiar character of a grand object to fix the attention, and swell the mind; in which state, it is disagreeable to contract the mind to a minute object, however elegant. The resembling an object to one that is greater, has, on the contrary, a good effect, by raising or swelling the mind: for one passes with satisfaction from a small to a great object; but cannot be drawn down, without reluctance, from great to small. Hence the following similes are faulty.

Meanwhile

Comparison.

Compari-
son.

Meanwhile the troops beneath Patroclus' care,
Invade the Trojans, and commence the war.
As wasps, provok'd by children in their play,
Pour from their mansions by the broad highway,
In swarms the guiltless traveller engage,
Whet all their stings, and call forth all their rage ;
All rise in arms, and with a general cry
Assert their waxen domes and buzzing progeny :
Thus from the tents the fervent legion swarms,
So loud their clamours, and so keen their arms.

Iliad, xvi. 312.

So burns the vengeful hornet (soul all o'er)
Repuls'd in vain, and thirsty still of gore ;
(Bold son of air and heat) on angry wings
Untam'd, untird, he turns, attacks, and stings.
Fir'd with like ardour, fierce Atrides flew,
And sent his soul with ev'ry lance he threw.

Iliad, xvii. 642.

An error opposite to the former, is the introducing a resembling image, so elevated or great as to bear no proportion to the principal subject. Their remarkable disparity, being the most striking circumstance, seizes the mind, and never fails to depress the principal subject by contrast, instead of raising it by resemblance : and if the disparity be exceeding great, the simile takes on an air of burlesque ; nothing being more ridiculous than to force an object out of its proper rank in nature, by equalling it with one greatly superior or greatly inferior. This will be evident from the following comparison.

Loud as a bull makes hill and valley ring,
So roar'd the lock when it releas'd the spring.

Odysssey, xxi. 51.

Such a simile upon the simplest of all actions, that of opening a lock, is pure burlesque.

A writer of delicacy will avoid drawing his comparisons from any image that is nauseous, ugly, or remarkably disagreeable ; for however strong the resemblance may be, more will be lost than gained by such comparison. Therefore we cannot help condemning, though with some reluctance, the following simile, or rather metaphor.

O thou fond man! with what loud applause
Didst thou beat heav'n with blessing Bolingbroke
Before he was what thou would'st have him be?
And now being trimm'd up in thine own desires,
Thou, beastly feeder, art so full of him,
That thou provok'st thyself to cast him up.
And so, thou common dog, didst thou disgorge
Thy glutton bosom of the royal Richard,
And now thou would'st eat thy dead vomit up,
And howl'st to find it.

Second Part Henry IV. act 1. sc. 6.

The strongest objection that can lie against a comparison is, that it consists in words only, not in sense. Such false coin, or bastard-wit, does extremely well in burlesque ; but it is far below the dignity of the epic, or of any serious composition.

The noble sister of Poplicola,
The moon of Rome ; chaste as the icicle
That's curd'd by the frost from purest snow,
And hangs on Dian's temple.

Coriolanus, act 5. sc. 3.

There is evidently no resemblance between an icicle and a woman, chaste or unchaste : but chastity is cold

in a metaphorical sense, and an icicle is cold in a proper sense ; and this verbal resemblance, in the hurry and glow of composing, has been thought a sufficient foundation for the simile. Such phantom similes are mere witticisms, which ought to have no quarter, except where purposely introduced to provoke laughter. Lucian, in his dissertation upon history, talking of a certain author, makes the following comparison, which is verbal merely.

"This author's descriptions are so cold, that they surpass the Caspian snow, and all the ice of the north."

— But for their spirits and souls
This word *rebellion* had froze them up
As fish are in a pond.

Second Part Henry IV. act 1. sc. 3.

Pope has several similes of the same stamp.

And hence one master passion in the breast,
Like Aaron's serpent, swallows up the rest.

Epiql. 2. l. 131.

And again, talking of this same ruling or master passion ;

Nature its mother, Habit is its nurse ;
Wit, spirit, faculties, but make it worse ;
Reason itself but gives it edge and pow'r ;
As heav'n's bless'd beam turns vinegar more sour.

Ibid. l. 145.

Where the subject is burlesque or ludicrous, such similes are far from being improper. Horace says pleasantly,

Quaquam tu levior cortice. *Lib. 3. od. 9.*

And Shakespeare,

In breaking oaths he's stronger than Hercules.

And this leads to observe, that besides the foregoing comparisons, which are all serious, there is a species, the end and purpose of which is to excite gaiety or mirth. Take the following examples.

Falstaff speaking to his page :

"I do here walk before thee, like a sow that hath overwhelmed all her litter but one."

Second part Henry IV. act 1. sc. 10.

"I think he is not a pick-purse, nor a horse-stealer ; but for his verity in love, I do think him as concave as a covered goblet, or a worm-eaten nut."

As you like it, act 3. sc. 10.

This sword a dagger had his page,

That was but little for his age ;

And therefore waited on him so,

As dwarfs upon knights-errant do.

Hudibras, canto 1.

"Books, like men, their authors, have but one way of coming into the world ; but there are ten thousand to go out of it, and return no more."

Tale of a Tub.

"The most accomplished way of using books at present is, to serve them as some do lords, learn their titles, and then brag of their acquaintance."

Ibid.

"He does not consider, that sincerity in love is as much out of fashion as sweet snuff ; no body takes it now."

Careless Husband.

COMPARTITION, in architecture, denotes the useful and graceful disposition of the whole ground-plot of an edifice, into rooms of office, and of reception or entertainment.

Compari-
son,
Comparti-
tion.

Compartment,
Compass.

COMPARTMENT, in general, is a design composed of several different figures, disposed with symmetry, to adorn a parterre, a ceiling, &c.

A compartment of tiles or bricks, is an arrangement of them, of different colours, and varnished, for the decoration of a building. Compartments in gardening, are an assemblage of beds, plots, borders, walks, &c. disposed in the most advantageous manner that the ground will admit of. Compartments in heraldry, are otherwise called *partitions*.

COMPASS, or *Mariner's Steering COMPASS*, is an instrument used at sea by pilots to direct and ascertain the course of their ships. It consists of a circular brass box, which contains a paper card with the 32 points of the compass, fixed on a magnetic needle that always turns to the north, excepting a small declination variable at different places. See VARIATION.

The needle with the card turns on an upright pin fixed in the centre of the box. In the centre of the needle is fixed a brass conical socket or cap, whereby the card hanging on the pin turns freely round the centre.

The top of the box is covered with a glass, that the card's motion may not be disturbed by the wind. The whole is inclosed in another box of wood, where it is suspended by brass hoops or gimbals, to preserve the card horizontal. The compass-box is to be so placed in the ship, that the middle section of the box, parallel to its sides, may be parallel to the middle section of the ship along its keel.

The compass being of the utmost consequence to navigation, it is reasonable to expect that the greatest attention should be used in its construction, and every attempt to improve it carefully examined, and, if proper, adopted. But so careless are the generality of commanders of this most useful instrument, that almost all the compasses used on board merchant-ships have their needles formed of two pieces of steel-wire, each of which is bent in the middle, so as to form an obtuse angle; and their ends, being applied together, make an acute one; so that the whole represents the form of a lozenge; in the centre of which, and of the card, is placed the brass cap. Now, if we examine a number of these cards, we shall rarely, if ever, find them all in the same direction, but they will all vary more or less, not only with regard to the true direction, but from one another.

These irregularities are owing to the structure of the needle; for the wires of which it is composed are only hardened at the ends; now, if these ends are not equally hard, or if one end be hardened up higher than the other, when they come to be put together, in fixing them to the card, that end which is hardest will destroy much of the virtue of the other; by which means the hardest end will have the most power in directing the card, and consequently make it vary toward its own direction: and, as the wires are disposed in the form of a lozenge, these cards can have but little force, so that they will often, when drawn aside, stand at the distance of several degrees on either side the point from whence they are drawn: for all magnetical bodies receive an additional strength by being placed in the direction of the earth's magnetism, and act proportionably less vigorously when turned out of it; wherefore, when these kind of needles are drawn

N^o 87.

aside from their true point, two of the parallel sides of the lozenge will conspire, more directly than before, with the earth's magnetism; and the other two will be less in that direction: by which means the two sides will very much impede its return; and the two latter will have that impediment to overcome, as well as the friction, by their own force alone.

To remove these inconveniences, some needles are made of one piece of steel of a spring temper, and broad towards the ends, but tapering towards the middle, where a hole is made to receive the cap. At the ends they terminate in an angle, greater or less according to the skill or fancy of the workman. These needles, though infinitely preferable to the other, are, however, far from being perfect; for every needle of this form hath six poles instead of two, one at each end, two where it becomes tapering, and two at the hole in the middle; this is owing to their shape; for the middle part being very slender, it has not substance enough to conduct the magnetic stream quite through, from one end to the other: all these poles appear very distinctly, when examined with a glass that is sprinkled over with magnetic sand. This circumstance, however, does not hinder the needle from pointing true; but as it has less force to move the card than when the magnetic stream moves in large curves from one end to the other, it is certainly an imperfection.

These inconveniences induced the ingenious Dr Knight to contrive a new sea-compass, which came into use on board all the ships of war. The needle in this instrument is quite straight, and square at the ends; and consequently has only two poles, though about the hole in the middle the curves are a little confused. Needles of this construction, after vibrating a long time, will always point exactly in the same direction; and if drawn ever so little on one side, will return to it again, without any sensible difference. We may therefore conclude, that a regular parallelopiped is the best form for a needle, as well as the simplest, the holes for the caps being as small as possible.

And as the weight should be removed to the greatest distance from the centre of motion, a circle of brass, of the same diameter of the card, may be added, which will serve also to support the card, which may then be made of thin paper, without any thing to stiffen it. This ring being fixed below the card, and the needle above it, the centre of gravity is placed low enough to admit of the cap being put under the needle, whereby the hole in the needle becomes unnecessary.

The above observations will be easily understood from viewing the several parts of the instrument as represented on Plate CXLIV. where fig. 6. is the card, with the needle KL, and its cap M, fixed upon it, being one third of the diameter of the real card. Fig. 8. is a perspective view of the backside of the card, where AB represents the turning down of the brass edge, C the under part of the cap, D and E two sliding weights to balance the card, and F, G, two screws that fix the brass edge, &c. to the needle. Fig. 7. is the pedestal that supports the card, containing a screwing needle, fixed in two small grooves to receive it, by

Compass. means of the collet C, in the manner of a port-crayon. D, the stem, is filed into an octagon, that it may be the more easily unscrewed. For its further illustration and application to use, see NAVIGATION.

The invention of the compass is usually ascribed to Flavio da Melfi, or Flavio Gioia, a Neapolitan, about the year 1302; and hence it is, that the territory of Principato, which makes part of the kingdom of Naples, where he was born, has a compass for its arms. Others say that Marcus Paulus, a Venetian, making a journey to China, brought back the invention with him in 1260. What confirms this conjecture is, that at first they used the compass in the same manner as the Chinese still do; *i. e.* they let it float on a little piece of cork, instead of suspending it on a pivot. It is added, that their emperor Chiningus, a celebrated astrologer, had a knowledge of it 1120 years before Christ. The Chinese only divide their compass into 24 points. Fauchette relates some verses of Guoyot de Provence, who lived in France about the year 1200, which seem to make mention of the compass under the name of *marinette*, or *mariner's stone*; which show it to have been used in France near 100 years before either the Melfite or Venetian. The French even lay claim to the invention, from the *fleur de lys* wherewith all nations shall distinguish the north point of the card. With as much reason Dr Wallis ascribes it to the English, from its name *compass*, by which name most nations call it, and which he observes is used in many parts of England to signify a circle.

Though the mariner's compass has been long in use, the best construction of it was attended with many inconveniences, till the late improvement which it has received from the invention and experiments of Dr Gowin Knight, and the farther commendation of Mr Smeaton, as has been described under the article AZIMUTH (Vol. II.)

The compass hath sometimes been observed to be disturbed by the electricity of its glass cover; and this from so slight an application of the finger as was barely necessary to wipe off a little dust. The same glass, rubbed a little more with the finger, a bit of muslin, or paper, would attract either end of the needle, so as to hold it to the glass for several minutes, far out of the due direction, according to that part of the glass which was most excited. And when the needle, after adhering to the glass, has dropped loose, and made vibrations, those would not be bisected as usual by that point where the needle should rest, but would either be made all on one side, or be very unequally divided, by means of some remains of electrical virtue in that part of the glass which had attracted the needle, until at length, after 15 minutes or more, all the electricity being discharged, the magnetical power took place. The remedy for this inconvenience is to moisten the surface of the glass; a wet finger will do it immediately and effectually. The mariner's compass with a chart is much less dangerously moved than the common compass with a bare needle: and the deeper, or farther distant, the needle hangs below the glass, the less disturbance it is likely to receive.

Notwithstanding the various contrivances that have been made to prevent the card from being much affected by the motions of the ship, they have always been found too delicate to encounter the shocks of a

tempestuous sea. Improved sea-compasses have lately been constructed by Mr McCulloch of London (and for which he has obtained a patent), that are reported to be the best of any yet used. The particulars are as follow:

Fig. 1. is a section of the steering compass. *Aaaa*, The common wooden-box, with its lid. *bb*, The brass compass-box. *cc*, The glass cover to ditto. *dd*, The hollow conical bottom. *e*, The prop upon which the compass is supported instead of gimbals; the spherical top of which is finely polished, and the apex of the hollow cone is fitted in a peculiar manner to receive it. *ff*, A quantity of lead run round the bottom and cone of the compass box, to balance and keep it steadily horizontal. *gg*, The card and the magnetic needle, bent in such a manner that the point of the conical pivot on which it moves and is supported, may be brought very near to the centre of gravity, as well as to the centre of motion. *hh*, Two guards, which by means of two pins *ii*, affixed to the compass box, prevents it from turning round and deceiving the steersman.

Fig. 2. a perspective view of the steering compass, with the lid off and the front laid open. *bb*, The guards. *b*, The compass-box. *c*, The prop, &c. as in fig. 1.

Fig. 3. a view of the azimuth compass. *b*, The compass-box. *b*, One of the guards, *e*, The prop, as in fig. 1. and 2. with this difference, that in the azimuth compass, instead of being screwed to the bottom of the wood-box, stands in a brass socket, and may be turned round at pleasure. 1. A brass bar, upon which the sight vanes are fixed. 2. A dark glass, which moves up or down on 3. the sight vane. 4. A magnifying glass, which is also moveable on the other vane. 5. The nonius or vernier. 6. A slide for moving the vernier so as to stop the card in taking the azimuth. 7. A double convex glass, by which the divisions on the vernier may be read with accuracy.

Fig. 4. is a section representing another application of the magnetic needle and card, constructed by Mr McCulloch. *Aaaa*, The common wood-box. *bb*, The brass compass box. *cc*, The brass support for the circle and pendulum. *d*, The pendulum. *e*, The agate. *ff*, The magnetic needle and card. *gg*, The brass circle. *hh*, The glass cover and brass ring. *i*, The lead weight. *N. B.* All the centres of motion are in the same plane.

“In one particular this patent compass is considered as an improvement on the common compasses, in as far as the needle is both longer and broader; hence its magnetism must be stronger, and of course the line of its magnetic direction correspondent with the card. In another particular, in order to prevent the motions of the vessel from affecting the needle, which is the most desirable object, the patent compass-box, instead of swinging in gimbals at right angles to each other, is supported in its very centre upon a prop; and whatever motion the other parts of the box may have, this centre being in the vertex of the hollow cone, may be considered as relatively at rest; and therefore gives little or no disturbance to the needle. Again, the pivot or centre upon which the needle turns, is so contrived as to stand always perpendicular over the centre of the compass-box, or apex of the hollow cone, as upon a fixed point; and is therefore still less affected

Compass.

Plate
CXLV.

Compass

by the motions of the vessel. Thus the centres of motion, gravity, and of magnetism, are brought almost all to the same point; the advantages of which will be readily perceived by any person acquainted with mechanical principles. Experience therefore will ascertain the utility of this improvement." *M'Culloch's Account.*

Of Dr Knight's *Azimuth Compass*, as improved by Mr Smeaton, a description was given under the article AZIMUTH, and a figure in Plate LXXVII. The use of the azimuth compass is for finding the sun's magnetical azimuth, or amplitude; and thence the variation of the compass. If the observation be for an amplitude at sun-rising, or for an azimuth before noon, apply the centre of the index on the west point of the card, within the box; so that the four lines on the edge of the card, and those on the inside of the box, may meet. If the observation be for the sun's amplitude setting, or an azimuth in the afternoon, turn the centre of the index right against the east point of the card, and make the lines within the box concur with those on the card: the instrument thus fitted for observation, turn the index *bc* towards the sun, till the shadow of the thread *ae* fall directly on the slit of the sight, and on the line that is along the middle of the index: then will the inner edge of the index cut the degree and minute of the sun's magnetical azimuth from the north or south. But note, that if, when the compass is thus placed, the azimuth is less than 45° from the south, and the index turned towards the sun, it will pass off the divisions of the limb: the instrument therefore in this case must be turned just a quarter of the compass, *i. e.* the centre of the index must be placed on the north or south point of the card, according as the sun is from you; and then the edge will cut the degree of the magnetic azimuth, or the sun's azimuth from the north, as before.

The sun's magnetical amplitude thus found, the variation of the needle is thus determined. Being out at sea the 15th of May 1717, in 45° north latitude, the tables give me the sun's latitude 19° north, and his east amplitude $27^\circ 25'$ north: by the azimuth compass, I find the sun's magnetical amplitude at his rising and setting; and find he rises, *v. gr.* between the 62d and 63d degree, reckoning from the north towards the east point of the compass, *i. e.* between the 27th and 28th degree, reckoning from the east. The magnetical amplitude, therefore, being here equal to the true one, the needle has no variation; but if the sun at his rising should have appeared between the 52d and 53d degree from the north towards the east; his magnetical amplitude would then have been between 37 and 38 degrees, *i. e.* about 10 degrees greater than the true amplitude: therefore, the needle would vary about 10 degrees north-easterly. If the magnetical east amplitude found by the instrument should be less than the true amplitude, their difference would show the variation of the needle easterly. If the true east amplitude be southward, as also the magnetical amplitude, and this last be the greater; the variation of the needle will be north-west; and *vice versa*.

What has been said of north-east amplitudes holds also of south-west; and what of south-east amplitudes holds of north-west amplitudes. Lastly, if amplitudes be found of different denominations, *v. gr.* if

the true amplitude be six degrees north, and the magnetical amplitude five degrees south; the variation, which in this case is north-west, will be equal to the sum of the magnetical and true amplitudes: understand the same for west amplitudes.

The variation may likewise be found from the azimuth: but in that case, the sun's declination, latitude of the place, and his altitude, must be given, that his true azimuth may be found.

This instrument is also useful in settling the ship's wake, in order to find the lee-way; and also to find the bearings of head-lands, and other objects.

COMPASS is also an instrument of considerable use in surveying land, dialing, &c.

Its structure, in the main, is the same with that of the mariner's compass; consisting, like that, of a box and needle: the principal difference consists in this, that instead of the needle's being fitted into the card, and playing with it on a pivot, it here plays alone; the card being drawn on the bottom of the box, and a circle divided in 360 degrees on the limb. See fig. 5. This instrument is of obvious use to travellers, to direct them in their road; and to miners, to show them what way to dig, with other considerable uses.

Plate
CXLIV.

1. *To take the declination of a wall by the Compass.* Apply that side of the compass whereon the north is marked along the side of the wall; the number of degrees over which the north end of the needle fixes will be the declination of the wall, and on that side; *v. gr.* if the north point of the needle tends towards the north, that wall may be shone on by the sun at noon; if it fix over fifty degrees, counting from the north towards the east, the declination is so many degrees from north towards east.

But since the needle itself declines from the north towards the west, with us, 13° ; it must be noted, that to retrieve the irregularity, 13° are always to be added to the degrees shown by the needle, when the declination of the wall is towards the east; on the contrary, when the declination is towards the west, the declination of the needle is to be subtracted.

2. *To take an angle with the Compass.* Suppose the angle required be DAE, fig. 4. apply that side of the compass whereon the north is marked to one of the lines AD; when the needle rests, observe the degrees at which its north point stands, which suppose 80° : so many degrees does the line decline from the meridian. In the same manner take the declination of the line AE, which suppose 215° ; subtract 80° from 215, the remainder is 135; which subtracted from 180° , there will remain 45° ; the quantity of the angle required. But if the difference between the declination of the two lines exceed 180° ; in that case, 180° must be subtracted from that difference: the remainder then is the angle required.

In measuring angles by the compass, there needs not any regard be had to the variation; that being supposed the same in all the lines of the angles.

3. *To take a plot of a field by the Compass.* Suppose the field A, B, C, D, E, fig. 10. for the greater accuracy let there be two sights fitted to the meridian line of the compass, place it horizontal, and through the sights look along the side AB, or a line parallel to it; applying the eye to the sight at the south point of the compass. Draw a rough sketch of the field by

the

Compass, Compasse. the eye, and on the corresponding line enter down the degree to which the needle points, which suppose 90; measure the length of the side, and enter that too, which suppose 10 chains.

In this manner proceed with all the rest of the sides and angles of the field; the sides, which suppose 70, 65, 70, 44, 50 fathom; and the angles, which suppose 30, 100, 130, 240, 300, degrees. To protract the field, set down the several angles observed, one after another, and subtract the lesser from the next greater: thus will you have the quantity of the several angles, and the length of the lines that include them. For the rest, see GEOMETRY.

Note, All the angles of the figure taken together, must make twice as many right angles; abating two if no mistake has been committed.

Azimuth COMPASS. See AZIMUTH.

COMPASS-Dials, are small horizontal dials, fitted in brass or silver boxes, for the pocket, to show the hour of the day, by the direction of a needle that indicates how to place them right, by turning the dial about till the cock or style stand directly over the needle; but these can never be very exact, because of the variation of the needle itself. See COMPASS, and DIALING.

COMPASSES, or *Pair of COMPASSES*, a mathematical instrument for describing circles, measuring figures, &c.

The common compasses consist of two sharp-pointed branches or legs of iron, steel, brass, or other metal, joined together at the top by a rivet, whereon they move as on a centre. Those compasses are of the best sort in which the pin or axle on which the joint turns, and also half the joint itself, is made of steel, as the opposite metals wear more equable. The perfection of them may be known by the easy and uniform opening and shutting of their legs; one of which is sometimes made to take in and out, in order to make room for two other points to describe with ink, black-lead, or other materials.

There are now used compasses of various kinds and contrivances, accommodated to the various uses they are intended for; as,

COMPASSES of three Legs, or *Triangular Compasses*, are, setting aside the excess of a leg, of the same structure with the common ones: their use being to take three points at once, and so to form triangles; to lay down three positions of a map, to be copied at once, &c.

Beam COMPASSES consist of a long branch, or beam, made of brass or wood, carrying two brass cursors, the one fixed at one end, the other sliding along the beam, with a screw to fasten it on occasion. To the cursors may be screwed points of any kind, whether steel for pencils, or the like. It is used to draw large circles, to take great extents, &c. To the fixed cursor is sometimes applied an adjusting or micrometer screw, by which an extent is obtained to extreme nicety. Mr Jones of Holborn has made beam compasses to adjust to the $\frac{1}{50000}$ th of an inch.

Caliber COMPASSES. See CALIBER.

Clockmaker's COMPASSES are joined like the common compasses, with a quadrant, or bow, like the spring compasses; only of different use, serving here to keep the instrument firm at any opening. They are made very strong, with the points of their legs of well tem-

pered steel, as being used to draw lines on paste-board or copper. **Compasses.**

Cylindrical and Spherical COMPASSES, consist of four branches, joined in a centre, two of which are circular, and two flat, a little bent on the ends: their use is to take the diameter, thickness, or caliber of round or cylindric bodies; such as cannons, pipes, &c.

Elliptic COMPASSES. Their use is to draw ellipses, or ovals of any kind: they consist of a beam A B about a foot long, bearing three cursors; to one of which may be screwed points of any kind: to the bottom of the other two are riveted two sliding dove-tails, adjusted in grooves made in the cross branches of the beam. The dove-tails having a motion every way, by turning about the long branch, go backwards and forwards along the cross; so that when the beam has gone half-way about, one of these will have moved the whole length of one of the branches; and when the beam has got quite round, the same dove-tail has got back the whole length of the branch. Understand the same of the other dove-tail.

Note, the distance between the two sliding dove-tails is the distance between the two foci of the ellipsis; so that by changing that distance, the ellipsis will be rounder or slenderer. Under the ends of the branches of the cross are placed four steel points to keep it fast.

The use of this compass is easy; by turning round the long branch, the ink, pencil, or other point, will draw the ellipsis required. Its figure shows both its use and construction.

German COMPASSES have their legs a little bent outwards, towards the top; so that when shut, the points only meet.

Hair COMPASSES are so contrived within side by a small adjusting screw to one of the legs, as to take an extent to a hair's breadth.

Lapidary's COMPASSES are a piece of wood, in form of the shaft of a plane, cleft at top, as far as half its length; with this they measure the angles, &c. of jewels and precious stones, as they cut them. There is in the cleft a little brass rule, fastened there at one end by a pin; but so that it may be moved in the manner of a brass level: with this kind of square they take the angles of the stones, laying them on the shaft as they cut them.

Proportional COMPASSES are those whose joint lies between the points terminating each leg: they are either simple or compound. In the former sort the centre is fixed, so that one pair of these serves only for one proportion.

Compound proportional COMPASSES consist of two parts or sides of brass, which lie upon each other so nicely as to appear but one when they are shut. These sides easily open, and move about a centre, which is itself moveable in a hollow canal cut through the greatest part of their length. To this centre on each side is affixed a sliding piece A of a small length, with a fine line drawn on it serving as an index, to be set against other lines or divisions placed upon the compasses on both sides. These lines are, 1. A line of lines. 2. A line of superficies, areas, or planes. 3. A line of solids. 4. A line of circles, or rather of polygons to be inscribed in circles. These lines are all unequally divided; the three first from 1 to 20, the last from 6 to 20. Their uses are as follow;

Plate
CXLIV
fig. 9.

Plate
CXLV.
fig. 6.

Compass

By the line of lines you divide a given line into any number of equal parts; for by placing the index A against 1, and screwing it fast, if you open the compasses, then the distance between the points at each end will be equal. If you place the index against 2, and open the compasses, the distance between the points of the longer legs B B, will be twice the distance between the shorter ones C C; and thus a line is bisected, or divided into two equal parts. If the index be placed against 3, and the compasses opened, the distances between the points will be as 3 to 1, and so a line is divided into three equal parts; and so you proceed for any other number of parts under 10.

The numbers of the line of planes answer to the squares of those in the line of lines; for because superficies or planes are to each other as the squares of their like sides; therefore, if the index be placed against 2 in the line of planes, then the distance between the small points will be the side of a plane whose area is one; but the distance of the larger points will be the like side of a plane whose area is two; or twice as large. If the index be placed at 3, and the compasses opened, the distances between the points at each end will be the like side of planes whose area are as 1 to 3; and so of others.

The numbers of the line or solids answer to the cubes of those in the line of lines; because all solids are to each other as the cubes of their sides or diameters: therefore, if the index be placed to number 2, 3, 4, &c. in the line of solids, the distance between the lesser and larger points will be the like sides of solids, which are to each other as 1 to 2, 1 to 3, 1 to 4, &c. For example: If the index be placed at 10, and the compasses be opened so that the small points may take the diameter of a bullet whose weight is one ounce, the distance between the large points will be the diameter of a bullet or globe of 10 ounces, or which is 10 times as large.

Lastly, The numbers in the line or circles are the sides of polygons to be inscribed in a given circle, or by which a circle may be divided into the equal parts, from 6 to 20. Thus, if the index be placed at 6, the points of the compasses at either end, when opened to the radius of a given circle, will contain the side of a hexagon, or divide the circle into six equal parts. If the index be placed against 7, and the compasses opened so that the larger points may take in the radius of the circle, then the shorter points will divide the circle into seven equal parts for inscribing a heptagon. Again, placing the index to 8, and opening the compasses, the larger points will contain the radius, and the lesser points divide the circle into eight equal parts for inscribing an octagon or square. And thus you may proceed for others.

Proportional COMPASSES with the sector lines. The structure of these is so like that of the common proportional compasses, only a little nicer, that it needs no particular description. The lines on the first face are the line of lines, marked *lines*; it is divided into 100 equal parts, every tenth numbered: and the line of chords, which goes to 60° , is marked *chords*. On the other face are a line of sines to 90° , and a line of tangents to 45° . On one side are the tangents from 45° to $71^\circ 34'$; on the other, secants from 0° to $70^\circ 30'$.

Compass

For the use of these compasses: 1. To divide a line into any number of equal parts less than 100: divide 100 by the number of parts required; slip the cursor till the line on the sliding dove-tail be against the quotient on the line of lines: then, the whole line being taken between the points of the compasses most remote from the centre, the aperture of the other will show the division required. 2. A right line given, supposed to be divided into 100 parts, to take any number of those parts; slip the line on the sliding dove-tail to the number of parts required: the whole line being taken between the points farthest from the centre, the aperture of the other two will include the number of divisions required. 3. The radius being given, to find the chord of any arch under 60° ; slip the line on the sliding dove-tail to the degrees required on the line of chords: the radius being taken between the points farthest from the centre of the cursor; the aperture of the other line will be the chord required, provided the number of degrees be greater than 29° : if it be less, the aperture taken from the radius will leave the chord required. 4. If the chord of an arch under 60° be given, and the radius required; slip the line on the dove-tail to the degrees given on the line of chords: the given chord being taken between the two points next the cursor, the aperture of the other will be the radius required. 5. The radius being given, to find the sine of any number of degrees; slip the line on the dove-tail to the degree on the line of sines whose sine is required: the radius taken between the points furthest from the cursor, the aperture of the other will give the sine of the angle required. But if the sine sought be less than $30'$, the difference of the apertures of the opposite points will be the sine required. 6. The radius being given, to find the tangent of any number of degrees under 71° : if the tangent required be under $26^\circ 30'$, then slip the line on the dove-tail to the degree proposed on the tangent line; the radius taken between the points farthest from the cursor, the aperture of the others will be the tangent of the degrees required: if the tangent required be above $26^\circ 30'$, but under 45° , the line on the cursor must be slipped to the degrees given on the tangent line: then the radius being taken between the points furthest from the cursor, the aperture of the others will be the tangent. If the tangent required be greater than 45° , but less than $56^\circ 20'$, slip the notch on the tangent side of the turned cheek to the degree 0 in the tangent line on the side of the compass; the radius taken between the points farthest from the cursor; the difference between the aperture of the other and these, added together, will be the tangent required. Thus, for the tangents of other degrees under 71° . After the like manner may the secant of any number of degrees under 71° be found.

Mr Heath, a mathematical instrument-maker in London, constructed a pair of proportional compasses, in 1746, with a curious and useful contrivance for preventing the shorter legs from changing their position, when these compasses were used. It consisted of a small beam foldered to a screw, and running parallel to the leg of the compasses, nearly of the length of the groove; in this beam a slit was made, which admitted of a sliding-nut, the other end of which fell into a hole in the bottom of the screw, belonging to the great nut

Fig. 1.



Fig. 2.

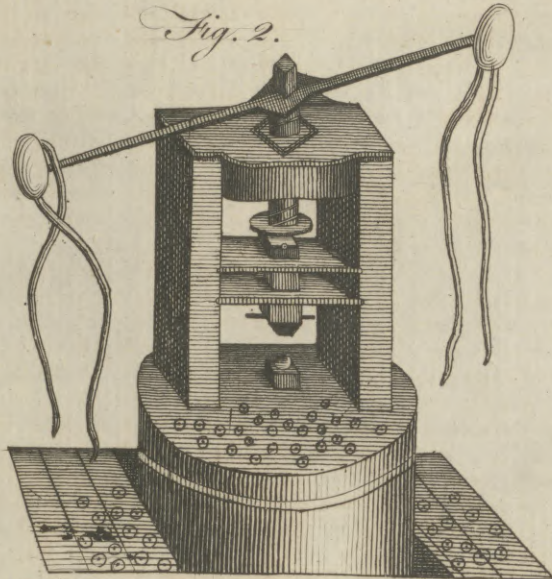
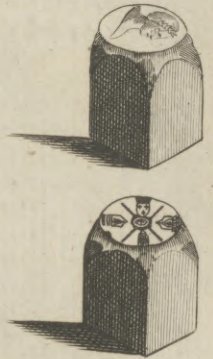


Fig. 3.



COMPASS.

Fig. 4.

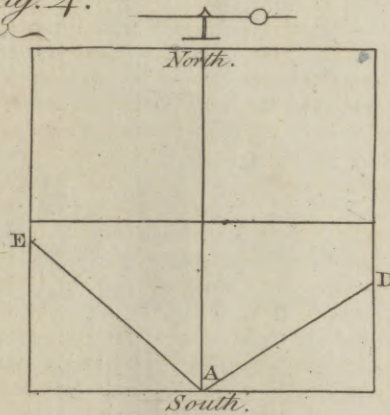
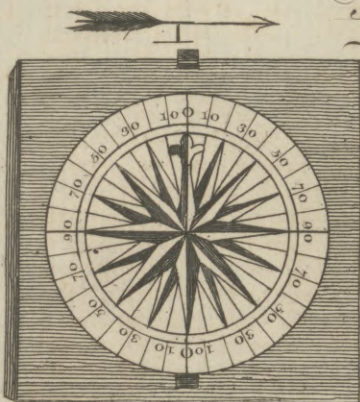


Fig. 7.

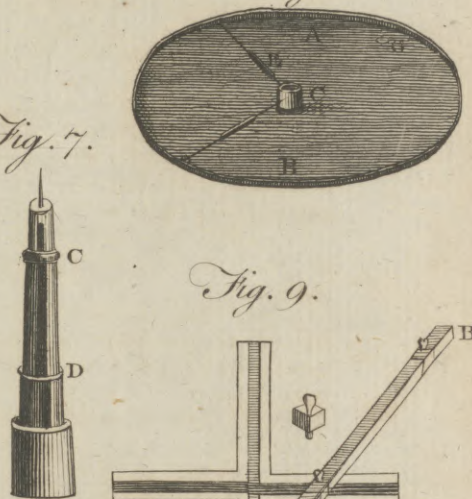


Fig. 9.

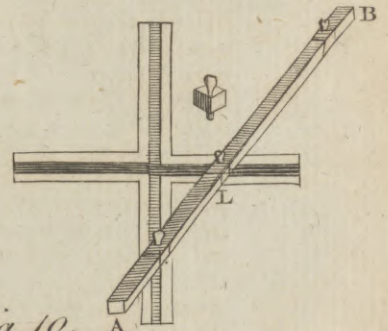


Fig. 5.

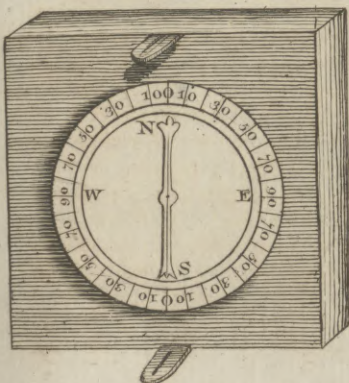


Fig. 6.

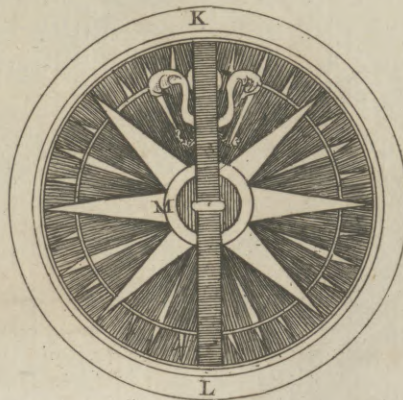


Fig. 10.



Fig. 1.

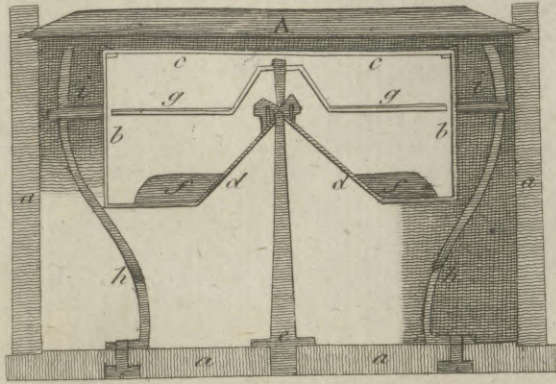


Fig. 2.

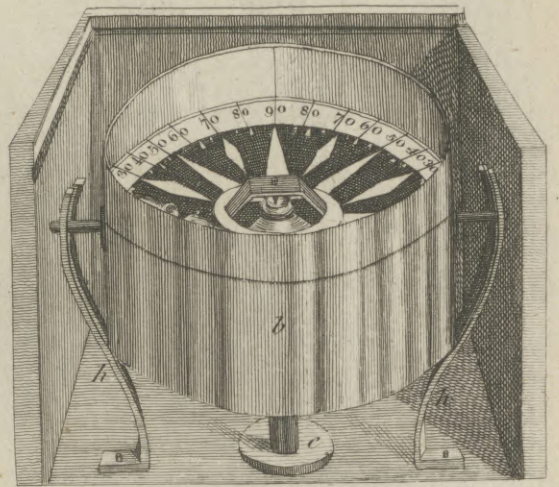


Fig. 3.

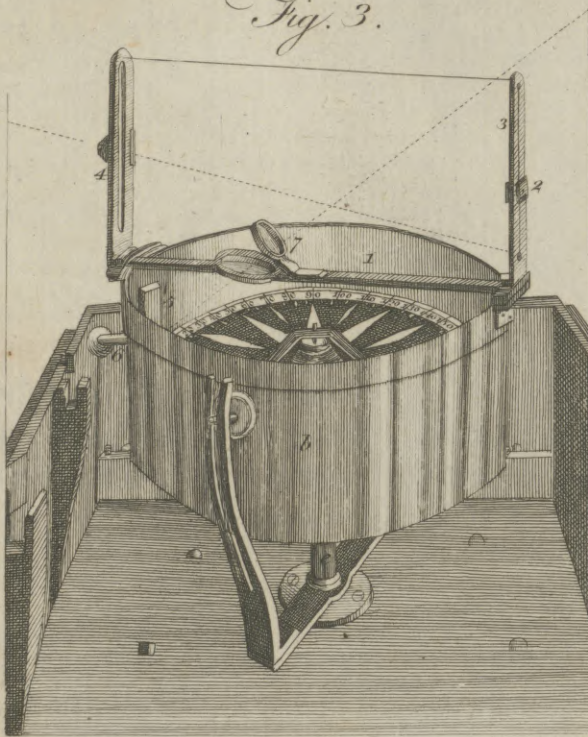


Fig. 4.

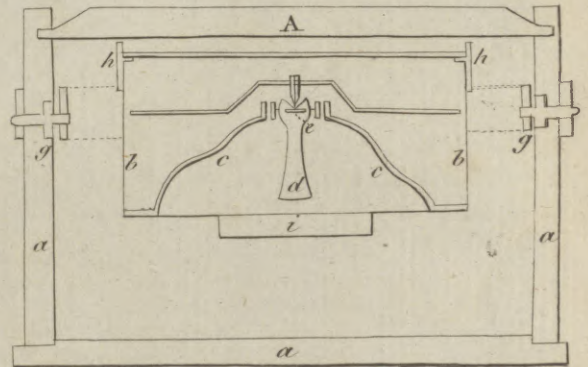
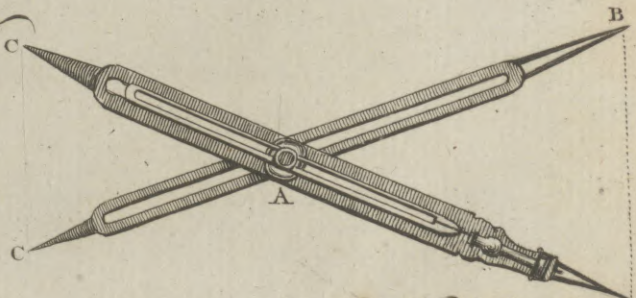
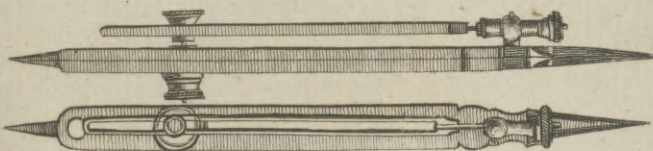


Fig. 5.



A. Boll, Pin. Val. Sculptor fecit. B

compasses
||
competence.

of the compasses. The screw-pin of the beam passed through an adjuster, by means of which the mark on the slider might be brought exactly to any division. But the proportional compasses have been much out of use since the invention of the sector.

Spring COMPASSES, or dividers; those with an arched head, which by its spring opens the legs; the opening being directed by a circular screw fastened to one of the legs, and let through the other, worked with a nut. These compasses are made of hardened steel.

Trifecting COMPASSES consist of two central rules, and an arch of a circle of 120 degrees, immoveable, with its radius; which is fastened with one of the central rules like the two legs of a sector, that the central rule may be carried through all the points of the circumference of the arch. The radius and rule should be as thin as possible; and the rule fastened to the radius should be hammered cold, to attain the greater elasticity; and the breadth of the central rule should be triple that of the radius: there must also be a groove in this rule, with a dove-tail fastened on it for its motion, and a hole in the centre of each rule. The use of this instrument is to facilitate the trifecting of angles geometrically; and it is said to have been invented by M. Tarragen for that purpose.

Turn-up COMPASSES. The body of this instrument is like the common compasses: but towards the bottom of the legs, without-side, are added two other points besides the usual ones; the one whereof carries a drawing pen point, and the other a port-crayon, both adjusted so as to turn round, and be in the way of use, or out of it, as occasion requires. These compasses have been contrived to save the trouble of changing the points.

COMPASSION, or COMMISERATION, in ethic, a mixed passion, compounded of love and sorrow, and excited by the sight or recital of distress. Hobbs makes this a merely selfish passion, and defines it, as being fear for ourselves; Hutcheson resolves it into instinct; but Dr Butler much more properly considers compassion as an original, distinct, particular affection in human nature.

COMPATIBLE, something that may suit or consist with another. See INCOMPATIBLE.

COMPEIGNE, a handsome town of the isle of France, in the county of Senlis, with a palace, or castle, where the king often resides. The maid of Orleans was taken prisoner here in 1430. It is seated on the river Oise, near a large forest. E. Long. 3. 12. N. Lat. 49. 25.

COMPENDIUM, in matters of literature, denotes much the same as epitome or abridgement. See ABRIDGEMENT.

COMPENSATION, in a general sense, an action whereby any thing is admitted as an equivalent to another.

COMPENSATION, in law. Where the same person is debtor and creditor to another, the mutual obligations, if they are for equal sums, are extinguished by compensation; if for unequal, the lesser obligation is extinguished, and the greater diminished, as far as the concurrence of debt and credit goes.

COMPETENCE, or COMPETENCY, in a general sense, such a quantity of any thing as is sufficient.

COMPETENCE, in law, the right or authority of a judge, whereby he takes cognizance of any thing.

COMPETENTES, an order of catechumens, in the primitive Christian church, being the immediate candidates for baptism. See CATECHUMEN.

COMPETITION, in a general sense, is the same with rivalry, or when two or more persons contend for the same thing.

COMPETITION, in Scots law. In escheats, see LAW, Part III. No clxvi. 17, &c. In confirmations by the superior, in resignations, and in personal rights of lands, *ibid.* clxviii. 5—9. In inhibitions, in adjudications, amongst assignees, arresters, and pounders, *ibid.* clxxi. 6. clxxii. 3. clxxviii. 2. clxxviii. 8, 9, 10. Amongst creditors of a defunct, clxxxix. 19.

COMPITALIA, or COMPITALITA, feasts held among the ancients in honour of the *lares*. The word comes from the Latin *compitum*, a cross way; by reason the feast was held in the meeting of several roads. The *compitalia* are more ancient than the building of Rome. Dionysius Halicarnassus, and Pliny, indeed, say, they were instituted by Servius Tullus; but this only signifies that they were then introduced into Rome. The feast being moveable, the day whereon it was to be observed was proclaimed every year. It was ordinarily held on the 4th of the nones of February, *i. e.* on the 2d of that month. Macrobius observes, that they were held not only in honour of the *lares*, but also of *mania*, madness. The priests who officiated at them were slaves and liberti, and the sacrifice a sow. They were re-established, after a long neglect, by Tarquin the Proud, on occasion of an answer of the oracle, *that they should sacrifice heads for heads*; *i. e.* that for the health and prosperity of each family, children were to be sacrificed: but Brutus, after expelling the kings, in lieu of those barbarous victims substituted the heads of garlic and poppy; thus satisfying the oracle which had enjoined *capita*, heads. During the celebration of this feast, each family placed at the door of their house the statue of the goddess *Mania*: they also hung up at their doors figures of wool, representing men and women; accompanying them with supplications that the *lares* and *mania* would be contented with those figures, and spare the people of the house.

COMPLEMENT, in geometry, is what remains of the quadrant of a circle, or 90°, after any certain arch has been taken away from it. Thus, if the arch taken away be 40°, its complement is 50; because 50+40=90. The sine of the complement of an arch is called the *co-sine*, and that of the tangent the *co-tangent*, &c.

COMPLETUS FLOS, in botany. A flower is said to be complete, which is provided with both the covers, *viz.* the calyx or flower-cup, and the petals. The term was invented by Vaillant, and is synonymous to *calyculatus flos* in Linnæus. Berkenhout erroneously confounds it with the *auctus* and *calyculatus calyx* of the same author.

COMPLEX, in a more general sense, a term synonymous with compound; though in strictness of speech there is some difference.

COMPLEX is properly applied where a thing contains divers others, or consists of divers parts not really distinct from each other, but only imaginarily, or in

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Complex,
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our conceptions. In this sense the soul may be said to be complex, in respect of the understanding and will, which are two things that our reason alone distinguishes in it.

COMPLEX Term or Idea, is a term compounded of several simple or incomplex ones. Thus in the proposition, *A just God cannot leave crimes unpunished*; the subject of this proposition, viz. *a just God*, is a complex term, or stands for a complex idea composed of two simple or incomplex ones, viz. *God and just*.

COMPLEXION, among physicians, the temperament, habitude, and natural disposition, of the body; but more often the colour of the face and skin.

Few questions in philosophy have engaged the attention of naturalists more than the diversities among the human species, among which that of colour is the most remarkable. The great differences in this respect have given occasion to several authors to assert, that the whole human race have not sprung from one original; but that as many different species of men were at first created, as there are now different colours to be found among them. Under the article **AMERICA**, n° 81 — 100. we have shown that all the arguments which can be brought for specific differences among mankind, whether drawn from a difference of colour, stature, or disposition, must necessarily be inconclusive. It remains, however, a matter of no small difficulty to account for the remarkable variations of colour that are to be found among different nations. On this subject Dr Hunter hath published a thesis, in which he considers the matter more accurately than hath commonly been done, and determines absolutely against any specific difference among mankind. He introduces his subject by observing, that when the question has been agitated, whether all the human race constitute only one species or not, much confusion has arisen from the sense in which the term *species* has been adopted. He therefore thinks it necessary to set out with a definition of the term. He includes under the same species all those animals which produce issue capable of propagating others resembling the original stock from whence they sprung. This definition he illustrates by having recourse to the human species as an example. And in this sense of the term he concludes, that all of them are to be considered as belonging to the same species. And as, in the case of plants, one species comprehends several varieties depending upon climate, soil, culture, and similar accidents; so he considers the diversities of the human race to be merely varieties of the same species, produced by natural causes. Of the different colours observable among mankind, he gives the following view:

BLACK. Africans under the line.

Inhabitants of New Guinea.

Inhabitants of New Holland.

SWARTHY. The Moors in the northern parts of Africa.

The Hottentots in the southern parts of it.

COPPER-COLOURED. The East Indians.

RED-COLOURED. The Americans.

BROWN-COLOURED. Tartars.

Persians.

Arabs.

BROWN-COLOURED] Africans on the coast of the Mediterranean.
Chinese.

BROWNISH. The inhabitants of the southern parts of Europe; as
Sicilians,
Abyssinians,
Spaniards,
Turks, and likewise the Samoiedes and Laplanders.

WHITE. Most of the European nations; as
Swedes,
Danes,
English,
Germans,
Poles, &c.
Kabardinski,
Georgians,
Inhabitants of the islands in the Pacific Ocean.

In attempting to investigate the causes of these differences, our author observes, that there can be no dispute of the seat of colour being placed in the skin; that it is not even extended over the whole of this, but confined to that part named the cuticle, consisting of the epidermis and reticulum; and that it chiefly occupies the latter of these. The cuticle is much thicker and harder in black people than in white ones; the reticulum in the latter being a thin mucus, in the former a thick membrane. He concludes that this seat of colour in whites is transparent, and either totally deprived of vessels, or only furnished with very few; as the yellow colour appearing in jaundice vanishes on the cause of the disease being removed; which is not the case with stains in the cuticle from gunpowder, or similar causes. He next points out three causes destroying the pellucidity of the cuticle, giving it a brown colour, and rendering it thicker. These are, access of air, nastiness, and the heat of the sun. The influence of each of these he proves by many examples; and from these he is inclined to consider the last as by much the most powerful. If, however, it be admitted that these causes have this effect, he thinks that all the diversity of colour which is to be observed among mankind, may be thus accounted for. He remarks, that all the inhabitants of the torrid zone incline more or less to a black colour. When we observe the differences which occur amongst them, we must at the same time remember, that a black colour is not referred to heat alone, but to the other causes also: and when we attend to the diversity of temperature that occurs even in the torrid zone, the existence of a white nation there would by no means destroy the argument. He is farther of opinion, that the existence of a brown colour, and of considerable varieties from white, in the northern and coldest parts of Europe, may very easily be explained. This he accounts for from the manner of life of the inhabitants, by which they are either exposed to the inclemency of the air, or to constant nastiness from smoky houses.

Having thus attempted to account, from natural causes, for the varieties which occur among mankind with

Complexion.

with respect to colour, our author observes, that, to all this reasoning, an objection will naturally be made, from considering that infants bring these marks into the world along with them, before they can be exposed to any such causes. Dr Hunter imagines, however, that this may readily be explained upon the supposition that many peculiarities acquired by parents are transmitted to their posterity; and of this, he thinks, no one can entertain the least doubt who attends to hereditary diseases. Thus, gout, scrophula, mania, and many other affections, although at first induced by particular accidents, will continue to affect families for many generations. In the same manner, a parent exposed to causes destroying the natural whiteness of his complexion, will beget swarthy children; and the same causes continuing to operate upon the son, the blackness will be increased. Thus all the different shades may have been at first induced, and afterwards continued.

The objection here obviated, however, might have been shortly answered by denying the fact; for it is now generally known, that the children of the blackest negroes are absolutely *born white*, as will be afterwards noticed.

This subject of complexion has been very well illustrated by Mr Clarkson, in a dissertation introduced in his Essay on the commerce and slavery of the human species. The first point that occurs to be ascertained, is, 'What part of the skin is the seat of colour?' The old anatomists usually divided the skin into two parts or laminæ; the exterior and thinnest, called by the Greeks *epidermis*, by the Romans *cuticula*, and hence by us *cuticle*; and the interior, called by the former *derma*, and by the latter *cutis*, or *true skin*. Hence they must necessarily have supposed, that, as the true skin was in every respect the same in all human subjects, however various their external hue, so the seat of colour must have existed in the cuticle or upper surface.

Malpighi, an eminent Italian physician of the last century, was the first person who discovered that the skin was divided into three laminæ or parts; the cuticle, the true skin, and a certain coagulated substance situated between both, which he distinguished by the title of *rete mucosum*: which coagulated substance adhered so firmly to the cuticle, as, in all former anatomical preparations, to have come off with it; and, from this circumstance, to have led the ancient anatomists to believe, that there were but two laminæ, or divisible portions in the human skin. See ANATOMY, n^o 74—76.

This discovery was sufficient to ascertain the point in question: for it appeared afterwards that the cuticle, when divided according to this discovery from the other lamina, was semitransparent; that the cuticle of the blackest negroe was of the same transparency and colour as that of the purest white; and hence the true skins of both being invariably the same, that the rete mucosum was the seat of colour.

This has been farther confirmed by all subsequent anatomical experiments; by which it appears, that, whatever is the colour of this intermediate coagulated substance, nearly the same is the apparent colour of the upper surface of the skin. Neither can it be otherwise; for the cuticle, from its transparency, must necessarily transmit the colour of the substance be-

neath it, in the same manner, though not in the same degree, as the cornea transmits the colour of the iris of the eye. This transparency is a matter of ocular demonstration in white people. It is conspicuous in every blush; for no one can imagine that the cuticle becomes red as often as this happens: nor is it less discoverable in the veins, which are so easy to be discerned; for no one can suppose that the blue streaks, which he constantly sees in the fairest complexions, are painted, as it were, on the surface of the upper skin. From these, and a variety of other observations, no maxim is more true in physiology, than that on the rete mucosum depends the colour of the human body; or, in other words, that the rete mucosum being of a different colour in different inhabitants of the globe, and appearing through the cuticle or upper surface of the skin, gives them that various appearance which strikes us so forcibly in contemplating the human race.

As this can be incontrovertibly ascertained, it is evident, that whatever causes co-operate in producing this different appearance, they produce it by acting upon the rete mucosum; which, from the almost incredible manner in which the cuticle is perforated, is as accessible as the cuticle itself. These causes are probably those various qualities of things, which, combined with the influence of the sun, contribute to form what we call *climate*. For when any person considers, that the mucous substance before mentioned is found to vary in its colour, as the climates vary from the equator to the poles, his mind must be instantly struck with the hypothesis, and he must adopt it, without any hesitation, as the genuine cause of the phenomenon.

This fact, of the variation of the mucous substance, according to the situation of the place, has been clearly ascertained in the numerous anatomical experiments that have been made; in which subjects of all nations have come under consideration. The natives of many of the kingdoms and isles of Asia are found to have their rete mucosum black; those of Africa, situated near the line, of the same colour; those of the maritime parts of the same continent, of a dusky brown, nearly approaching to it; and the colour becomes lighter or darker in proportion as the distance from the equator is either greater or less. The Europeans are the fairest inhabitants of the world. Those situated in the most southern regions of Europe, have in their rete mucosum a tinge of the dark hue of their African neighbours: hence the epidemic complexion, prevalent among them, is nearly of the colour of the pickled Spanish olive; while in this country, and those situated nearer the north pole, it appears to be nearly, if not absolutely, white.

These are facts which anatomy has established; and we acknowledge them to be such, that we cannot divest ourselves of the idea, that climate has a considerable share in producing a difference of colour.

The only objection of any consequence that has ever been made to the hypothesis of climate, is this, that people under the same parallels are not exactly of the same colour. But this is no objection in fact; for it does not follow that those countries which are at an equal distance from the equator, should have their climates the same. Indeed nothing is more contrary to experience than this. Climate depends upon a variety

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riety of accidents. High mountains in the neighbourhood of a place make it cooler, by chilling the air that is carried over them by the winds. Large spreading succulent plants, if among the productions of the soil, have the same effect; they afford agreeable cooling shades, and a moist atmosphere from their continual exhalations, by which the ardour of the sun is considerably abated. While the soil, on the other hand, if of a sandy nature, retains the heat in an uncommon degree, and makes the summers considerably hotter than those which are found to exist in the same latitude where the soil is different. To this proximity of what may be termed *burning sands*, and to the sulphurous and metallic particles which are continually exhaling from the bowels of the earth, is ascribed the different degree of blackness by which some African nations are distinguishable from each other, though under the same parallels. To these observations we may add, that though the inhabitants of the same parallel are not exactly of the same hue, yet they differ only by shades of the same colour; or, to speak with more precision, that there are no two people, in such a situation, one of whom is white and the other black. To sum up the whole—Suppose we were to take a common globe; to begin at the equator; to paint every country along the meridian line in succession from thence to the poles; and to paint them with the same colour which prevails in the respective inhabitants of each, we should see the black, with which we had been obliged to begin, insensibly changing to an olive, and the olive, through as many intermediate colours, to a white: and if, on the other hand, we should complete any one of the parallels according to the same plan, we should see a difference perhaps in the appearance of some of the countries through which it ran, though the difference would consist wholly in shades of the same colour.

The argument, therefore, which is brought against the hypothesis, is so far from being an objection, that it may be considered as one of the first arguments in its favour: for if climate has really an influence on the mucous substance of the body, it is evident, that we must not only expect to see a gradation of colour in the inhabitants from the equator to the poles, but also different shades of the same colour in the inhabitants of the same parallel.

To this argument may be added one that is uncontroversial, which is, that when the black inhabitants of Africa are transplanted to colder, or the white inhabitants of Europe to hotter climates, their children, born there, are of a different colour from themselves; that is, lighter in the first, and darker in the second instance.

As a proof of the first, we shall give the words of the Abbé Raynal, in his admired publication. “The children,” says he, “which they (the Africans) procreate in America, are not so black as their parents were. After each generation the difference becomes more palpable. It is possible, that after a numerous succession of generations, the men come from Africa would not be distinguished from those of the country into which they may have been transplanted.”

This circumstance we have had the pleasure of hearing confirmed by a variety of persons who have been witnesses of the fact; but particularly by many intel-

N^o 88.

ligent Africans, who have been parents themselves in America, and who have declared, that the difference is so palpable in the northern provinces, that not only they themselves have constantly observed it, but that they have heard it observed by others.

Neither is this variation in the children from the colour of their parents improbable. The children of the blackest Africans are born white. In this state they continue for about a month, when they change to a pale yellow. In process of time they become brown. Their skin still continues to increase in darkness with their age, till it becomes of a dirty fallow black; and at length, after a certain period of years, glossy and shining. Now, if climate has any influence on the mucous substance of the body, this variation in the children from the colour of their parents is an event which must be reasonably expected: for being born white, and not having equally powerful causes to act upon them in colder, as their parents had in the hotter climates which they left, it must necessarily follow, that the same effect cannot possibly be produced.

Hence also, if the hypothesis be admitted, may be deduced the reason why even those children who have been brought from their country at an early age into colder regions, have been observed to be of a lighter colour than those who have remained at home till they arrived at a state of manhood. For having undergone some of the changes which we mentioned to have attended their countrymen from infancy to a certain age, and having been taken away before the rest could be completed, these farther changes, which would have taken place had they remained at home, seem either to have been checked in their progress, or weakened in their degree, by a colder climate.

We come now to the second and opposite case; for a proof of which we shall appeal to the words of Dr Mitchell in the Philosophical Transactions, n^o 476. sect. 4. “The Spaniards who have inhabited America under the torrid zone for any time, are become as dark coloured as our native Indians of Virginia, of which I myself have been a witness; and were they not to intermarry with the Europeans, but lead the same rude and barbarous lives with the Indians, it is very probable, that, in a succession of many generations, they would become as dark in complexion.”

To this instance we shall add one, which is mentioned by a late writer, who, describing the African coast and the European settlements there, has the following passage. “There are several other small Portuguese settlements, and one of some note at Mitomba, a river in Sierra Leon. The people here called *Portuguese*, are principally persons bred from a mixture of the first Portuguese discoverers with the natives, and now become, in their complexion and woolly quality of their hair, perfect negroes, retaining, however, a smattering of the Portuguese language.”

These facts with respect to the colonists of the Europeans are of the highest importance in the present case, and deserve a serious attention. For when we know to a certainty from whom they are descended; when we know that they were, at the time of their transplantation, of the same colour as those from whom they severally sprung; and when, on the other hand, we are credibly informed that they have changed it for the native colour of the place which they now inhabit;

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the evidence in support of these facts is as great as if a person, on the removal of two or three families into another climate, had determined to ascertain the circumstance; as if he had gone with them and watched their children; as if he had communicated his observations at his death to a successor; as if his successor had prosecuted the plan: and thus an uninterrupted chain of evidence had been kept up from their first removal to any determined period of succeeding time.

But though these facts seem sufficient of themselves to confirm our opinion, they are not the only facts which can be adduced in its support. It can be shown, that the members of the very same family, when divided from each other, and removed into different countries, have not only changed their family complexion, but that they have changed it to as many different colours as they have gone into different regions of the world. We cannot have, perhaps, a more striking instance of this than in the Jews. These people are scattered over the face of the whole earth. They have preserved themselves distinct from the rest of the world by their religion; and as they never intermarry with any but those of their own sect, so they have no mixture of blood in their veins that they should differ from each other: and yet nothing is more true, than that the English Jew is white, the Portuguese swarthy, the Armenian olive, and the Arabian copper; in short, that there appear to be as many different species of Jews as there are countries in which they reside.

To these facts we shall add the following observation, that if we can give credit to the ancient historians in general, a change from the darkest black to the purest white must have actually been accomplished. One instance, perhaps, may be thought sufficient. Herodotus relates, that the Colchi were black, and that they had crisped hair. These people were a detachment of the Æthiopian army under Sesostris, who followed him in his expedition, and settled in that part of the world where Colchis is usually represented to have been situated. Had not the same author informed us of this circumstance, we should have thought it strange that a people of this description should have been found in such a latitude. Now as they were undoubtedly settled there, and as they were neither so totally destroyed, nor made any such rapid conquests, as that history should notice the event, there is great reason to presume that their descendants continued in the same, or settled in the adjacent country; from whence it will follow, that they must have changed their complexion to that which is observed in the inhabitants of this particular region at the present day; or, in other words, that the black inhabitants of Colchis must have been changed into the fair Circassian. Suppose, without the knowledge of any historian, they had made such considerable conquests as to have settled themselves at the distance of 1000 miles in any one direction from Colchis, still they must have changed their colour: For had they gone in an eastern or western direction, they must have been of the same colour as the Circassians; if to the north, whiter; if to the south, of a copper. There are no people within that distance of Colchis who are black.

From the whole of the preceding observations on the subject, we may conclude, that as all the inhabitants of the earth cannot be otherwise than

the children of the same parents, and as the difference of their appearance must have of course proceeded from incidental causes, these causes are a combination of those qualities which we call *climate*: that the blackness of the Africans is so far engrafted in their constitution, in a course of many generations, that their children wholly inherit it if brought up in the same spot; but that it is not so wholly interwoven in their nature, that it cannot be removed if they are born and settled in another.

The same principles with the above we find adopted and further illustrated by Professor Zimmerman of Brunswick, in his celebrated work *The Geographical History of Man, &c.* He there proves in the most satisfactory manner, That the complexion of the human species is uniformly correspondent with the degree of heat or cold to which they are habitually exposed. In maintaining this position, he makes a very proper distinction with regard to climate. By *climates* we are to understand, not simply or solely those distinguished by the geographical divisions of the globe, to the exclusion of what he terms *physical* climate, or that which depends on the changes produced in any given latitude by such adventitious circumstances as the lower or more elevated situations of a country, its being encompassed by water or large tracts of land, overspread or surrounded with forests, placed in an extensive plain, or environed by lofty mountains. Peculiarities of the like kind, as has been already noticed, frequently prevent the *physical* climate from corresponding entirely with the *geographical*, as a country influenced by them is often much warmer or colder than other regions placed under the same degree of latitude. The influence of these secondary or modifying circumstances has been already adverted to, and need not be further enlarged upon: we shall here only observe, that the erroneous reasoning of Lord Kames on this subject seems to have been owing to his inattention to the difference above mentioned. At Senegal, and in the adjacent lands, the thermometer is often at 112 or 117 degrees in the shade; and here we find the inhabitants jet black, with woolly hair. The heat is equally great in Congo and Loango, and these countries are inhabited by negroes only; whereas in Morocco, to the north of these regions, and at the Cape of Good Hope, to the south, the heat is not so intense, nor are the inhabitants of so deep a hue. Lord Kames asks, Wherefore are not the Abyssinians and the inhabitants of Zaara of as dark a complexion as the Moors on the coast of Guinea? M. Zimmerman answers, that "these countries are much cooler. The desert is not only farther from the equator, but the winds blowing over the Atlas mountains, which like the Alps are covered with snow, and the westerly wind coming from the sea, must considerably mitigate the heat. Nor is Abyssinia so warm as either Monomotopa or Guinea. The north-east winds from the side of Persia and Arabia are cooled by their passage over the Red Sea: the northern winds from Egypt lose much of their heat on the chain of mountains that is extended between the countries: the winds from the south and the west are sea-winds. Thus the only quarter from which they can derive excessive heat is from the west, as the air on this side must pass over tracts of heated lands." For a similar reason it is that negroes are not found either in Asia or South A-

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merica under the equator. The situations of these countries, our author observes, expose them to feebreezes and cooling winds from the continent. He confirms this hypothesis by observing, that the mountaineers of warm climates, as in Barbary and Ceylon, are much fairer than the inhabitants of the valleys: that the Saracens and Moors, who conquered the north-east part of Africa in 1700, from being brown, are become like the negroes near the equator: that the Portuguese, who settled at Senegal in 1400, became blacks; and Tudela the Jew asserts, that his countrymen in Abyssinia acquired the dark complexion of the original natives.

Upon the whole: Colour and figure may be styled habits of the body. Like other habits, they are created, not by great and sudden impressions, but by continual and almost imperceptible touches. Of habits both of mind and body, nations are susceptible as well as individuals. They are transmitted to offspring, and augmented by inheritance. Long in growing to maturity, national features, like national manners, become fixed only after a succession of ages. They become, however, fixed at last; and if we can ascertain any effect produced by a given state of weather or of climate, it requires only repetition during a sufficient length of time to augment and impress it with a permanent character. The sanguine countenance will, for this reason, be perpetual in the highest latitudes of the temperate zone; and we shall for ever find the swarthy, the olive, the tawny, and the black, as we descend to the south.

The uniformity of the effect in the same climate, and on men in a similar state of society, proves the power and certainty of the cause. If the advocates of different human species suppose that the beneficent Deity hath created the inhabitants of the earth of different colours, because these colours are best adapted to their respective zones; it surely places his benevolence in a more advantageous light to say, he has given to human nature the power of accommodating itself to every zone. This pliancy of nature is favourable to the unions of the most distant nations, and facilitates the acquisition and the extension of science, which would otherwise be confined to few objects and to a very limited range. It opens the way particularly to the knowledge of the globe which we inhabit; a subject so important and interesting to man. It is verified by experience. Mankind are for ever changing their habitations by conquests or by commerce; and we find them in all climates, not only able to endure the change, but so assimilated by time, that we cannot say with certainty whose ancestor was the native of the clime, and whose the intruding foreigner.

All the foregoing observations have been well recapitulated, illustrated by new facts, and enforced by additional reasoning founded on experience, by the Reverend Dr S. S. Smith, professor of moral philosophy in the college of New Jersey, in his *Essay on the Causes of the Variety of Complexion and Figure in the Human Species*; to which the reader who wishes for further satisfaction on the subject is referred.

COMPLEXUS; and *COMPLEXUS Minor*, or *Trachelo-mastoidaus*: two muscles in the posterior part of the trunk. See ANATOMY, *Table of the Muscles*.

COMPLICATION, in general, denotes the blend-

ing, or rather interweaving, of several different things together: thus, a person afflicted with several disorders at the same time, is said to labour under a complication of disorders.

COMPLINE, the last division of the Romish breviary. It was instituted to implore God's protection during the night, as the *prime* is for the day. It is recited after sun-set; and is so called, because it completes the office for the 24 hours.

COMPLUTENSIAN BIBLE. See BIBLE (*Greek*).

COMPONE, or COMPONED, or *Gobony*, in heraldry. A bordure compone is that formed or composed of a row of angular parts, or chequers of two colours.

COMPONED, or COMPOSED, is also used in general for a bordure, a pale, or a fess, composed of two different colours or metals disposed alternately, separated and divided by fillets, excepting at the corners; where the junctures are made in form of a goat's foot.

COMPOSITE, in general, denotes something compounded, or made up of several others united together: thus,

COMPOSITE Numbers, are such as can be measured exactly by a number exceeding unity; as 6 by 2 or 3, or 10 by 5, &c. so that 4 is the lowest composite number. Composite numbers, between themselves, are those which have some common measure besides unity; as 12 and 15, as being both measured by 3.

COMPOSITE Order, in architecture, the last of the five orders of columns; so called because its capital is composed out of those of the other columns, borrowing a quarter-round from the Tuscan and Doric, a row of leaves from the Corinthian, and volutes from the Ionic. Its cornice has simple modillions or dentils. It is also called the *Roman* or *Italic* order, as having been invented by the Romans. By most authors it is ranked after the Corinthian, either as being the next richest, or the last invented. See ARCHITECTURE, n° 48.

COMPOSITION, in a general sense, the uniting or putting together several things, so as to form one whole, called a *compound*.

COMPOSITION of Ideas, an act of the mind, whereby it unites several simple ideas into one conception or complex idea.

When we are provided with a sufficient stock of simple ideas, and have by habit and use rendered them familiar to our minds, they become the component parts of other ideas still more complicated, and form what we may call a second order of compound notions. This process may be continued to any degree of composition we please, mounting from one stage to another, and enlarging the number of combinations.

COMPOSITION, in grammar, the joining of two words together; or prefixing a particle to another word, to augment, diminish, or change its signification.

COMPOSITION, in logic, a method of reasoning, whereby we proceed from some general self-evident truth to other particular and singular ones.

In disposing and putting together our thoughts, there are two ways of proceeding equally within our choice: for we may so suppose the truths, relating to any part of knowledge, as they presented themselves to the mind in the manner of investigation; carrying on the series of proofs in a reverse order, till they at last terminate

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minate in first principles: or beginning with these principles, we may take the contrary way; and from them deduce, by a direct train of reasoning, all the several propositions we want to establish.

This diversity in the manner of arranging our thoughts gives rise to the twofold division of method established among logicians; the one called *analytic* method, or the method of *resolution*, inasmuch as it traces things back to their source, and resolves knowledge into its first and original principles. This method stands in contradistinction to the method of composition; or, as it is otherwise called, the *synthetic* method: for here we proceed by gathering together the several scattered parts of knowledge, and combining them into one system, in such a manner as that the understanding is enabled distinctly to follow truth through all the different stages of gradation.

COMPOSITION, in music, is the art of inventing and writing airs; of accompanying them with a suitable harmony; in short, of forming a complete piece of music in all its parts.

The knowledge of melody, harmony, and its rules, is the foundation of composition. Without doubt, it is necessary to know in what manner chords should be filled, how to prepare and resolve dissonances, how to find the fundamental bass, and how to put in practice all the other minutæ of elementary knowledge; but with the mechanical rules of harmony alone, one is by no means better qualified to understand the art, and operate in the practice of composition, than to form himself for eloquence upon all the rhetorical precepts exhibited in grammar. We need not say, that besides this, it is necessary to understand the genius and compass of voices and instruments; to judge what airs may be of easy, and what of difficult, execution; to observe what will, and what will not, be productive of any effect; to feel the character of different movements, as well as that of different modulations, that both may be always suitably applied; to know the different rules established by convention, by taste, by caprice, or by pedantry, as fugues, imitations, or in pieces where the subject is confined to uniform laws in its harmony, melody, rhythmus, &c. All these acquisitions are still no more than preparatives for composition: but the composer must find in his own genius the sources of beautiful melody, of sublime harmony, the picturesque, and the expressive in music; he must, in short, be capable of perceiving, and of forming, the order of the whole piece; to follow the relations and aptitudes of which it is susceptible in every kind; to inflame his soul with the spirit and enthusiasm of the poet, rather than childishly amuse himself with punning in harmony, or adapting the music to each particular word. It is with reason that our musicians have given the name of *words* to the poems which they set to music. It appears evident from their manner of expressing them, that, in their apprehension, they seemed words, and words alone. One would be tempted to imagine, particularly during some of these last years, that the rules for the formation and succession of chords have caused all the rest to be neglected or forgot; and that harmony has made no acquisitions but at the expence of what is general and essential in the musical art. All our artists know how to fill a chord with its constituent sounds, or a piece of

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harmony with its constituent parts; but not a soul amongst them feels a ray of composition. As to what remains, though the fundamental rules of counterpoint, or music in parts, continue still the same, they are more or less rigorous and inflexible in proportion as the parts increase in number; for according as the parts are multiplied, the difficulty of composition is heightened, and the rules are less severe.—Compositions in two parts are called *duettos* when the two performers sing equally; that is to say, when the subject is no further extended, but divided between them: but if the subject is in one part alone, and the subordinate harmony no more than an accompaniment, the first part is then either called a *recitative* or a *solo*; and the other an *accompaniment*, or *continued bass*, if it is a bass. It is the same case with the *trio*, with compositions in three, in four, or in five parts.

The name of *composition* is likewise given to such pieces of music themselves as are formed according to the rules of the art. For this reason the *duetts*, *trios*, *quartettos*, which have just been mentioned, are called *compositions*.

Compositions are either formed for the voice alone, or for instruments, or for voices and instruments joined. Full choruses and songs are the only compositions principally intended for the voice, though sometimes instruments are joined with it to support it. Compositions for instruments are intended to be executed by a band in the orchestra, and then they are called *symphonies*, *concertos*; or for some particular species of instruments, and then they are called *pieces* or *sonatas*.

Such compositions as are destined both for voices and instruments, have been generally divided into two capital species, *viz.* the *sacred* and the *secular*. The compositions destined for the church, whether psalms, hymns, anthems, or responsives, are in general distinguished by the name of *church-music*, and characterized by their intention to be sung with words. Secular music in general may likewise be divided into two kinds; *theatrical* and *chamber music*. Of the first kind is that used in the operas; the subdivisions of the second are endless. Solos, concertos, cantatas, songs, and airs, almost of every kind, which are not adapted to the church or the stage, may be included in the idea of *chamber-music*.

In general, it is thought, that sacred music requires deeper science, and a more accurate observation of rules; the secular species gives more indulgence to genius, and subsists in greater variety.

But we must here observe, that the ecclesiastical music now used, or rather profaned and murdered, amongst us, though regular in its harmony, is simple in its composition, and demands not that profound knowledge in the art, either to form or comprehend it, which Rousseau, whom till now we have followed in this article, seems to imagine. His assertion can only be applicable to the church-music of Italy. That which is now established amongst us seems not to be indigenous, but transferred with the Calvinistical liturgy from Geneva; and as it is intended for popular use, it can by no means be esteemed an high exertion of the musical art: yet, however simple, it is pleasing; and, when properly performed, might elevate the soul to a degree of devotion, and even of rapture, which

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at present we are so far from feeling, that we rather seem to sleep or to howl, than to sing the praise of God. Perhaps our clergy may find more advantage in cultivating their farms; but they would surely feel a higher and diviner pleasure in cultivating the tastes and voices of their people. The one, however, is not incompatible with the other. An hour of relaxation in a winter evening might serve for the accomplishment of this pious purpose; and one should imagine, that, independent of religious considerations, the spirit of the craft might dictate such a measure as calculated to produce popular entertainment and gain popular affection.

In composition, the author either confines himself, as a subject, to the mere mechanical modulations and arrangements of sound; and, as his end, to the pleasure of the ear alone; or otherwise he soars a nobler height; he aspires to imitative music; he endeavours to render the hearts and souls of his auditors ductile by his art, and thus to produce the noblest emotions and most salutary effects. In the first view, it is only necessary that he should look for beautiful sounds and agreeable chords; but in the second, he ought to consider music in its conformity with the accents of the human voice, and in the expressive powers of notes harmonically combined to signify or paint such objects as are susceptible of imitation. In Rousseau's article *Opera*, some ideas may be found by which the art may be ennobled and elevated, by forming music into a language more powerful and pathetic than eloquence itself. See *OPERA*.

COMPOSITION, in literature, the art of forming and arranging sentiments, and cloathing them with language suitable to the nature of the subject & discourse. See the articles *LANGUAGE*, *ORATORY*, *POETRY*, *DIALOGUE*, *EPISTLE*, and *HISTORY*.

COMPOSITION, in chemistry, is the union and combination of several substances of different natures, from which a compound body results. From this union of bodies of different natures, a body is formed, of a mixed nature, which Becker and Stahl have called a *mixture*, and which may be called a *combination*, or *chemical composition*, to avoid the equivocal sense of the word *mixture*. By this last, we understand only a mere apposition of parts; and which would therefore give a very false idea of chemical composition, in which a mutual adhesion takes place between the combined substances.

COMPOSITION, in painting, includes the invention as well as disposition of the figures, the choice of attitudes, &c.

Composition, therefore, consists of two parts; one of which finds out, by means of history, proper objects for a picture; and the other disposes them to advantage. See *PAINTING*.

COMPOSITION, in pharmacy, the art or act of mixing divers ingredients together into a medicine so as they may assist each other's virtues, supply each other's defects, or correct any ill qualities thereof. See *PHARMACY*.

COMPOSITION, in commerce, a contract between an insolvent debtor and his creditors, whereby the latter accept of a part of the debt in composition for the whole, and give a general acquittance accordingly.

COMPOSITION, in printing, commonly termed *compositing*, the arranging of several types or letters in the composing-stick, in order to form a line; and of several lines ranged in order, in the galley, to make a page; and of several pages to make a form. See *PRINTING*.

COMPOSITÆ, in botany. The name of a class in Hermannus and Royen; as likewise of an order in Linnæus's fragments of a natural method, consisting in general of the plants which have the characters enumerated in the following article. A particular description of this order is given under the article *SYNGENESIA*, which includes all the compound flowers.

COMPOSITUS FLOS, in botany, an aggregate flower composed of many *flosculi sessiles*, on a common entire receptaculum, with a common perianthium, and whose antheræ being five in number unite in the form of a cylinder; the flosculi are monopetalous, and under each of them is a monospermous germin. Compound flowers are either *ligulati*, *tubulosi*, or *radiati*.

COMPOST, in agriculture, denotes a certain kind of mixture designed to assist the soil in the way of vegetation, instead of dung. The requisites for a compost are, 1. That it ought to be cheaper than the quantity of dung required for an equal extent of soil. 2. It ought to be less bulky; and, 3. It ought to produce equal effects.

Under the article *AGRICULTURE*, we have endeavoured to show, that the true vegetable food consists in reality of the putrid effluvia proceeding from decayed animal and vegetable substances. If this theory is admitted, the hope of making composts as a succedaneum for dung is but very small, unless they are made of putrefied animal and vegetable substances; in which case, unless in very singular circumstances, they will prove much dearer than dung itself. Several attempts, however, have been made by those who had other views concerning the nature of the true vegetable food. An oil-compost is recommended in the *Georgical Essays*, upon a supposition that the food of vegetables is of an oily nature. It is made as follows: "Take of North American potash 12 lb. Break the salt into small pieces, and put it into a convenient vessel with four gallons of water. Let the mixture stand 48 hours; then add coarse train oil 14 gallons. In a few days the salt will be dissolved, and the mixture, upon stirring, will become nearly uniform. Take 14 bushels of sand, or 20 of dry mold; upon these pour the above-liquid ingredients. Turn this composition frequently over, and in six months it will be fit for use. When the liquid ingredients are put to one or two hogheads water, a liquid compost will be formed, which must be used with a water cart."

This compost, however, the inventor himself owns to be inferior to rotten dung, as indeed may very naturally be supposed; yet in some cases it seems capable of doing service, as will appear from some of the following experiments which we extract from the essays above mentioned.

Exp. I. By the author of the essays. "I took four pots, n^o 1, 2, 3, 4. N^o 1. contained 12lb. of barren sand, with 1 oz. of the sand oil compost. N^o 2. contained 12lb. of sand without any mixture. N^o 3. had 12lb. of sand with half an ounce of slaked lime. N^o 4.

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Composi-
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Compost. had 12lb. of sand with 4oz. of the sand oil-compost. In the month of March, I put six grains of wheat into each pot, and during the summer, I occasionally watered the plants with filtrated water. All the time the plants were consuming the farina, I could observe very little difference in their appearance. But after one month's growth, I remarked that n^o 1. was the best; n^o 2. the next; n^o 3. the next; and n^o 4. much the worst." The same differences were observed in August, when n^o 1. the best, had five small ears, which contained a few poor grains of wheat.

Exp. II. By the same. "In the month of June, I selected four lands of equal goodness in a field intended for turnips. The soil was a light sand, with a tolerable quantity of vegetable earth amongst it. It was ploughed out of sward in November, and had not borne a crop for many years. I shall distinguish my experimental lands by n^o 1, 2, 3, 4. N^o 1. was manured with rotten dung; n^o 2. with oil-compost; n^o 3. with lime; n^o 4. was left without any dressing. On the 20th of June they were all sown with turnip-seed broadcast, and during the course of the season were twice hoed. In November I viewed the field, and made the following remarks. N^o 1. the best; n^o 2. the next; n^o 3. the worst; n^o 4. better than n^o 3." Here the oil-compost appears in a favourable light; but other trials, made with equal accuracy, seem rather to prove, that it is not proper for turnips, barley, or quick growing vegetables. It requires being meliorated by the atmosphere, and therefore is better adapted for winter crops.

Exp. III. by the same. "In the month of May, I planted 12 alleys that lay between my asparagus beds with cauliflower plants. Each alley took up about 30 plants. One of the alleys I set apart for an experiment with the oil-compost, prepared according to the directions already given. About an handful of the compost was put to the root of each cauliflower plant. In all other respects the alley was managed like the rest. The plants in general flowered very well; but those to which I applied the compost sprung up hastily with small stalks, and produced very poor flowers. I imputed this unfavourable appearance to the freshness of the compost, which was only a few weeks old. In the September following this unsuccessful experiment, I planted the same alleys with early cabbages. The necessity of meliorating the compost was in this trial fully confirmed. For the cabbages that grew upon the alley, which in May had received the compost, were larger and in all respects finer than the others."

Exp. IV. by James Stovin, Esq; of Doncaster. "In the year 1769, I made the following trial with the oil-compost, prepared as above directed. One acre sown with barley, and manured with oil-compost at 18s. produced five quarters five bushels. An acre adjoining, sown with barley, and manured with 12 loads of rotten dung at 3l. produced four quarters three bushels and two pecks. The compost-barley was bolder and better corn than the other. In the year 1770, the dunged acre produced of rye, three quarters. The compost acre of ditto, two quarters six bushels. In the year 1771, the same lands were sown with oats, and the produce was greatly in favour of the dunged acre. These experimental lands

were in a common field that had been long under the plough."

Exp. V. by Richard Townly, Esq. of Belfield. "In the spring 1770, I prepared a piece of ground for onions. It was laid out into six beds of the same size, and which were all sown at the same time. Over two of them, the oil compost was scattered in a very moderate quantity. Over other two, pigeon's dung; and over the remaining two, some of my *weed-compost* (formed of putrefied vegetables), which I esteem one of the best manures, for most vegetables, that can be made. The onions came up very well in all the beds; but, in about six weeks, those that were fed with the oil-compost, plainly discovered the advantage they had over the rest, by their luxuriancy and colour, and at the end of the summer perfected the finest crop I had ever seen, being greatly superior to the others both in quantity and size. The same spring I made an experiment upon four rows of cabbages, set at the distance of four feet every way. Two were manured with oil-compost, and two with my own. All the plants were unluckily damaged, just before they began to form, by some turkies getting into the field and plucking off the greatest part of the leaves. However, they so far recovered, in the September following, from 22 to 28lb. a-piece. The rows proved so equal in goodness, that I could not determine which had the advantage. The same year, one part of a field of wheat exposed to the north-east winds, which, that spring, continued to blow for a month or five weeks, appeared very poor and languid at the time of tillering. Over it I ordered some of the oil-compost to be sown with the hand; which not only recovered, but also pushed forwards the wheat plants in that part of the field, so as to make them little inferior, if any, to the rest. The same spring, I made a comparative experiment, upon four contiguous lands of oats, between the oil-compost and my own weed-compost. The latter had manifestly the advantage, though the other produced a very large and fine crop. I also tried the oil-compost upon carrots, and it answered exceedingly well. I did the same this year (1771) both upon them and my onions, and have the finest crops of these vegetables I ever saw any where upon the same compass of ground."

Exp. VI. by Mr J. Broadbent of Berwick, in Elmet near Leeds.—"On the first of October 1771, I sowed two acres of a light channelly soil with wheat, and harrowed in the compost with the grain. Being at a considerable distance from a large town, we find it very difficult and expensive to procure rotten dung in sufficient quantity for our tillage lands, for which reason we have recourse to land-dressings both for our winter and spring-corn. Rape-dust and foot are principally used; but the present price of both these articles is a heavy tax upon the farmer. To obviate that inconvenience, I resolved to make trial of the oil-compost; and from what I have observed in this one experiment, I am encouraged to make a more extensive use of it the next year. Being well acquainted with the nature and efficacy of foot, I am satisfied, that the above two acres produced as good a crop of wheat as if they had been dressed with that excellent manure."

On the supposition that vegetables are supported by matters

Compost.

matters of a faliae nature, composts formed of different sorts of falts have been contrived, but with less success than the one above treated of. A famous composition of this kind was lately sold by patent, under the name of *Baron Van Haak's compost*. The following experiment is mentioned in the *Georgical Essays*, as made with a view to determine the virtues of it compared with the oil-compost and foot mixed with ashes.—“ In the beginning of April 1773, an acre of land was sown with forward oats. I pitched upon one land in the middle of the piece, which I esteemed better than any of the rest, and upon this I scattered Baron Van Haak's compost, in the quantity directed in his instructions. On one side I manured a land with the oil-compost, but rather with a less quantity than directed; and, on the other side, I manured two lands with dry coal-ashes sifted fine, and an equal quantity of foot. The lands upon which this experiment was made, were much worn out with a long succession of crops. The lands which had the benefit of the ashes and foot, produced an exceeding fine crop; the oil-compost produced a tolerable good one; but that which had only the assistance of the baron's compost, produced a very poor one. It could not have been worse had it been left destitute of every assistance.”

Composts, made with putrefied animal substances, will no doubt answer much better, in most cases, than any other kind of manure, but they are difficult to be procured. The following is recommended by Dr Hunter of York.—“ Take a sufficient quantity of sawdust, incorporate it with the blood and offal of a slaughter-house, putting a layer of one and a layer of the other till the whole becomes a moist and fetid composition. Two loads of this compost, mixed with three loads of earth, will be sufficient for an acre of wheat or spring-corn. Being a kind of top-dressing, it should be put on at the time of sowing, and harrowed in with the grain. The present year I have a field of wheat manured in this manner, and have the pleasure to say, that it is extremely clean, and has all the appearance of turning out an excellent crop. As this kind of compost lies in a small compass, it seems well adapted for the use of such farmers as are obliged to bring their manures from a distance. It is besides extremely rich, and will probably continue in the land much longer than fold-yard or stable-dung. I apprehend that it is capable of restoring worn out land to its original freshness; and I am induced to be of that opinion, from the appearance of the above crop, which is now growing upon land much impoverished by bad management.”

Another compost, prepared from whales flesh, is recommended by Mr Charles Chaloner.—“ I have a particular pleasure (says he) in describing and making public the best method of forming a compost from whales flesh, as recommended to me by Dr Hunter. Having marked out the length and breadth of your intended dung-hill, make the first layer of earth about a foot in thickness. Moor-earth, or such as is taken from ant-hills, is the best for this purpose. Over the earth lay one layer of long litter, from the fold-yard or stable, about 12 inches in thickness, then a layer of whale-flesh, and over that another layer of dung. Repeat the operations till the heap be rai-

fed about six feet, then give it a thick covering of earth, and coat the heap with fods. In this manner each layer of flesh will be placed between two layers of dung. In about a month turn the whole in the usual manner, which will occasion a strong degree of heat and fermentation. When turned, coat with earth as before, with a view to confine the putrid steam which would otherwise escape. In a month or two the heap will be found to be considerably fallen, when it should have a second turning as before. The operation of turning must be repeated at proper intervals, till the whole becomes an uniformly putrid mass. The whale-flesh is of different degrees of firmness, some of it being almost liquid; and, in proportion to its firmness, the heap will become sooner or later fit for use. In general, the compost should not be used till 12 months old; but that depends upon circumstances. Guard the heap from dogs, pigs, badgers, and vermin, as these animals are remarkably fond of whale-flesh. This animal compost may with great advantage be applied to all purposes where good rotten dung is required. I have used it with great success for cabbages, and find it an excellent dressing for meadow-ground. According to the best computation, one hoghead of whale refuse, will make eight loads of dung, which, when we consider the great facility with which this basis of our dung-hill may be carried, is a momentous concern to such farmers as lie remote from a large town.” See MANURE.

COMPOST, in gardening, is a mixture of several earths, earthy substances, and dungs, either for the improvement of the general soil of a garden, or for that of some particular plants. Almost every plant delights in some peculiar mixture of soils or compost, in which it will thrive better than in others. The most remarkable and generally useful of these, are taken notice of under the description of the several botanical articles, as they occur in the order of the alphabet.

COMPOSTELLA, a celebrated town of Spain, and capital of Galicia, with an archbishop's see, and an university. The public squares, and the churches, particularly the Metropolitan church, are very magnificent. It has a great number of monasteries, for both sexes, and about 2000 houses. It is pretended that the body of St James was buried here, which draws a great number of pilgrims from most parts of Christendom. They walk in procession to the church, and visit his wooden image, which stands on the great altar, and is illuminated with 40 or 50 wax-candles. They kiss it three times with a very respectful devotion, and then put their hats on its head. In the church there are 30 silver lamps, always lighted, and six chandeliers of silver, five feet high. The poor pilgrims are received into an hospital, built for that purpose, which stands near the church; and round it are galleries of free stone, supported by large pillars. The archbishop is one of the richest prelates in Spain, having 70,000 crowns a year. From this town the military order of St Jago, or St James, had its original. It is seated in a peninsula, formed by the rivers Tambrá and Ulla, in a pleasant plain. W. Long. 7. 17. N. Lat. 42. 54.

NEW COMPOSTELLA, a town of North America, in New Spain, and province of Xalisco, built in 1531.

Compost.
Compo-
stella.

Compound It is seated near the South Sea. W. Long. 110. 12. N. Lat. 21. 0.

COMPOUND, in a general sense, an appellation given to whatever is composed or made up of different things; thus we say, a compound word, compound sound, compound taste, &c.—*Compound* differs from *complex*, and stands opposed to *simple*. See **COMPLEX** and **SIMPLE**.

COMPOUND Flower. See *COMPOSITUS Flos*.

COMPOUND Interest, called also *interest upon interest*, is that which is reckoned not only upon the principal, but upon the interest itself forborn; which hereby becomes a sort of secondary principal. See **INTEREST**.

COMPOUND Motion, that motion which is effected by several conspiring powers. Powers are said to conspire if the direction of the one be not quite opposite to that of the other; as when the radius of a circle is conceived to revolve about a centre, and at the same time a point to move straight along it.

COMPOUND Numbers, those which may be divided by some other number besides unity, without leaving any remainder; such are 18, 20, &c. the first being measured by the numbers 2, 6, or 9; and the second by the numbers 2, 4, 5, 10.

COMPOUND Quantities. See **ALGEBRA**.

COMPOUND Ratio, is that which the product of the antecedents of two or more ratios has to the product of their consequents. Thus, 6 to 72 is in a ratio compounded of 2 to 6, and of 3 to 12.

COMPOUND (substantive), the result or effect of a composition of different things; or a mass formed by the union of many ingredients.

COMPREHENSION, in English church-history, denotes a scheme proposed by Sir Orlando Bridgman in 1667-8, for relaxing the terms of conformity in behalf of protestant dissenters, and admitting them into the communion of the church. A bill for this purpose was drawn up by Lord Chief-Baron Hale, but disallowed. The attempt was renewed by Tillotson and Stillingfleet in 1674, and the terms were settled to the satisfaction of the nonconformists; but the bishops refused their assent. This scheme was likewise revived again immediately after the Revolution; the king and queen expressed their desire of an union: however the design failed after two attempts; and the act of toleration was obtained.

COMPREHENSION, in metaphysics, is that act of the mind whereby it apprehends or knows any object that is presented to it, on all the sides whereon it is capable of being apprehended or known. To comprehend a thing is defined by the schoolmen, *rem aliquam totam et totaliter cognoscere*.

COMPREHENSION, in rhetoric, a trope or figure whereby the name of a whole is put for a part; or that of a part for a whole; or a definite number of any thing for an indefinite.

COMPRESS, in surgery, a bolster of soft linen cloth, folded in several doubles, frequently applied to cover a plaster, in order not only to preserve the part from the external air, but also the better to retain the dressings or medicines.

COMPRESSION, the act of pressing or squeezing some matter together, so as to set its parts nearer to each other, and make it possess less space. *Compression* properly differs from *condensation*, in that the lat-

ter is performed by the action of cold, the former by some external violence.

COMPROMISE, a treaty or contract, whereby two contending parties establish one or more arbitrators to judge of and terminate their difference in an amicable manner.

COMPTON (Henry), bishop of London, was the youngest son of Spencer Earl of Northampton, and born in 1632. After the restoration of Charles II. he became cornet of a regiment of horse: but soon after quitting the army for the church, he was made bishop of Oxford in 1674; and about a year after translated to the see of London. He was entrusted with the education of the two princesses Mary and Anne, whom he also afterwards married to the princes of Orange and Denmark: and their firmness in the Protestant religion was in a great measure owing to their tutor, to whom, when popery began to prevail at court, it was imputed as an unpardonable crime. He was suspended from his ecclesiastical function by James II. but was restored by him again on the prince of Orange's invasion. He and the bishop of Bristol made the majority for filling the vacant throne with a king: he performed the ceremony of the coronation; was appointed one of the commissioners for raising the liturgy; and laboured with much zeal to reconcile dissenters to the church. His spirit of moderation made him unpopular with the clergy, and in all probability checked his further promotion. He died in 1713; but, living in busy times, did not leave many writings behind him.

COMPTROLLER. See **CONTROLLER**.

COMPULSOR, an officer under the Roman emperors, dispatched from court into the provinces, to compel the payment of taxes, &c. not paid within the time prescribed. The word is formed of the verb *compellere*, "to oblige, constrain." These were charged with so many exactions, under colour of their office, that Honorius cashiered them by a law in 412.

The laws of the Visigoths mention military compulsors; which were officers among the Goths, whose business was to oblige the tardy soldiers to go into the fight, or to run to an attack, &c.

Cassian mentions a kind of monastic compulsors, whose business was to declare the hours of canonical office, and to take care the monks went to church at those hours.

COMPUNCTION, in theology, an inward grief in the mind for having offended God. The word comes from *compungere*, of *pungere*, "to prick."—The Romanists own their confession insignificant unless attended with compunction or pricking of heart.

Among spiritualists, compunction bears a more extensive signification; and implies not only a grief for having offended God, but also a pious sensation of grief, sorrow, and displeasure, on other motives. Thus, the miseries of life, the danger of being lost in the world, the blindness of the wicked, &c. are to pious people motives of compunction.

COMPURGATOR, one that, by oath, justifies another person's innocence. Compurgators were introduced as evidences in the jurisprudence of the middle ages. Their number varied according to the importance of the subject in dispute, or the nature of the crime with which a person was charged.

Compromise
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Compurgator.

Computa-
tion
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Conca.

COMPUTATION, in a general sense, the manner of estimating time, weights, measure, moneys, or quantities of any kind.—The word is sometimes also used among mathematicians in the like sense as calculation.

COMUM (anc. geog.), a town of the Orobii, of an ancient standing, and formerly powerful, daring to dispute with the Romans: *Comenses*, the people; *Comensis Ager*, the epithet. It became afterwards no inconsiderable municipium, to which Julius Cæsar added 5000 new colonists (Strabo); whence it was generally called *Novocomum*, and the people *Novocomenses*. But in time it recovered its ancient name, *Comum*; Pliny the Younger, a native of that place, calling it by no other name. Now *Como*, in the duchy of Milan, at the south end of the lake of that name. E. Long. 9. 35. N. Lat. 46.

COMUS, in mythology, the god of jollity or festivity. There is great reason to believe he was the Chamos of the Moabites; Beel-Phegor, Baal-Peor, Priapus, and Bacchus. He is represented under the appearance of a young man, with an inflamed red countenance, his head inclined, and crowned with flowers; his air drowsy; leaning on a huntsman's spear in his left hand, and holding an inverted torch in his right. His statue was placed at the chamber doors of new married persons; his pedestal crowned with flowers.

CON, or COND. See COND.

CONANT (Dr John), a learned English divine, born in 1608. He took his degrees at Exeter College Oxford; was, by the parliament, constituted one of the assembly of divines, though he seldom, if ever, sat with them; and in 1657 was admitted vice-chancellor of the university. On the restoration he was one of the commissioners, and assisted at the conferences in the Savoy; but was deprived by the act of uniformity: after eight years he was confirmed, and was made arch-deacon of Norwich, and prebendary of Worcester. In 1686 he lost his sight; and died in 1693; leaving a number of admired sermons, afterwards published in six volumes.

CONARION, or CONOIDES, a name for the pineal gland. See ANATOMY, n^o 132.

CONATUS, a term frequently used in philosophy and mathematics, defined by some to be a quantity of motion, not capable of being expressed by any time or length; as the *conatus recedendi ab axe motus*, is the endeavour which a body, moved circularly, makes to recede, or fly off from the centre or axis of its motion.

CONCA (Sebastian), called *Cavalier*, a celebrated history and portrait painter, was born at Gaeta in 1679, and placed as a disciple with Francesco Solimena, an incomparable master. Under his direction Conca exerted his utmost industry to obtain a proper knowledge of the true principles of the art of painting; nor did he permit any kind of amusement to withdraw his attention from his studies. Solimena soon perceived in his disciple such talents, and such a disposition, as would qualify him to make a very great progress; and on that account he conceived so strong an affection for him, that he not only afforded him the best instructions, but often employed him to sketch after his own designs; took him along with him to Monte Cassino, where he was to paint a chapel in fresco; and there made Conca acquainted with every thing

N^o 88.

relative to that manner of painting. At his return to Naples with Solimena, he was, if possible, still more assiduous to improve himself to the utmost; and entered on a project that might at once advance his income, and add to his expertness in his profession. That project was, to paint portraits in a small size and at a low rate; by which scheme all ranks of persons crowded to him; and beside the pecuniary advantages resulting from it, he acquired an extraordinary freedom of hand in penciling and colouring; a good habit of imitating nature with an elegant choice; and likewise great diversity of airs of heads, which were of extraordinary use to him in his future beautiful compositions. As he had a great desire to see Rome, he obtained permission from Solimena to indulge his inclination; and although he was near thirty years of age when he visited that city, yet he spent eight years in constant study after the antiques, after Buonaroti, Raphael, and the Caracci, and perfected himself in every part of his profession. The fame of his works soon spread throughout Rome, and procured him the patronage of Cardinal Ottobuoni, who was a princely encourager of artists; and Conca having shown an elegant proof of his abilities in a composition representing Herod inquiring of the wise men the place of the birth of the Messiah, the figures being as large as life, the Cardinal thought it so excellent a performance that he rewarded him in a munificent manner, entertained him in his own palace, and introduced him to Pope Clement XI. who appointed Conca to paint the picture of the prophet Jeremiah in the church of S. John Lateran; which he executed with universal applause. On that occasion the pope was desirous to give him some particular mark of his esteem; and therefore, in a general assembly of the academicians of St Luke, he conferred on him the order of knighthood, and the cardinal presented him with a rich diamond cross, which Conca, out of respect to his patron, always wore at his bosom. From that time he was incessantly employed, and his works were solicited by most of the princes of Europe. The churches and chapels of every part of Italy are enriched with some of his compositions; of which he painted an incredible number, as he lived to a very advanced age, and never discontinued his labours. He was earnestly invited by Philip V. of Spain to visit his court, but he could not be prevailed on to leave Rome. He painted two admirable pictures for the king of Poland, with figures as large as life; in one was represented Alexander presenting Bucephalus to Philip, after he had managed him; a grand composition, with a multitude of figures, correctly designed, and charmingly grouped and disposed; the whole being adorned with most elegant architecture, in true and beautiful perspective. The other was the marriage of Alexander with Roxana, the daughter of Darius, which was in every respect equal to the former. He was at last so strongly pressed to go to Naples, that he undertook the journey; and was received in that kingdom with all the respect and honour due to his merit; and there he finished several noble designs, as also at Gaeta his native city. While he continued at Naples, he received in the royal presence a snuff-box of very great value, presented to him in the king's name by the marquis of Tanucci, at that time prime minister; and in the year

Conca.

Concale
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Concep-
tion.

Concep-
tion.

1757, the king was pleased to ennoble him and all his descendants. At that time he was 78, and it is confidently said that he died in 1761 aged 82, which is very probable, though not positively certain. He understood perspective and architecture thoroughly, and added to it a fine understanding of the chiaro-scuro. His style of composition is grand and elegant; his design very correct; his disposition ingenious; his attitudes and expression full of truth, nature, and variety; and his colouring is excellent. The history of Diana and Actæon, by Conca, is in the possession of the earl of Pembroke at Wilton.

CONCALE BAY, is on the coast of France in Brittany, where the English forces landed in June 1758, in order to go to St Maloes; which they did, and burnt all the ships in that harbour, which were above 100; of all forts. Concale is the town which gives name to the bay, and is famous for oysters. It is 18 miles east of St Maloes, and 197 west of Paris. W. Long. 1. 47. N. Lat. 48. 41.

CONCARNEAU, a town of France, in Bretagne, with a harbour and a castle. E. Long. 3. 45. N. Lat. 47. 55.

CONCATENATION, a term chiefly used in speaking of the mutual dependence of second causes upon each other.

CONCAVE, an appellation used in speaking of the inner surface of hollow bodies, but more especially of spherical ones.

CONCAVE Glasses, such as are ground hollow, and are usually of a spherical figure, though they may be of any other, as parabolical, &c. All objects seen through concave glasses appear erect and diminished.

CONCENTRATION, in general, signifies the bringing things nearer a centre. Hence the particles of salt, in sea-water, are said to be concentrated; that is, brought nearer each other, by evaporating the watery part.

CONCENTRIC, in mathematics, something that has the same common centre with another: it stands in opposition to *excentric*.

CONCEPTION, in logic, the simple apprehension or perception which we have of any thing, without proceeding to affirm or deny any thing about it. Some writers, as Lord Kames, distinguish between conception and perception; making the latter to denote the consciousness of an object when present, or to include the reality of its object; whereas conception expresses the forming an idea of an object whether present or absent, or without any conviction of its reality.

CONCEPTION, in medicine, denotes the first formation of the embryo, or fœtus, in the womb.

Conception is no other than such a concurrence and commixture of the prolific seed of the male with that of the female, in the cavity of the uterus, as immediately produces an embryo.

The symptoms of conception or pregnancy are, when, in a few days after the conjugal act, a small pain is perceived about the navel, and is attended with some gentle commotions in the bottom of the abdomen; and within one, two, three, or even four, months, the menses cease to flow, or prove in less quantity than usual. Upon the first failure of this kind, the woman begins to count the series of her weeks, without taking any notice of the time before

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elapsed; after this, or between the second or third months, but generally about the third, the motions of the embryo become perceivable to the mother; who hereupon becomes troubled with a nausea, vomiting, loathing, longing, &c. About this time the breasts begin to swell, grow hard and painful, and contain a little milk; the nipples also become larger, firmer, and darker coloured, a livid circle appearing round them: the eyes seem sunk and hollow. During the two first months of pregnancy, the woman grows thinner and slenderer; the abdomen being also depressed; though it afterwards distends, and grows gradually larger.

The manner wherein conception is effected is thus laid down by the modern writers: In the superficies of the ovaries of women, there are found little pellucid spherules, consisting of two concentric membranes filled with a lymphatic humour, and connected to the surface of the ovaria, underneath the tegument, by a thick calyx, contiguous to the extremities of the minute ramifications of the Fallopian tubes.

These spherules, by the use of venery, grow, swell, raise and dilate the membrane of the ovary into the form of papillæ; till, the head propending from the stalk, it is at length separated from it; leaving behind it a hollow cicatrix in the broken membrane of the ovary; which, however, soon grows up again.

Now, in these spherules, while still adhering to the ovary, fœtuses have been frequently found; whence it appears, that these are a kind of ova, or eggs, deriving their structure from the vessels of the ovary, and their liquor from the humours prepared therein.

Hence also it appears, that the Fallopian tubes being swelled and stiffened by the act of venery, with their muscular sibræ, like fingers, may embrace the ovaries, compress them, and by that compression expand their own mouths: and thus the eggs, now mature, and detached as before, may be forced into their cavities, and thence conveyed into the cavity of the uterus; where they may either be cherished and retained, as when they meet with the male seed; or, if they want that, again expelled.

Hence the phenomena of false conceptions, abortions, fœtuses found in the cavity of the abdomen, the Fallopian tubes, &c. For in coition, the male seed, abounding with living animalcules, agitated with a great force, a brisk heat, and probably with a great quantity of animal spirits, is violently impelled through the mouth of the uterus, which on this occasion is open, and through the valves of the neck of the uterus, which on this occasion are laxer than ordinary, into the uterus itself; which now, in like manner, becomes more active, turgid, hot, inflamed, and moistened with the flux of its lymph and spirits, by means of the titillation excited in the nervous papillæ by the attrition against the rugæ of the vagina.

The semen thus disposed in the uterus, is retained, heated, and agitated, by the convulsive constriction of the uterus itself; till meeting with the ova, the finest and most animated part enters through the dilated pores of the membranula of the ovum, now become glandulous; is there retained, nourished, dilated; grows to its umbilicus, or navel; stifles the other less lively animalcules; and thus is conception effected.

Hence it appears, that conception may happen in any part where the semen meets with an ovum: thus

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whether

Concep-
tion.

whether it be carried through the Fallopian tube to the ovary, and there cast upon the ovum; or whether it meet with it in some recess of the tube itself; or, lastly, whether it join it in the cavity of the uterus, it may still have the same effect, as it appears from observation actually to have done. But it is probable, that conception is then most perfect when the two, viz. the semen and ovum, are carried at the same time into the uterus, and there mixed, &c.

Other anatomists choose to suppose the male seed taken up, before it arrives in the uterus, by the veins which open into the vagina, &c. and thus mixed with the blood; by which, in the course of circulation, it is carried, duly prepared, into the ovary, to impregnate the eggs.

It has been advanced by several writers, that women may possibly conceive in their sleep, and be with child without any knowledge of the occasion of it. As ridiculous and absurd as this doctrine may appear to the generality of the world, no less an author than Genfili has thought it worthy a particular dissertation.

CONCEPTION Immaculate of the Holy Virgin, is a feast established in honour of the holy virgin, particularly with regard to her having been conceived and born *immaculate*, i. e. without original sin, held in the Romish church on the 8th of December. The immaculate conception is the great head of controversy between the Scotists and Thomists; the former maintaining, and the latter impugning it. In the three Spanish military orders, of St James of the sword, Calatrava, and Alcantara, the knights take a vow at their admission to defend the immaculate conception. This resolution was first taken in 1652. Peter d'Alva has published 48 huge volumes in folio on the mysteries of the conception.

CONCEPTION, an episcopal town of Chili in South America. It is situated in W. Long. 79. 12. S. Lat. 36. 43; and is the oldest European settlement in Chili, and the second in point of dignity. On their first settlement here, the Spaniards were repeatedly driven off by the Indians, so that they were obliged to take up their residence at St Jago. Since that time both the cities of Conception and St Jago have been frequently destroyed by earthquakes. In the year 1730 both of them were laid in ruins by a dreadful shock, the first concussions of which were attended with an unusual swelling of the sea, that overturned the few houses which had escaped the ravages of the earthquake. The harbour is good, and pretty much frequented; on which account the city is regarded as a place of consequence. The king allows annually 350,000 pieces of eight for the support of a garrison of 3500 men; a corps that is seldom complete. None of the fortifications are considerable; but those towards the land are wretched. The Spaniards now live in tolerable security with respect to the Indians, and have no notion of any attack from the land side. It is said indeed, that not only this but all the settlements in Chili and Peru would fall an easy prey to the attacks of a foreign enemy; the fortifications being in ruins, and the garrisons scarce half the number required by the king: owing to the avarice, ignorance, and supine negligence of the governors, who study nothing but to enrich themselves.

CONCEPTION, a town of North America, in New

Spain, and in the Audience of Guatimali. It is seated near the sea-coast, 100 miles west of Porto-bello, and a small river that runs into the sea. W. Long. 83. 5. N. Lat. 10. 0.

CONCERT, or *CONCERTO*, in music, a number or company of musicians, playing or singing the same piece of music or song at the same time.

CONCERTATO intimates the piece of music to be composed in such a manner, as that all the parts may have their recitativos, be it for two, three, four, or more voices or instruments.

CONCERTO GROSSI, the grand chorus of a concert, or those places where all the several parts perform or play together.

CONCESSION, in general, signifies either the act of granting or yielding any thing, or the thing itself which is so granted or yielded.

CONCESSION, in rhetoric, a figure, whereby something is freely allowed, that yet might bear dispute, to obtain something that one would have granted to him, and which he thinks cannot fairly be denied, as in the following concession of Dido, in Virgil:

"The nuptials he disclaims, I urge no more;
"Let him pursue the promis'd Latian shore.
"A short delay is all I ask him now;
"A pause of grief, an interval from wo."

CONCHA, in zoology, a synonyme of the *MYTILUS*, *SOLEN*, and other shell-fish.

CONCHES, a town of Normandy, with a Benedictine abbey, which carries on a considerable trade. It is seated on the top of a mountain, in the territory of Ouche, 45 miles north-west of Paris. E. Long. 0. 51. N. Lat. 48. 58.

CONCHITES MARMOR, a name given by the ancients to a species of marble dug near Megara, and remarkable for containing a great number of sea-shells, and other marine bodies immersed in it.

CONCHOID, in geometry, the name of a curve, given to it by its inventor Nicomedes. See *FLUXIONS*.

CONCHYLIA, a general name for all petrified shells, as limpets, cochleæ, nautili, conchæ, lepadæ, &c.

CONCIATOR, in the glass art, is, for the crystal-glass, what the founder is at the green-glass houses. He is the person that weighs and proportions the salt on ashes and sand, and works them with a strong fire till they run into lumps and become white; and if the metal be too hard, and consequently brittle, he adds salt or ashes, and if too soft, sand; still mixing them to a fit temper, which is only known by the working.

CONCINNOUS INTERVALS, in music, are such as are fit for music, next to, and in combination with concords; being neither very agreeable nor disagreeable in themselves; but having a good effect, as by their opposition they heighten the more essential principles of pleasure: or as, by their mixture and combination with them, they produce a variety necessary to our being better pleased.

CONCINNOUS System, in music. A system is said to be concinuous, or divided concinuously, when its parts, considered as simple intervals, are concinuous; and are besides placed in such an order between the extremes, as that the succession of sounds, from one extreme to the other, may have an agreeable effect.

CONCLAMATIO, in antiquity, a shout raised by those present at burning the dead, before they set fire

Concert
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Conclama-
tio.

Conclave
||
Concord.

fire to the funeral pile. See SHOUT. The word was also applied to the signal given to the Roman soldiers to decamp, whence the expression *conclamare vasa*; and *conclamari arma*, was a signal for battle. It was likewise used for a practice of calling to a person deceased three times by his name; and when no reply was returned, they thus expressed his decease, *conclamatum est*. Whence the same term was afterwards applied to the cessation of the Roman empire.

CONCLAVE, the place in which the cardinals of the Romish church meet, and are shut up, in order to the election of a pope.

The conclave is a range of small cells, 10 feet square, made of wainscot: these are numbered, and drawn for by lot. They stand in a line along the galleries and hall of the Vatican, with a small space between each. Every cell has the arms of the cardinal over it. The conclave is not fixed to any one determinate place, for the constitutions of the church allow the cardinals to make choice of such a place for the conclave as they think most convenient; yet it is generally held in the Vatican.

The conclave is very strictly guarded by troops: neither the cardinals, nor any person shut up in the conclave, are spoke to, but at the hours allowed of, and then in Italian or Latin; even the provisions for the conclave are examined, that no letters be conveyed by that means from the ministers of foreign powers, or other persons who may have an interest in the election of the pontiff.

CONCLAVE is also used for the assembly, or meeting, of the cardinals shut up for the election of a pope.

CONCLUSION, in logic, the consequence or judgment drawn from what was asserted in the premises; or the previous judgments in reasoning, gained from combining the extreme ideas between themselves.

CONCOCTION, in medicine, the change which the food undergoes in the stomach, &c. to become chyle. See CHYLE.

CONCOMITANT, something that accompanies or goes along with another.

CONCORD, in grammar, that part of construction called *syntax*, in which the words of a sentence agree; that is, in which nouns are put in the same gender, number, and case; and verbs in the same number and person with nouns and pronouns. See GRAMMAR.

CONCORD, in music, the relation of two sounds that are always agreeable to the ear, whether applied in succession or consonance.

Form of CONCORD, in ecclesiastical history, a standard-book among the Lutherans, composed at Torgaw, in 1576, and thence called the Book of Torgaw, and reviewed at Berg by six Lutheran doctors of Germany, the principal of whom was James Andreae. This book contains in two parts, a system of doctrine, the subscription of which was a condition of communion, and a formal and very severe condemnation of all who differed from the compilers of it, particularly with respect to the majesty and omnipresence of Christ's body, and the real manducation of his flesh and blood in the eucharist. It was first imposed on the Saxons by Augustus, and occasioned great opposition and disturbance. The dispute about it was revived in Switzerland in 1718, when the magistrates of Bern published an order for

adopting it as the rule of faith; the consequence of which was a contest, that reduced its credit and authority.

Concord.
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Concordat.

CONCORDANCE, a dictionary or index to the Bible, wherein all the leading words, used in the course of the inspired writings, are ranged alphabetically; and the various places where they occur referred to; to assist in finding out passages, and comparing the several significations of the same word.

Cardinal Hugo de St Charo, is said to have employed 500 monks at the same time in compiling a Latin concordance: besides which, we have several other concordances in the same language; one, in particular, called the *concordance* of England, compiled by J. Darlington, of the order of Predicants; another more accurate one, by the Jesuit de Zamora.

R. Mordecai Nathan has furnished us with a Hebrew concordance, first printed at Venice in 1523, containing all the Hebrew roots branched into their various significations, and under each signification all the places in scripture wherein it occurs: but the best and most useful Hebrew concordance is that of Buxtorf, printed at Basil in 1632.

Dr Taylor published, in 1754, a Hebrew concordance in two volumes folio, adapted to the English Bible, and disposed after the manner of Buxtorf.

The Greek concordances are only for the New Testament: indeed we have one of Conr. Kircher's on the Old; but this is rather a concordantial dictionary than a concordance; containing all the Hebrew words in an alphabetical order; and underneath all the interpretations or senses the LXX. give them; and in each interpretation, all the places where they occur in that version.

In 1718, Trommius published his Greek concordance for the Septuagint at Amsterdam, in two volumes folio; and Schmidius improving on a similar work of H. Stephen, has given an excellent Greek concordance for the New Testament, the best edition of which is that of Leipzig, an. 1717.

Calasius, an Italian Cordelier, has given us concordances of the Hebrew, Latin, and Greek, in two columns: the first, which is Hebrew, is that of R. Mordecai Nathan, word for word, and according to the order of the books and chapters: in the other column is a Latin interpretation of each passage of scripture quoted by R. Mordecai; this interpretation is Calasius's own; but in the margin he adds that of the LXX. and the Vulgate, when different from his. The work is in 4 vols folio, printed at Rome in 1621.

We have several very copious concordances in English, as Newmann's, &c. but the last and best esteemed, is that in 4to. by Alex. Cruden.

CONCORDANT VERSES, such as have several words in common; but which, by the addition of other words, convey an opposite, at least a different meaning. Such are those,

Et { canis } in silva { venatur } & omnia { servat.
lupus } { nutritur } { vastat.

CONCORDAT, in the Canon law, denotes a covenant or agreement concerning some beneficiary matter, as a resignation, permutation, promotion, or the like.

The council of Trent, sess. vi. *de reform.* cap. 4. speaking of concordats made without the authority

Concordat || **Concrétion.** and approbation of the pope, calls them *concordias quantum suos obligant auctores, non successores*. And the congregation of cardinals, who have explained this decree, declares also that a concordat cannot be valid so as to bind successors, unless confirmed by the pope.

CONCORDAT is also used, absolutely, among the French, for an agreement concluded at Bologna in 1516, between pope Leo X. and Francis I. of France, for regulating the manner of nominating to benefices.

The concordat serves in lieu of the Pragmatic sanction, which has been abrogated; or, rather, it is the pragmatic sanction softened and reformed. The concordat between the pope and the republic of Venice resembles the former.

There is also a German concordat, made between the emperor Frederic III. and the princes of Germany, in 1448, relating to beneficiary matters, confirmed by pope Nicholas V.

CONCORDIA, a town of Italy, in the duchy of Mirandola; seated on the river Secchia, 5 miles west of Mirandola, and 15 miles south-east of Mantua; subject to the house of Austria. E. Long. 11. 22. N. Lat. 44. 52.

CONCORDIA (anc. geog.), a town of the Veneti, situated at the confluence of the rivers Romatinus Major and Minor, 31 miles to the west of Aquileia, (Pliny, Ptolemy, Antonine); a colony surnamed *Julia*. Its ruins still go by the name of *Concordia*.—Another Concordia (Ptolemy), of Lusitania, to the north-west of Trajan's bridge, on the Tagus.—A third of the Nemetes in Belgica, on the west side of the Rhine; a Roman fortress, situated between Brocomagus and Noviomagus. Now Drufenheim, in Alsace. E. Long. 8°, Lat. 48° 40'.

CONCORDIA, a Pagan divinity of the Romans. She had a temple on the declivity of the capitol; another in the portico of Livia; and a third on Mount Palatine, built of brass by Cn. Flavius, on account of a vow made for reconciling the senate and people. She was pictured with a cup in her right hand; in her left was sometimes a sceptre, and sometimes a *cornucopia*. Her symbols were two hands joined, as is seen in a coin of Aurelius Venus, and another of Nero; also two serpents twisting about a caduceus. She was addressed to promote the peace and union of families and citizens.

CONCOÛ, in botany, a name given by the people of Guinea to an herb, which is in great esteem among them for killing that troublesome sort of worm called the *Guinea-worm*, that breeds in their flesh. They bruise the leaves, and mixing them with oil, apply them in form of a cataplasm.

CONCRETE, in the school-philosophy, an assemblage or compound.

CONCRETE, in natural philosophy and chemistry, signifies a body made up of different principles, or any mixed body: thus, soap is a factitious concrete, mixed together by art; and antimony is a natural concrete, or a mixed body compounded in the bowels of the earth.

CONCRETION, the uniting several small particles of a natural body into sensible masses or concretes, whereby it becomes so and so figured and determined, and is endued with such and such properties.

CONCRETION is also the act whereby soft bodies are

rendered hard; or an insensible motion of the particles of a fluid or soft body, whereby they come to a consistence. It is indifferently used for induration, condensation, congelation, and coagulation.

CONCUBINAGE sometimes expresses a criminal or prohibited commerce between the two sexes; in which sense it comprehends adultery, incest, and simple fornication.

In its more restrained sense, concubinage is used for a man's and a woman's cohabiting together in the way of marriage, without having passed the ceremony thereof.

Concubinage was anciently tolerated: the Roman law calls it an allowed custom, *licita consuetudo*. When this expression occurs in the constitutions of the Christian emperors, it signifies what we now call a *marriage in consensu*.

The concubinage tolerated among the Romans in the time of the republic, and of the heathen emperors, was that between persons not capable of contracting marriage together: nor did they even refuse to let inheritances descend to children which sprung from such a tolerated cohabitation. Concubinage between such persons they looked on as a kind of marriage, and even allowed it several privileges; but then this concubinage was confined to a single person, and was of perpetual obligation as much as marriage itself. Hottoman observes, that the Roman laws had allowed of concubinage long before Julius Cæsar made that law whereby every one was allowed to marry as many wives as he pleased. The emperor Valentinian, Socrates tells us, allowed every man two.

CONCUBINAGE is also used for a marriage performed with less solemnity than the formal marriage; or a marriage with a woman of inferior condition, and to whom the husband does not convey his rank or quality. Cujas observes, that the ancient laws allowed a man to espouse, under the title of *concubine*, certain persons, such as were esteemed unequal to him, on account of the want of some qualities requisite to sustain the full honour of marriage. He adds, that though concubinage was beneath marriage, both as to dignity and civil effects; yet was concubine a reputable title, very different from that of mistress among us. The commerce was esteemed so lawful, that the concubine might be accused of adultery in the same manner as a wife.

This kind of concubinage is still in use in some countries, particularly in Germany, under the title of a *half-marriage*, *morgengabic marriage*, or *marriage with the left-hand*; alluding to the manner of its being contracted, viz. by the man's giving the woman his left hand instead of the right. This is a real marriage, though without solemnity: the parties are both bound for ever; though the woman be thus excluded from the common rights of a wife for want of quality or fortune.

The children of concubines were not reputed either legitimate or bastards, but natural children, and were capable only of donations. They were deemed to retain the low rank of the mother; and were on this ground unqualified for inheriting the effects of the father.

CONCUBINAGE, in a legal sense, is used as an exception against her that sueth for dower, alleging there-

Concubine by, that she was not a wife lawfully married to the party, in whose lands she seeks to be endowed, but his concubine.

CONCUBINE, a woman whom a person takes to cohabit with him, in the manner, and under the character, of a wife, without being authorized thereto by a legal marriage.

CONCUBINE is also used for a real, legitimate, and only wife, distinguished by no other circumstance but a disparity of birth or condition between her and the husband. Du Cange observes, that one may gather from several passages in the epistles of the popes, that they anciently allowed of such concubines. The seventeenth canon of the first council of Toledo declares, that he who, with a faithful wife, keeps a concubine, is excommunicated; but that if the concubine served him as a wife, so that he had only one woman, under the title of concubine, he should not be rejected from communion: which shows that there were legitimate wives under the title of concubines.

In effect, the Roman laws did not allow a man to espouse whom he pleased; there was required a kind of parity, or proportion, between the conditions of the contracting parties: but a woman of inferior condition, who could not be espoused as a wife, might be kept as a concubine; and the laws allowed of it, provided the man had no other wife.

It is certain the patriarchs had a great number of wives, and that these did not all hold the same rank; some being subaltern to the principal wife; which were what we call *concubines* or half-wives. The Romans prohibited a plurality of concubines, and only had regard to the children issuing from a single concubine, because she might become a legitimate wife. Solomon had 700 wives and 300 concubines: the emperor of China has sometimes two or three thousand concubines in his palace. Q. Curtius observes, that Darius was followed in his army by 365 concubines, all in the equipage of queens.

CONCUPISCENCE, according to divines, an irregular appetite, or lust after carnal things, inherent in the nature of man ever since the fall.

COND, CON, or CONN, in sea language, signifies to guide or conduct a ship in her right course. He that cons her, stands aloft with a compass before him, and gives the word of direction to the man at the helm how he is to steer. If the ship go before the wind, or, as they call it, betwixt the sheets, the word is either starboard, or port the helm; according as the conder would have the helm put to the right or left side of the ship, upon which the ship always goes the contrary way. If he says, helm a mid-ship, he would have the ship to go right before the wind, or directly between her two sheets. If the ship sail by a wind, or on a quarter wind, the word is, aloof, keep your luff, fall not off, veer no more, keep her to, touch the wind, have a care of the lee-latch: all which expressions are of the same import, and imply that the steersman should keep the ship near the wind. On the contrary, if he would have her sail more large, or more before the wind, the word is, ease the helm, no near, bear up. If he cries steady, it means, keep her from going in and out, or making yaws (as they call it), howsoever she sails, whether large or before a wind: and

when he would have her go just as she does, he cries, keep her thus, thus, &c.

Condate,
Conde.

CONDATE (anc. geog.), a town of Armorica in Gaul: called *Civitas Rhedonum*, in the Notitia; afterwards *Redonae*; Redonica Regio, the district. Hence the modern name *Rennes*, in Brittany. W. Long. 1.45. Lat. 48. 5. Another Condate of Britain (Antonine); now thought to be Congleton, in Yorkshire; others say in Lancashire.

CONDE (Lewis de Bourbon prince of), was born at Paris Sept. 7. 1621. He was styled Duke d'Enguien, till he succeeded to the title of Prince of Conde by his father's death in 1646. As he was of a tender and delicate constitution, the prince sent him to the castle of Montrond in Berry, that he might breathe a more pure and salutary air. Here he was educated in his infancy by some experienced and prudent citizens wives. When he was of a proper age, the prince took upon himself the task of governor, and appointed for his assistant M. de la Boullieres, a private gentleman, a man of honour, fidelity, and good nature, and who made it a rule to observe inviolably the orders that were given him. Two Jesuits distinguished for their genius and knowledge were also given him for preceptors. He formed him a household of 15 or 20 officers, all men of the greatest virtue and discretion.

With these attendants the duke d'Enguien went to settle at Bourges, where he frequented the college of Jesuits. Here, besides the ordinary studies, he was taught ancient and modern history, mathematics, geography, declamation; also riding and dancing, in which last he soon excelled. He made such a surprising progress, that before the age of 13 he defended in public some questions in philosophy with incredible applause. At his return from Montrond, he had for his tutor M. de Merille; a man deeply versed in the knowledge of common law, of ancient and modern laws, of the holy scriptures, and of the mathematics. Under his direction the duke went through that new course with prodigious success. He acquired a critical taste in the arts and sciences, which he retained all his life; he never suffered a day to pass without dedicating two or three hours at least to reading; his thirst for knowledge was universal, and he endeavoured to search every thing to the bottom. His chief inclination, however, lay towards the military art; and at the age of 18 he obtained permission to make his first campaign as a volunteer in the army commanded by M. de la Meilleraye. This campaign was unfortunate; and the duke d'Enguien was only a witness of the marshal's imprudence and disgrace. Nevertheless, in this campaign he laid the foundation of that renown which made him afterwards considered as the greatest general of his age.

On his return to Paris, the duke waited upon cardinal Richelieu at Ruel. That minister was so pleased with his conversation, that he soon after made proposals of an alliance with the prince of Conde, by marrying the duke d'Enguien to Claire Clemence de Maille Breza, the cardinal's niece. The duke consented to this match out of obedience to his father; but the force he put upon himself by yielding to it was so great, that he fell dangerously ill. It

Conde. was long before he got the better of his distemper; but at length he not only recovered, but became so strong as afterwards to bear the greatest fatigues with ease.

The duke made two more campaigns as a volunteer; the one under the marshal de la Meilleraye, the other in the army of Louis XIII. which conquered Rouffillon. In 1643, at the age of 22, he obtained from the king, at the persuasion of cardinal Mazarine, the command of the army destined to cover Champagne and Picardy; which command was confirmed to him after the king's death by the queen regent, Anne of Austria, to whose interest he was strongly devoted. In this situation, though he never had been present at any battle, he soon gave such a specimen of his abilities as crowned him with glory. The Spaniards, who threatened France with an invasion, were defeated by him at Rocroi; and this signal victory made him from that time considered as the guardian genius of his country. He next formed the project of besieging Theonville, and proposed it to the council of regency. They consented with fear and distrust; but the duke carried it into execution with such skill, activity, and courage, that he became justly the subject of general admiration. In two months time Theonville surrendered. At length, having covered Alsace and Lorraine from the enterprises of the Imperialists, the duke returned to Paris, where he obtained the government of Champagne, and of the city of Stenai.

The three following years were little more than a series of military operations. The three battles of Fribourg, in which the duke d'Enguien triumphed over Velt Marshal count de Mercy, the greatest general in all Germany; the taking of Philippsbourg, and a great number of other places, which rendered him master of the palatinate, and of the whole course of the Rhine; the victory of Nortlingue, by which he revenged the viscount du Turenne's defeat at Mariendal; the siege and conquest of Dunkirk; the good and bad success of his arms in Catalonia, where, though he was forced to raise the siege of Lorida, he kept the Spaniards in awe, and cut to pieces their rear guard; these are the principal events which distinguish the campaigns of 1644, 1645, and 1646.

The victories of the duke d'Enguien, his great reputation and esteem with the people, began now to give umbrage to Mazarin. The cardinal's dislike to him appeared on the death of the duke de Breze, admiral of France. The prince of Conde earnestly demanded for his son the duke de Breze's places. But Mazarin, afraid of increasing the wealth and power of a prince whom his victories and the love and confidence of the people and the army had already rendered too formidable to him, evaded his request, by persuading the queen to take the admiralty to herself. On the death of his father, the minister's dislike to the young prince of Conde became still more apparent. By the minister's persuasion he had accepted of the command of the army in Catalonia; but, on his arrival at Barcelona, he found neither troops, money, artillery, provisions, nor ammunition. Enraged at this deception, he vented his resentment in bitter complaints and severe threats; but by the resources that

he found in this dilemma, the prince added new lustre to his glory.

The campaign of 1648 was as glorious to Conde as those which preceded it had been. To disconcert at once the projects of the arch-duke Leopold, the prince resolved to attack him even in the heart of the Low Countries; and notwithstanding the considerable difficulties which he had to surmount, he besieged the important city of Ypres, and took it in sight of all the enemies forces.

Notwithstanding this success, Conde saw himself at the point of experiencing the greatest reverse of fortune. His army was a prey to scarcity, to nakedness, contagious distempers, and desertion. For eight months it received no supply from the minister, but half a muster. Every thing was supplied by the prince himself; he lavished his money, and borrowed more to supply his troops. When it was represented to him that he was in danger of ruining himself by such an enormous expence, he replied, that "since he every day ventured his life for the service of his country, he could very well sacrifice his fortune to it. Let but the government exist (added he), and I shall want for nothing."

The French army having been reinforced by 4000 of the troops of Weimar, Conde attacked the Spaniards advantageously encamped near Lens, and gained a complete victory over them, which disabled them from attempting any thing more, and even from supporting themselves. Afterwards he besieged Furnes, the garrison of which, 500 men, surrendered themselves prisoners of war. But the prince was wounded there in the trenches by a musket-shot above the right hip; and the contusion was so great, that he was forced to submit to several incisions.

The French court, animated with the victory at Lens, thought this a proper time to take vengeance on the factions which for some time had violently agitated the kingdom; and accordingly imprisoned Brouffel and Blancmenil, two of the principal leaders of the country party. This vigorous proceeding, however, occasioned a general revolt. Two hundred thousand men took arms in Paris, barricaded the streets, invested the palais-royal, and demanded the prisoners. It was necessary to release them; but from that time the regal authority was annihilated; the queen was exposed to a thousand insults, and Mazarin dared no longer venture out of the palais-royal. In this embarrassment the queen recalled the prince of Conde, as the only one from whom she could hope for support. He retired to Ruel, whither the regent had gone with the young king and Mazarin. Anne of Austria proposed to him the reducing of Paris by force of arms: but he calmed the resentments of that prince; and instead of being accessory to her vengeance, he directed all his views to pacify the kingdom, and at length brought about an accommodation between the parties, who desired it with equal ardour. But new incidents soon rekindled the combustion. The treachery of Mazarin, and the artifices of the leaders of the country party, occasioned new cabals and fresh troubles. Conde was caressed by the leaders of both parties; but at last, enraged at the arrogance of the malcontents, who every day formed new pretensions,

Conde. he took part openly with the court, though he thought it ungrateful, and protected the minister, though he did not esteem him.

The royal family, the duke of Orleans, Conde, and Mazarin, left Paris privately in the night between the 5th and 6th of January 1649, and went to St Germain. The parliament sent deputies to learn from the queen herself the reasons of her departure, and to beg her to name the citizens whom she suspected, that they might be tried. Mazarin had the imprudence to dismiss them without any answer. Exasperated at this, the people again took up arms in order to defend themselves against the enterprizes of the court, who had determined to block up and to starve the capital, in order to suppress the party of malcontents. With 7 or 8000 men, the broken relics of the last campaign, the prince of Conde formed a design of reducing above 500,000 intrenched behind walls. He had neither money nor magazines; he saw himself in the depth of a most severe winter; nevertheless he triumphed over Paris, and this great success completed his glory. It did him so much the more honour, as during the siege he constantly defeated the troops of the malcontents; he prevailed on the army that marched to their assistance under Turenne, to abandon that general; he stopped the progress of the duke de Longueville, who had caused an insurrection in Normandy; and got the start of the Spaniards, who were advancing to give him battle.

Condi de Retz, co-adjutor of Paris, and afterwards cardinal, was the life and soul of the revolvers, and directed all their motions. He had taken Catiline for his model; and was equally intrepid and capable of the greatest actions; of an exalted genius, but governed by his ambition. He distinguished his hatred to Mazarin by arming the malcontents: and he himself raised at his own expence a regiment which he called the regiment of *Corinth*: as soon as this corps took the field during the blockade of Paris, it was defeated and dispersed. This check was called *the first to the Corinthians*. The peace was signed at St Germain; but neither party carried its point, and scarce any one but Conde acquired glory by this war. After the conclusion of the treaty, the prince repaired to the capital, and traversed all the streets in his coach alone. All persons of any consequence paid their compliments to him, and the parliament sent a solemn deputation to thank him for the peace to which he had so powerfully contributed. The people, however, made loud complaints on account of the king's absence (for the court was not yet returned to Paris), and the malcontents gave reason to apprehend a new insurrection. Conde encouraged the king and queen to return; and at length brought them to Paris, amidst the acclamations and blessings of the public.

The important service which Conde had just done the court intitled him to the acknowledgements of the queen, and especially of Mazarin; but the dark soul of that cardinal only remembered it to punish a too fortunate and too powerful protector. He privately swore the prince's destruction; at least that he should give the whole kingdom a pattern of submission and dependence on his will. However, not to excite the public indignation, he still kept up appearances with the prince, while he secretly spread about him disgusts,

suspicious, snares of every kind, and the most heinous calumnies. The ungrateful minister deceived the prince by making him the most flattering proposals; and with the most alluring promises which he always found means to avoid fulfilling. The enraged prince despised the minister, and treated him with disdain. After this they were reconciled again only to be again at variance. Each of them in their turn courted the country party, in order to make it subservient to their designs. At last Mazarin thought of an expedient, which but too effectually answered his purpose, of making an irreconcilable quarrel between that party and the prince. There was among the malcontents one marquis de la Boulaie, a man of an infamous character, who had obtained the confidence of the party by false appearances of hatred to the cardinal, but who secretly kept up a correspondence with him. It is pretended that he made him an offer of privately killing Conde. Mazarin was charmed with the proposal; yet he only required Boulaie to exhibit all the proofs of an assassination, and to act in such a manner that every thing might concur to render the country party suspected of that crime. He was punctually obeyed; the coach was stopped; some pistols were fired at it; by which two of the footmen were dangerously wounded; and, after that shameful exploit, la Boulaie took refuge in the hotel of the duke of Beaufort, who was the hero of the party, in order no doubt to countenance the prince's suspicion of the malcontents. Luckily Conde was not in his coach when it was stopped; the cardinal had spread the report of his intended assassination; and in concert with the queen and the prince he had prevailed to have the coach sent away empty, to prove the reality of the attempt. Mazarin counterfeited a zeal for the prince's life; he furiously declaimed against the malcontents, who, he pretended, had made an attempt on a life so precious to the state; and he inflamed Conde's resentment against the duke of Beaufort and the coadjutor, whom he supposed to be the authors of this heinous outrage. The prince was so strongly prejudiced, that he refused to hear them when they appeared before him to justify themselves. He demanded justice against them of the king; he formally accused them before the parliament, and remained inflexible in spite of the pains which the leaders of the party took to demonstrate to him that he had been imposed upon. However, the affair was brought before the parliament; the accused defended themselves, and the coadjutor, who had discovered the cardinal's secret, unmasked him so well, that the prince agreed to a private negotiation with the malcontents; he required nothing more than the coadjutor's leaving Paris, but with the rank of ambassador to Rome or Vienna. That prelate would have consented to it, to satisfy Conde, if Mazarin, some days after, had not given him the choice of any recompence, in order to engage his concurrence in the prince's destruction. Affairs were now in such a dangerous situation, that the cardinal saw clearly it was necessary to hasten to the winding up of the plot. Master of the queen's mind, which he guided as he pleased; and sure of having inflamed against Conde all the resentment of the malcontents; he sought and obtained, by means of the duchess Chevreuse, the support of that powerful faction, which connected itself

Conde.

Conde. the more readily with him, in hopes that the prince's fall would soon enable it to crush without difficulty the cardinal himself. The coadjutor had private conferences with the queen and the minister. Conde had notice of it; and in order to discover if it were true, he endeavoured to surprize it from Mazarin's own mouth. "Cardinal (said he, one day), it is publicly reported that you have nightly meetings with the coadjutor, disguised like a trooper." He accompanied this speech with a quick and penetrating look: but the cardinal, who was a perfect master of dissimulation, answered him in such a free, artless like manner, that he entirely removed Conde's apprehensions; and he slighted the information he had received, of the plot forming against him.

Mazarin wanted nothing but the support of the duke of Orleans; and at last found means, by the duchess of Chevreuse, to inflame the jealousy of that sickle and inconstant prince, and to engage him to consent to the imprisonment of Conde. Having thus united all parties, and fearing no other obstacle, this ungrateful and perfidious minister made preparations for privately arresting the prince; the order for it was signed January 18th 1650. Conde having that day repaired as usual to the palais-royal, to assist at council with the prince of Conti and the duke of Longueville, the queen gave orders to arrest them all three, and convey them without any noise to the castle of Vincennes. She was instantly obeyed, and the princes were strictly guarded in that prison.

In this unexpected reverse of fortune, the fortitude and greatness of Conde's mind appeared only the more remarkable. Confined with the other two princes in the tower of Vincennes, where neither supper, furniture, nor beds, were provided, he contented himself with two new laid eggs, and threw himself in his cloaths, on a truss of straw, where he slept 12 hours without waking. He still retained his cheerfulness, and dedicated the greatest part of his time to reading, the rest to conversation, playing at battle-door and shuttle-cock, to bodily exercises, and the cultivation of flowers.

Mazarin triumphed at the disgrace of the princes, proscribed all those who were attached to Conde, and behaved in the most insolent and arbitrary manner. The prince's friends, however, notwithstanding their being strictly watched, found means to keep up a punctual correspondence with him. They made various attempts to release him: they raised troops; in particular, the dukes of Bouillon and Rochefocault, and the viscount de Turenne. The princess of Conde engaged the province of Guienne to declare in his favour; she made war, in order to force the court to release him; at length the partizans of the prince signed a treaty with the Spaniards, to labour in concert for his enlargement. But all these efforts would, perhaps, have been ineffectual, if other more powerful resources had not been employed.

In that gallant and warlike age, every thing was managed by the passions and intrigues of five or six women, who possessed the confidence of the leaders of the state, and of the various parties. The princess of Mantua, wife to one of the sons of the elector Palatine, king of Bohemia, principally directed the counsels in the party of the princes. She found means to

reconcile the duke of Orleans, the coadjutor, and the malcontents, with the friends of the prince, and united their efforts against the cardinal. The parliament, on the other side, loudly demanded the release of the prisoners. All the orders of the state united in soliciting it, inasmuch that the queen was at last prevailed on to give her consent. At this news, Mazarin was so confounded, that he fled in the disguise of a trooper, and arrived at the gates of Richlieu, where a body of horse waited for him. The parliament, informed by the queen of his flight, thundered forth an arret, by which he was obliged to leave the kingdom, with his family and foreign servants, in the space of 15 days, under the penalty of being exposed to a criminal prosecution. The queen desired to follow him with the king; but the nobles and burghers invested the palais-royal, and prevented the execution of this project, which would have kindled a civil war. Mazarin, therefore, perceiving that it was impossible for the queen to join him, determined to go himself to restore the princes to their liberty, and to get the start of the deputies who were coming to acquaint them with it. On his arrival at Havre, he informed the princes that they were free; he entreated Conde's friendship; and was so abject as to prostrate himself at the feet of him whom he had so basely oppressed. Conde gave him a polite reception, and spoke to him in a free and cheerful tone; but tired with the mean submissions which the cardinal lavished upon him, he left him without making any promise, and set out on his return to Paris, which he entered as it were in triumph, amidst the acclamations of all orders of men, and the demonstrations of a most sincere and general joy.

After this a civil war ensued, in which the prince of Conde sided with the malcontents. Being pressed by the king's army, he retired into the suburbs of St Anthony, where he behaved with the utmost bravery; when the citizens opened their gates and received him in; and a peace ensued soon after. His hatred of the cardinal, however, made him quit Paris, and take refuge among the Spaniards, who made him generalissimo of their forces; and he took Rocroi. The peace of the Pyrenees restored him to his country; and he again signalized himself at the head of the king's armies. Being afflicted with the gout, he refused the command of the army in 1676, and retired to Chartilly, where he was as much esteemed for the virtues of peace, as he had been before for his military ones. He died in 1686, at Fontainebleau.

CONDE, a town of the French Netherlands, in the province of Hainault, with the title of a principality, and a castle. It is one of the strongest towns in this country, and seated near the confluence of the rivers Hainne and Scheld. E. Long. 3. 29. N. Lat. 50. 27.

CONDE, a town of France, in Normandy, and in the Bessin, which carries on a considerable trade; seated on the river Nereau. W. Long. 0. 37. N. Lat. 48. 50.

CONDEMNATION, the act of giving judgment, passing or pronouncing sentence against a person subjected thereby to some penalty or punishment, either in respect of life, reputation, or fortune.

Conde,
Condemna-
tion.

Condensation
||
Condor.

CONDENSATION, the act whereby a body is rendered more dense, compact, and heavy. The word is commonly applied to the conversion of vapour into water, by distillation, or naturally in the clouds. The way in which vapour commonly condenses, is by the application of some cold substance. On touching it, the vapour parts with its heat which it had before absorbed; and on doing so, it immediately loses the proper characteristics of vapour, and becomes water. But though this is the most common and usual way in which we observe vapour to be condensed, nature certainly proceeds after another method: since we often observe the vapours most plentifully condensed when the weather is really warmer than at other times. See the articles **CLOUD**, **EVAPORATION**, &c.

CONDENSER, a pneumatic engine, or syringe, whereby an uncommon quantity of air may be crowded into a given space; so that sometimes ten atmospheres, or ten times as much air as there is at the same time in the same space, without the engine, may be thrown in by means of it, and its egress prevented by valves properly disposed. See **PLATE CXLVI**.

It consists of a brass cylinder, wherein is a moveable piston; which being drawn out, the air rushes into the cylinder through a hole provided on purpose; and when the piston is again forced into the cylinder, the air is driven into the receiver through an orifice, furnished with a valve to hinder its getting out.

The receiver or vessel containing the condensed air, should be made very strong, to bear the force of the air's spring thus increased; for which reason they are generally made of brass: its orifice is fitted with a female screw to receive the male screw at the end of the condenser.

If glass be used for a condenser, it will not suffer so great a degree of condensation; but the experiment will be more entertaining, since the subject may be viewed in the condensed air.

CONDITION, in the civil law, a clause of obligation stipulated as an article of a treaty or a contract; or in a donation of a testament, legacy, &c. in which last case a donee does not lose his donative if it be charged with any dishonest or impossible conditions.

CONDITIONAL, something not absolute, but subject to conditions.

CONDITIONAL Conjunctions, in grammar, are those which serve to make propositions conditional; as *if, unless, provided, &c.*

CONDITIONAL Propositions, in logic, such as consist of two parts connected together by a conditional particle.

CONDITIONAL Syllogism, a syllogism where the major is a conditional proposition. Thus,

If there is a God, he ought to be worshipped.

But there is a God;

Therefore he ought to be worshipped.

CONDIVICNUM, (anc. geog.), the capital of the Namnetes, in Armorica. Now Nants in Brittany, on the Loire, from its name *Civitas Namnetum*. W. Long. 1. 30. Lat. 47. 15.

CONDOM, a town of Gascony in France, capital of the Condomois, with a bishop's see. It is but a poor place, and the trade is very small. It is seated on the river Gelisse, in E. Long. 0. 22. N. Lat. 44.

CONDOR, or **CONTOR**, in ornithology. See **VULTUR**.

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CONDORMIENTES, in church-history, religious sectaries, who take their name from lying all together, men and women, young and old. They arose in the 13th century, near Cologne; where they are said to have worshipped an image of Lucifer, and to have received answers and oracles from him.

CONDRIEU, a town of Lyounois in France, remarkable for its excellent wines. It is seated at the foot of a hill near the river Rhone, E. Long. 4. 33. N. Lat. 45. 28.

CONDRUSII, (anc. geog.), a people of Belgica, originally Germans, dwelling about the Maese. Their country is now called *Condrotz*, in the bishopric of Liege, between Luxemburg and the Maese.

CONDUCTOR, in surgery, an instrument which serves to conduct the knife in the operation of cutting for the stone, and in laying up sinuses and fistulas.

CONDUCTORS, in electrical experiments, are those bodies that receive and communicate electricity; and those that repel it are called *non-conductors*. See **ELECTRICITY**.

CONDUIT, a canal or pipe for the conveyance of water, or other fluid.

There are several subterranean conduits through which the waters pass that form springs. Artificial conduits for water are made of lead, stone, cast-iron, potter's earth, timber, &c.

CONDYLOID and **CORONOID** processes. See **ANATOMY**, n^o 26.

CONDYLOMA, in medicine, a tubercle, or calous eminence, which arises in the folds of the anus, or rather a swelling or hardening of the wrinkles of that part.

CONDYLUS, a name given by anatomists to a knot in any of the joints, formed by the epiphysis of a bone.

CONE, in geometry, a solid figure, having a circle for its base, and its top terminated in a point or vertex. See **CONIC SECTIONS**.

Melting Cone, in chemistry, is a hollow cone formed of copper or brass, with a handle, and with a flat bottom adjoining to the apex of the cone, upon which it is intended to rest. Its use is to receive a mass of one or more metals melted together, and cast into it. This mass, when cold, may be easily shook out of the vessel, from its figure. Also, if a melted mass consisting of two or more metals, or other substances not combined together, be poured into this vessel, the conical figure facilitates the separation of these substances according to their respective densities. The cone ought to be well heated before the melted mass is thrown into it; that it may not contain any moisture, which would occasion a dangerous explosion. It ought also to be greased internally with tallow, to prevent the adhesion of the fluid matter.

Cone of Rays, in optics, includes all the several rays which fall from any radiant point upon the surface of a glass.

CONE, in botany. See **CONUS**.

CONESSI, a sort of bark of a tree, which grows on the Coromandel coast in the East Indies. It is recommended in a letter to Dr Monro, in the Medical Essays, as a specific in diarrhoeas. It is to be finely pulverized, and made into an electuary with syrup of oranges. The bark should be fresh, and the electua-

Condormientes
||
Coneffi.

Confar-
ation
||
Confession.

ry new made every day, or second day, otherwise it loses its austere but grateful bitterness on the palate, and its proper effects on the intestines.

CONFARREATION, a ceremony among the ancient Romans, used in the marriage of persons whose children were destined for the honour of the priesthood.

Confarreation was the most sacred of the three modes of contracting marriage among that people; and consisted, according to Servius, in this, that the *pontifex maximus* and *flamen dialis* joined and contracted the man and woman, by making them eat of the same cake of salted bread: whence the term, *far* signifying meal or flour.

Ulpian says, it consisted in the offering up of some pure wheaten bread; rehearsing, withal, a certain formula, in presence of ten witnesses. Dionysius Halicarnassensis adds, that the husband and wife did eat of the same wheaten bread, and threw part on the victims.

CONFECTIO, in pharmacy, signifies, in general, any thing prepared with sugar: in particular it imports something preserved, especially dry substances. It also signifies a liquid or soft electuary, of which there are various sorts directed in dispensaries. See **PHARMACY**.

CONFECTOR, among the ancient Romans, a sort of gladiator, hired to fight in the amphitheatre against beasts; thence also denominated *bestiarius*.

The *confectores* were thus called à *conficiendis bestiis*, from their dispatching and killing beasts.

The Greeks called them *παρὰβολοι*, q. d. *daring, rash, desperate*; whence the Latins borrowed the appellations *parabolani* and *parabolarii*. The Christians were sometimes condemned to this sort of combat.

CONFECTS, a denomination given to fruits, flowers, herbs, roots, &c. when boiled or prepared with sugar or honey, to dispose them to keep, and render them more agreeable to the taste.

CONFEDERACY, in law, is when two or more persons combine to do any damage to another, or to commit any unlawful act. Confederacy is punishable, though nothing be put in execution; but then it must have these four incidents: 1. That it be declared by some matter of prosecution, as by making of bonds or promises to one another; 2. That it be malicious, as for unjust revenge; 3. That it be false, *i. e.* against the innocent; and, lastly, That it be out of court, voluntary.

CONFERVA, in botany: A genus belonging to the cryptogamia class of plants; and in the natural method ranking under the 57th order, *Alga*. The tubercles are of different sizes, on capillary, very long fibres. There are 21 species, most of them growing on stones in slow streams, on the sides of cisterns, or in ponds.

CONFESSION, in a civil sense, a declaration or acknowledgement of some truth, though against the interest of the party who makes it; whether it be in a court of justice or out of it. It is a maxim, that in civil matters, the confession is never to be divided, but always taken entire. A criminal is never condemned on his simple confession, without other collateral proofs; nor is a voluntary extrajudicial confession admitted as any proof. A person is not admitted to accuse himself, according to that rule in law, *Non auditur perire volens*. See **ARRAIGNMENT**.

CONFESSION, among divines, the verbal acknowledgement which a Christian makes of his sins.

Among the Jews it was the custom, on the annual feast of expiation, for the high-priest to make confession of sins to God in the name of the whole people: besides this general confession, the Jews were enjoined, if their sins were a breach of the first table of the law, to make confession of them to God; but violations of the second table were to be acknowledged to their brethren. The confession of the primitive Christians were all voluntary, and not imposed on them by any laws of the church; yet private confession was not only allowed, but encouraged.

The Romish church requires confession not only as a duty, but has advanced it to the dignity of a sacrament: this confession is made to the priest, and is private and auricular; and the priest is not to reveal them under pain of the highest punishment.

CONFESSION of Faith, a list of the several articles of belief in any church.

CONFESSIO, or **CONFESSIO**, a place in churches under the great altar, where the bodies of deceased saints, martyrs, and confessors, were deposited.

This word is also used by the Romanists for a desk in the church where the confessor takes the confessions of the penitents.

CONFESSOR, a Christian who has made a solemn and resolute profession of the faith, and has endured torments in its defence. A mere saint is called a confessor, to distinguish him from the roll of dignified saints; such as apostles, martyrs, &c. In ecclesiastical history, we frequently find the word confessors used for martyrs: in after-times, it was confined to those who, after having been tormented by the tyrants, were permitted to live and die in peace. And at last it was also used for those who, after having lived a good life, died under an opinion of sanctity. According to St Cyprian, he who presented himself to torture, or even to martyrdom, without being called to it, was not called a *confessor* but a *professor*: and if any out of a want of courage abandoned his country, and became a voluntary exile for the sake of the faith, he was called *ex-territis*.

CONFESSOR is also a priest, in the Romish church, who has a power to hear sinners in the sacrament of penance, and to give them absolution. The church calls him in Latin *confessorius*, to distinguish him from confessor, which is a name consecrated to saints. The confessors of the kings of France, from the time of Henry IV. have been constantly Jesuits: before him the Dominicans and Cordeliers shared the office between them. The confessors of the house of Austria have also, ordinarily, been Dominicans and Cordeliers; but the latter emperors have all taken Jesuits.

CONFIGURATION, the outward figure which bounds bodies, and gives them their external appearance; being that which, in a great measure, constitutes the specific difference between bodies.

CONFIRMATION, in a general sense, the act of ratifying or rendering a title, claim, report, or the like, more sure and indisputable.

CONFIRMATION, in law, a conveyance of an estate, or right in *esse*, from one man to another, whereby a voidable estate is made sure and unavoidable, or a particular estate is increased, or a possession made perfect.

Confession
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Confirmation.

Confisca-
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Conflagra-
tion.

Confluent
||
Confucius.

CONFIRMATION, in theology, the ceremony of laying on of hands, for the conveyance of the Holy Ghost.

The antiquity of this ceremony is, by all ancient writers, carried as high as the apostles, and founded upon their example and practice. In the primitive church, it used to be given to Christians immediately after baptism, if the bishop happened to be present at the solemnity. Among the Greeks, and throughout the East, it still accompanies baptism: but the Romaniſts make it a distinct independent sacrament. Seven years is the stated time for confirmation: however, they are sometimes confirmed before, and sometimes after, that age. The person to be confirmed has a god-father and god-mother appointed him, as in baptism. The order of confirmation in the church of England, does not determine the precise age of the persons to be confirmed.

CONFISCATION, in law, the adjudication of goods or effects to the public treasury; as the bodies and effects of criminals, traitors, &c.

CONFLAGRATION, the general burning of a city, or other considerable place.

This word is commonly applied to that grand period or catastrophe of our world, when the face of nature is to be changed by fire, as formerly it was by water. The ancient Pythagoreans, Platonists, Epicureans, and Stoics, appear to have had a notion of the conflagration: though whence they should derive it, unless from the sacred books, is difficult to conceive; except, perhaps, from the Phœnicians, who themselves had it from the Jews. Seneca says expressly, *Tempus advenerit quo sidera sideribus incurrent, & omni flagrante materia uno igne, quicquid nunc ex deposito lucet, ardebit.* This general dissolution the Stoics call *εκαυρωσις, ecpyrosis*. Mention of the conflagration is also made in the books of the Sybils, Sophocles, Hyſtaſpes, Ovid, Lucan, &c. Dr Burnet, after F. Tachard and others, relates that the Siamese believe that the earth will at last be parched up with heat; the mountains melted down; the earth's whole surface reduced to a level, and then consumed with fire. And the Bramins of Siam do not only hold that the world shall be destroyed by fire; but also that a new earth shall be made out of the cinders of the old.

Various are the sentiments of authors on the subject of the conflagration; the cause whence it is to arise, and the effects it is to produce. Divines ordinarily account for it metaphysically; and will have it take its rise from a miracle, as a fire from heaven. Philosophers contend for its being produced from natural causes; and will have it effected according to the laws of mechanics. Some think an eruption of the central fire sufficient for the purpose; and add, that this may be occasioned several ways, viz. either by having its intension increased; which again, may be effected either by being driven into less space by the encroachments of the superficial cold, or by an increase of the inflammability of the fuel whereon it is fed; or by having the resistance of the imprisoning earth weakened; which may happen, either from the diminution of its matter, by the consumption of its central parts, or by weakening the cohesion of the constituent parts of the mass by the excess of the defect of moisture. Others look for the cause of the conflagration in the atmosphere; and suppose, that some of the

meteors there engendered in unusual quantities, and exploded with unusual vehemence, from the concurrence of various circumstances, may effect it, without seeking any further. The astrologers account for it from a conjunction of all the planets in the sign Cancer; as the deluge, say they, was occasioned by their conjunction in Capricorn. Lastly, others have recourse to a still more effectual and flaming machine, and conclude the world is to undergo its conflagration from the near approach of a comet in its return from the sun.

CONFLUENT, among physicians, &c. an appellation given to that kind of SMALL-POX wherein the pustules run into each other.

CONFLUENTES (anc. geog.), a place at the confluence of the Rhine and Moselle, supposed to be one of the 50 forts erected by Drusus on the Rhine, in Gallia Belgica: Now *Coblentz*, a town of Triers. E. Long. 7. 15. Lat. 50. 30.

CONFORMATION, the particular consistence and texture of the parts of any body, and their disposition to compose a whole.

CONFORMATION, in medicine, that make and construction of the human body which is peculiar to every individual. Hence, a *mala conformatio* signifies some fault in the first rudiments; whereby a person comes into the world crooked, or with some of the viscera or cavities unduly framed or proportioned. Many are subject to incurable asthmas, from a too small capacity of the thorax, and the like vitious conformations.

CONFORMITY, in the schools, is the congruency, or relation of agreement between one thing and another; as between the measure and the thing measured, the object and the understanding, the thing and the division thereof, &c.

CONFRONTATION, the act of bringing two persons in presence of each other, to discover the truth of some fact which they relate differently.

The word is chiefly used in criminal matters; where the witnesses are confronted with the accused, the accused with one another, or the witnesses with one another.

CONFUCIUS, a Chinese philosopher, who lived about 500 years before our Saviour's birth, in the kingdom of Lu, now called the province of *Xantung*. His wit and judgment got him a reputation from his very youth; and being a mandarin, and employed in the government of the kingdom of Lu, his profound knowledge of morals and politics made him be greatly admired. Notwithstanding his care, his prince's court was much disordered; and Confucius finding the king would not listen to his advice, quitted the court, and taught moral philosophy with such applause that he soon had above 3000 scholars, whereof 72 surpassed the rest in learning and virtue, for whom the Chinese have still a particular veneration. He divided his doctrine into four parts, and his scholars into four classes: the first order was of those who studied to acquire virtue; the 2d, those who learned the art of reasoning well; the 3d studied the government of the state and the duty of magistrates; the 4th were wholly taken up in noble discourses of all that concerned morals. In spite of all his pains to establish pure morality and religion, he was nevertheless the innocent cause of their corruption. It is said, that when

Confusion. he was complimented upon the excellency of his philosophy, he replied, that he fell greatly short of the perfect degree of virtue; but that in the west the most holy was to be found. This made a strong impression on the learned; and in the 66th year after Christ's birth, the emperor Mon-ti sent ambassadors toward the west to seek this holy man. They stopped at an island near the Red Sea, and found a famous idol named Fohi, representing a philosopher that lived 500 years before Confucius. They carried this idol back with them, with instructions concerning the worship rendered to it; and so introduced a superstition that abolished in several places the maxims of Confucius. His tomb is in the academy where he taught, near the town Xio-fu, upon the banks of the river Xu. This philosopher has been in great veneration in China above 2000 years; and is still so esteemed, that each town has a palace consecrated to his memory. There was one of his descendants who was very considerable in the kingdom in 1646, whom Xanchi king of Tartary, who then conquered China, received with a great deal of honour. All those of his family are mandarins by birth; and have a privilege common with the princes of the blood, not to pay any tribute.

CONFUSION, in a general sense, is opposed to order, in a perturbation whereof confusion consists; *e. gr.* when things prior in nature do not precede, or posterior do not follow, &c.

In a logical sense, confusion is opposed to distinctness or perspicuity; and may happen either in words, as when misconstrued or misapplied; or in ideas, as when the idea of any thing presents something along with it, which does not properly belong to that thing. See **IDEA** and **NOTION**.

In a physical sense, confusion is a sort of union or mixture by mere contiguity. Such is that between fluids of contrary nature, as oil and vinegar, &c.

CONFUSION, in Scots law, is a method of suspending and extinguishing obligations. See **LAW**, Part III. N^o clxxvi. 8.

CONFUSION of Tongues, in the history of mankind, is a memorable event, which happened in the one hundred and first year according to the Hebrew chronology, and the four hundred and first year by the Samaritan, after the flood, at the overthrow of Babel; and which was providentially brought about in order to facilitate the dispersion of mankind and the population of the earth. Until this period there had been one common language, which formed a bond of union that prevented the separation of mankind into distinct nations; and some have supposed, that the tower of Babel was erected as a kind of fortress, by which the people intended to defend themselves against that separation which Noah had projected.

There has been a considerable difference of opinion as to the nature of this confusion, and the manner in which it was effected. Some learned men, prepossessed with the notion that all the different idioms now in the world did at first arise from one original language to which they may be reduced, and that the variety among them is no more than must naturally have happened in a long course of time by the mere separation of the builders of Babel, have maintained, that there were no new languages formed at the confusion; but that this event was accomplished by creating a misun-

derstanding and variance among the builders without any immediate influence on their language. But this opinion, advanced by Le Clerc, &c. seems to be directly contrary to the obvious meaning of the word **רעש**, *Shapha*, "lip," used by the sacred historian. Others have imagined, that this was brought about by a temporary confusion of their speech, or rather of their apprehensions, causing them, whilst they continued together and spoke the same language, to understand the words differently. Scaliger is of this opinion. Others, again, account for this event by the privation of all language, and by supposing that mankind were under a necessity of associating together, and of imposing new names on things by common consent. Another opinion ascribes the confusion to such an indistinct remembrance of the original language which they spoke before, as made them speak it very differently; so that by the various inflections, terminations, and pronunciations of divers dialects, they could no more understand one another, than they who understand Latin can understand those who speak French, Italian, or Spanish, though all these languages arise out of it. This opinion is adopted by Casaubon, and by Bishop Patrick in his Commentary *in loc.* and is certainly much more probable than either of the former. And Mr Shuckford maintains, that the confusion arose from small beginnings, by the invention of new words in either of the three families of Shem, Ham, and Japhet, which might contribute to separate them from one another; and that in each family new differences of speech might gradually arise, so that each of these families went on to divide and subdivide among themselves. Others, again, as Mr Jos. Mede and Dr Wotton, &c. not satisfied with either of the foregoing methods of accounting for the diversity of languages among mankind, have recourse to an extraordinary interposition of divine power, by which new languages were framed and communicated to different families by a supernatural infusion or inspiration; which languages have been the roots and originals from which the several dialects that are, or have been, or will be spoken, as long as this earth shall last, have arisen, and to which they may with ease be reduced. As to the number of languages thus introduced, many opinions have been adopted. If there were no more than there were nations or heads of nations, then the number would be seven for Japhet, four for Ham, and five for Shem; but if there were as many as there were families, which is the more probable opinion, their number cannot be certainly assigned. However, the Hebrews fancy they were 70, because the descendants from the sons of Noah, enumerated Genesis x. were just so many. Allowing, then, the languages of the chief families to have been fundamentally different from each other, the sub-languages and dialects within each branch would probably have had a mutual affinity, greater or less as they settled nearer or farther from each other. But whichever of these hypotheses is adopted, the primary object of the confusion at Babel was the separation and dispersion of mankind.

Dr Bryant, in the third volume of his *Analysis of Ancient Mythology*, has advanced a singular hypothesis, both with respect to the confusion of tongues and the dispersion. He supposes that the confusion of language was local and partial, and limited to Babel only.

By

By בל דמיע, Gen. xi. 1. and 8. which our translators render *the whole earth*, he understands *every region*: and by the same words in ver. 9. *the whole region* or province. This confusion was occasioned, as he supposes, by a labial failure; so that the people could not articulate. Thus their speech was confounded, but not altered; for, as soon as they separated, they recovered their true tenor of pronunciation, and the language of the earth continued for some ages nearly the same. The interviews between the Hebrews and other nations, recorded in Scripture, were conducted without an interpreter; and he farther observes, that the various languages which subsist at this day retain sufficient relation to show, that they were once dialects from the same matrix, and that their variety was the effect of time. See DISPERSION.

CONFUTATION, in rhetoric, &c. a part of an oration, wherein the orator seconds his own arguments and strengthens his cause, by refuting and destroying the opposite arguments of the antagonist. This is done by denying what is apparently false, by detecting some flaw in the reasoning of the adverse party, by granting their argument, and showing its invalidity, or retorting it upon the adversary.

CONGE, in the French law, a licence, or permission, granted by a superior to an inferior, which gives him a dispensation from some duty to which he was before obliged. A woman cannot obligate herself without the *conge* or licence of her husband; a monk cannot go out of his convent, without the *conge* of his superiors.

CONGE' *de lire*, in ecclesiastical policy, the king's permission royal to a dean and chapter in the time of a vacancy, to choose a bishop; or to an abbey, or priory, of his own foundation, to choose their abbot or prior.

The king of England, as sovereign patron of all archbishoprics, bishoprics, and other ecclesiastical benefices, had of ancient time free appointment of all ecclesiastical dignities, whensoever they chanced to be void; investing them first *per bucculum & annulum*, and afterwards by his letters-patent; and in course of time he made the election over to others, under certain forms and limitations, as that they should at every vacation, before they choose, demand the king's *congé de lire*, and after the election crave his royal assent, &c.

CONGE', in architecture, a mould in form of a quarter round, or a cavetto, which serves to separate two members from one another; such as that which joins the shaft of the column to the cincture, called also *apophyge*.

CONGES are also rings or ferrels formerly used in the extremities of wooden pillars, to keep them from splitting, afterwards imitated in stone-work.

CONGELATION, signifies the passing of any body from a fluid to a solid state: so that the term is thus applicable to metals when they resume their solid form after being heated, to water when it freezes, to wax, spermaceti, &c. when they become solid after having been rendered fluid by heat; and in general to all processes, where the whole substance of the fluid is converted into a solid: but it differs from crystallization; because in the latter process, though the salt passes from a fluid to a solid state, a considerable

quantity of liquid is always left, so that the term *congelation* is never applied in this case.

The process of congelation in all cases depends upon, or at least is accompanied with, the emission of heat, as has been evinced by experiments made not only in water, but on spermaceti, wax, &c. for in all of these, tho' the thermometer immersed in them while fluid continued to descend gradually till a certain period, yet it was as constantly observed to remain stationary, or even to ascend while the congelation went on. The principle on which the phenomenon depends is thus ascertained; but why this heat should be emitted, is a question which has not yet been thoroughly investigated. Some conjectures relative to this are indeed mentioned in the article CHEMISTRY, when treating of elementary fire, though experiments are still to be wished for on the subject.

It is not known whether all kinds of fluids are naturally capable of congelation or not; though we are certain that there are very great differences among them in this respect. The most difficult of all those which the congelation has been actually ascertained is quicksilver. This was long thought capable of resisting any degree of cold whatever; and it is only within a few years that its congelation by artificial means was known, and still more lately that some climates were found to be so severe as to congeal this fluid by the cold of the atmosphere.

The congelation of quicksilver was first ascertained by M. Joseph Adam Braun professor of philosophy at Peterburg. He had been employed in making thermometrical experiments, not with a view to make the discovery he actually did, but to see how many degrees of cold he could produce. An excellent opportunity for this occurred on the 14th of December 1759, when the mercury stood naturally at -34 , which is now known to be only five or six degrees above its point of congelation. Mr Braun, having determined to avail himself of this great degree of natural cold, prepared a freezing mixture of aquafortis and pounded ice, by means of which his thermometer was reduced to -69 . Part of the quicksilver had now really congealed; yet so far was M. Braun from entertaining any suspicion of the truth, that he had almost desisted from further attempts, being satisfied with having so far exceeded all the philosophers who went before him. Animated, however, by the hopes of producing a still greater degree of cold, he renewed the experiment; but having expended all his pounded ice, he was obliged to substitute snow in its place. With this fresh mixture the mercury sunk to -100 , 240 , and 352° . He then supposed that the thermometer was broken; but on taking it out to observe whether it was so or not, he found the quicksilver fixed, and continuing so for 12 minutes. On repeating the same experiment with another thermometer which had been graduated no lower than -220 , all the mercury sunk into the ball, and became solid as before, not beginning to reascend till after a still longer interval of time. Hence the professor concluded that the quicksilver was really frozen, and prepared for making a decisive experiment. This was accomplished on the 25th of the same month, and the bulb of the thermometer broken as soon as the metal was congealed. The mercury was now converted

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Congelation of quicksilver.

4
Experiments of Mr Braun.

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ed into a solid and shining metallic mass, which extended under the strokes of a pestle, in hardness rather inferior to lead, and yielding a dull sound like that metal. Professor Æpinus made similar experiments at the same time, employing both thermometers and tubes of a larger bore; in which last he remarked, that the quicksilver fell sensibly on being frozen, assuming a concave surface, and likewise that the congealed pieces sunk in fluid mercury.

The fact being thus established, and fluidity no longer to be considered as an essential property of quicksilver, Mr Braun communicated an account of his experiments to the Peterburg Academy, on the 6th of September 1760; of which a large extract was inserted in the Philosophical Transactions, vol. lii. p. 156. Five years afterwards he published another treatise on the same subject, under the title of Supplements to his former dissertation. In these he declared, that, since his former publication, he had never suffered any winter to elapse without repeating the experiment of congealing quicksilver, and never failed of success when the natural cold was of a sufficient strength for the purpose. This degree of natural cold he supposes to be -10 of Fahrenheit, though some commencement of the congelation might be perceived when the temperature of the air was as high as $+2$. The results of all his experiments were, that with the abovementioned frigorific mixtures, and once with rectified spirits and snow, when the natural cold was at -28° , he congealed the quicksilver, and discovered that it is a real metal which melts with a very small degree of heat. Not perceiving, however, the necessary consequence of its great contraction in freezing, he, in this work, as well as in the former, confounded its point of congelation with that of its greatest contraction in freezing, and thus marked the former a great deal too low; though the point of congelation was very uncertain according to him, various difficulties having occurred to his attempts of finding the greatest point of contraction while freezing.

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Of Mr Blu-
menbach.

The experiments of M. Braun were not repeated by any person till the year 1774, when Mr John Frederic Blumenbach, then a student of physic at Gottingen, performed them to more advantage than it appears M. Braun had ever done. He was encouraged to make the attempt by the excessive cold of the winter that year. "I put (says he), at five in the evening of January 11th, three drachms of quicksilver into a small sugar-glass, and covered it with a mixture of snow and Egyptian sal-ammoniac. This mixture was put loose into the glass, so that the quicksilver lay perfectly free, being only covered with it as by pieces of ice: the whole, together with the glass, weighed somewhat above an ounce. It was hung out at a window in such a position as to expose it freely to the northwest; and two drachms more of sal-ammoniac mixed with the snow on which it stood. The snow and sal-ammoniac, in the open air, soon froze into a mass like ice: no sensible change, however, appeared in the quicksilver that evening; but at one in the morning it was found frozen solid. It had divided into two large and four smaller pieces: one of the former was hemispherical, the other cylindrical, each seemingly rather above a drachm in weight; the four small bits might amount to half a scruple. They were all with their flat side frozen hard to the glass, and no

where immediately touched by the mixture; their colour was a dull pale white with a bluish cast, like zinc, very different from the natural appearance of quicksilver. Next morning about seven o'clock I found that the larger hemisphere began to melt, perhaps because it was most exposed to the air, and not so near as the others to the sal-ammoniac mixture which lay beneath. In this state it resembled an amalgam, sinking to that side on which the glass was inclined; but without quitting the surface of the glass, to which it was yet firmly congealed: the five other pieces had not yet undergone any alteration, but remained frozen hard. Toward eight o'clock the cylindrical piece began to soften in the same manner, and the other four soon followed. About eight they fell from the surface of the glass, and divided into many fluid shining globules, which were soon lost in the interstices of the frozen mixture, and reunited in part at the bottom, being now exactly like common quicksilver." At the time this experiment was made, the thermometer stood at -10° in the open air.

The circumstances attending this experiment are still unaccountable; for, in the first place, the natural cold was scarcely sufficient, along with that of the artificial mixture, which produces 32° more, to have congealed the quicksilver; which yet appears to have been very effectually done by the length of time it continued solid. 2. It is not easy to account for the length of time required for congealing the quicksilver in this experiment, since other frigorific mixtures begin to act almost immediately; and, 3. There was not at last even the appearance of action, which consists in a solution of the snow, and not in its freezing into a mass. "The whole experiment (says Dr Blagden*) remains involved in such obscurity, that some persons have supposed the quicksilver itself was not frozen, but only covered over with ice; to which opinion, however, there are great objections. It is worthy of remark, that Gottingen, though situated in the same latitude as London, and enjoying a temperate climate in general, becomes subject at times to a great severity of cold. This of 11th of January 1774 is one instance: I find elsewhere where the thermometer sunk to -12° , -16° , or -19° ; and at Cattlenburg, a small town about two German miles distant, to -30° . By watching such extraordinary occasions, experiments on the freezing of quicksilver might easily be performed in many places, where the possibility of them is at present little suspected. The cold observed at Glasgow in 1780 would have been fully sufficient for that purpose."

In consequence of the publication of Mr Braun's Experiments, the Royal Society desired their late secretary Dr Maty to make the necessary application to the Hudson's Bay company, in order to repeat the experiment in that country.* Mr Hutchins, who was then at London, and going out with a commission as governor of Albany Fort, offered to undertake the experiments, and executed them very completely, freezing quicksilver twice in the months of January and February 1775. The account of his success was read before the Royal Society at the commencement of the severest winter that had been known for many years in Europe; and at this time the experiment was repeated by two gentlemen of different countries. One was Dr Lambert Bicker, secretary to the Batavian society at Rotterdam; who on the 28th of January 1776, at

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Remarks
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periment.

* *Phil.*
Transf.
vol. iii.

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eight in the morning, made an experiment to try how low he could bring the thermometer by artificial cold, the temperature of the atmosphere being then $+2^{\circ}$. He could not, however, bring it lower than -94° , at which point it stood immovable; and on breaking the thermometer, part of the quicksilver was found to have lost its fluidity, and was thickened to the consistence of an amalgam. It fell out of the tube in little bits, which bore to be flattened by pressure, without running into globules like the inner fluid part. The experiment was repeated next day, when the thermometer stood at $+8^{\circ}$, but the mercury would not then descend below -80° ; and as the thermometer was not broken, it could not be known whether the mercury had congealed or not. All that could be inferred from these experiments therefore was, that the congealing point of mercury was not below -94° of Fahrenheit's thermometer. The other who attempted the congelation of this fluid was the late Dr Anthony Fothergill; but it could not be determined whether he succeeded or not. An account of his experiment is inserted in the Philosophical Transactions, Vol. lxvi.

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No other attempts were made to congeal quicksilver until the year 1781, when Mr Hutchins resumed the subject with great success, inasmuch that from his experiments the freezing point of mercury is now almost as well settled as that of water. Preceding philosophers, indeed, had not been altogether inattentive to this subject. Professor Braun himself had taken great pains to investigate it; but for want of paying the requisite attention to the difference betwixt the contraction of the fluid mercury by cold and that of the congealing metal by freezing, he could determine nothing certain concerning it. Others declared it as their opinion, that nothing certain could be determined by merely freezing mercury in a thermometer filled with that fluid. Mr Cavendish and Dr Black first suggested the proper method of obviating the difficulties on this subject. Dr Black, in a letter to Mr Hutchins, dated October 5. 1779, gave the following directions for making the experiment with accuracy: "Provide a few wide and short tubes of thin glass, sealed at one end and open at the other; the wideness of these tubes may be from half to three quarters of an inch, and the length of them about three inches. Put an inch or an inch and a half depth of mercury into one of these tubes, and plunging the bulb of the thermometer into the mercury, set the tube with the mercury and the thermometer in it into a freezing mixture, which should be made for this purpose in a common tumbler or water-glass: and, *N. B.* in making a freezing mixture with snow and spirit of nitre, the quantity of the acid should never be so great as to dissolve the whole of the snow, but only enough to reduce it to the consistence of papada. When the mercury in the wide tube is thus set in the freezing mixture, it must be stirred gently and frequently with the bulb of the thermometer; and if the cold be sufficiently strong, it will congeal by becoming thick and *broafly* like an amalgam. As soon as this is observed, the thermometer should be examined without lifting it out of the congealing mercury; and I have no doubt that in every experiment thus made, with the same mercury, the instrument will always

point to the same degree, provided it has been made and graduated with accuracy."

The apparatus recommended by Mr Cavendish, and which Mr Hutchins made use of, consisted of a small mercurial thermometer, the bulb of which reached about $2\frac{1}{2}$ inches below the scale, and was inclosed in a glass cylinder swelled at the bottom into a ball, which when used was filled with quicksilver, so that the bulb of the thermometer was entirely covered with it. If this cylinder be immersed in a freezing mixture till great part of the quicksilver in it is frozen, it is evident that the degree shown at that time by the inclosed thermometer is the precise point at which mercury freezes; for as in this case the ball of the thermometer must be surrounded for some time with quicksilver, part of which is actually frozen, it seems impossible that the thermometer should be sensibly above that point; and while any of the quicksilver in the cylinder remains fluid, it is impossible that it should sink sensibly below it. The diameter of the bulb of the thermometer was rather less than a quarter of an inch, that of the swelled part of the cylinder two-thirds; and as it was easy to keep the thermometer constantly in the middle of the cylinder, the thickness of quicksilver betwixt it and the glass could never be much less than the sixth part of an inch. The bulb of the thermometer was purposely made as small as it conveniently could, in order to leave a sufficient space between it and the cylinder, without making the swelled part larger than necessary, which would have caused more difficulty in freezing the mercury in it.

The first experiment with this apparatus was made on the 15th of December 1781; the thermometer had stood the evening before at -18° . A bottle of spiritus nitri fortis was put on the house-top, in order to cool it to the same temperature. The thermometers made use of had been hung up in the open air for three weeks, to compare their scales. On the morning of the experiment they were about 23° below 0.—In making it, the thermometer of the apparatus was suspended in the bulb of the cylinder by means of some red worsted wound about the upper part of its stem, to a sufficient thickness, to fill the upper part of its orifice; and a space of near half an inch was left empty between the quicksilver and worsted.

The apparatus was placed in the open air, on the top of the fort, with only a few deer skins sewed together for a shelter; the snow lay 18 inches deep on the works, and the apparatus was stuck into the snow, in order to bring it the sooner to the temperature of the air. The instruments were afterwards placed in three fresh freezing mixtures, in hopes of being able by their means to produce a greater degree of cold, but without effect; nor was any greater cold produced by adding more spirit of nitre. The mercury, however, was very completely frozen, that in the thermometer descending to 448° . On plunging the mercury into the freezing mixture, it descended in less than one minute to 40° below 0.

The second experiment was made the day following; and the same quantity of quicksilver employed that had been used in the former. As too small a quantity of the freezing mixture, however, had been originally made, it was necessary to add more during the

Congelation.

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Accounts
of the ex-
periments.

Congela-
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the operation of congelation; by which means the spirit of nitre, in pouring it upon the snow, sometimes touched the bulb of the thermometer, and instantly raised it much higher; nor did the mercury ever descend below 206° , which was not half as far as it had done the day before, though the temperature of the atmosphere had been this day at -34° before the commencement of the operation. That in the apparatus, however, sunk to -95° . The apparatus was taken out of the mixture for half a minute, in order to examine whether the mercury was perfectly congealed or not, and during that time it showed no sign of liquefaction.

The third experiment was made the same day, and with the freezing mixture used in the last. By it the point of congelation was determined to be not below 40° .

The fourth experiment was made January 7th 1782; and in it he observed, that the mercury in the apparatus thermometer, after standing at 42 and $41\frac{1}{2}$ for a considerable time, fell to 77, not gradually, but at once as a weight falls.

In the fifth experiment the weather was excessively severe, so that it ought to have frozen the metal in the open air; but this did not then happen.

At the time of making the sixth experiment, the quicksilver in the open air stood at 44 below 0; and Mr Hutchins resolved to make use of this opportunity to observe how far it was possible to make it descend by means of cold, observing the degrees at the same time with a spirit thermometer made by Nairne and Blount, with which he had been furnished by the royal society in 1774. In this, however, he did not succeed; for the mercury never fell below 438, nor the standard 48. It stood at $27\frac{1}{2}$ at the beginning of the experiment. The reason of this was supposed to be, that the atmosphere was too cold for making this kind of experiments, by reason of its freezing the thread of quicksilver in the stem of the thermometer, so that it became incapable of contraction along with that in the bulb. In other experiments, though the metal in the bulb became solid, yet that in the stem always remained fluid; and thus was enabled to subside to a great degree by the diminution of bulk in the solid mercury. That this was really the case, appeared from the quicksilver falling at once from -86 to -434 , when the cold of the freezing mixture diminished, and the temperature of the air becoming about the same time somewhat milder, melted the congealed part in the stem, which thus had liberty to descend to that point.

In this experiment, also, the mixtures were made in double quantity to those of the former; these being only in common tumblers, but the mixtures for this experiment in pint-basons. It was observed that they liquefied faster than in other experiments. He had usually made them of the consistence of pap; but though he added snow at different times, it had very little effect in augmenting the cold, but rather decreased it. The congealed pieces of metal fell to the bottom, as might naturally have been expected from its great contraction in becoming solid.

From this experiment Mr Hutchins concluded, that the nearer the temperature of the atmosphere approached to the congealing point of mercury (so that

a great degree of cold might be communicated to the bulb of a thermometer, and yet the quicksilver in the tube remain fluid), he might make the experiment of ascertaining the greatest contraction of mercury to more advantage. With this view, he made another experiment, when the temperature of some of his thermometers stood as low as -37° ; and after an hour's attendance he perceived the mercury had fallen to 1367 ; but the thermometer unluckily was broken, and its bulb thrown away with the mixture. Professor Braun had likewise observed, that his thermometers were always broken when the mercury descended below 600.

The eighth experiment was made with a view to try whether quicksilver would congeal when in contact with the freezing mixture. For this purpose, he did not use the apparatus provided for other experiments, but filled a gallipot made of flint stone (as being thinner than the common sort), containing about an ounce, half full of quicksilver, into which he inserted a mercurial thermometer, employing another as an index. Thus he hoped to determine exactly when the quicksilver was congealed, as he had free access to it at all times, which was not the case when it was inclosed in the cylindrical glass, the worsted wound round the tube of the thermometer to exclude the air being equally effectual in excluding any instrument from being introduced to touch the quicksilver. He then made a kind of skewer, with a flat blunt point, of dried cedar wood, on account of its lightness, which he found would remain in the gelatinous freezing mixture at any depth he chose; but, when inserted into the quicksilver, the great difference betwixt the specific gravity of it and that ponderous fluid, made it always rebound upward; and by the degree of resistance, he could always know whether it proceeded from fluid or solid metal. At this time, however, the experiment did not succeed; but, at another trial, having employed about $\frac{1}{4}$ ths of a pound of metal, and let it remain a considerable time immersed in the same mixture which had just now been supposed to fail, he found that part of it was congealed; and, on pouring off the fluid part, no less than two-thirds remained fixed at the bottom.

The last experiment which has been published concerning the congelation of quicksilver by means of snow is that of Mr Cavendish, and of which he gives an account in the Phil. Transact. Vol. lxxiii. p. 325. Here, speaking of the cold of freezing mixtures, he says, "There is the utmost reason to think that Mr Hutchins would have obtained a greater degree of cold by using a weaker nitrous acid than he did. I found (says he) by adding snow gradually to some of this acid, that the addition of a small quantity produced heat instead of cold; and it was not until so much was added as to increase the heat from 28 to 51° , that the addition of more snow began to produce cold; the quantity of snow required for this purpose being pretty exactly one quarter of the weight of the spirit of nitre, and the heat of the snow, and air of the room, as well as of the acid, being 28° . The reason of this is, that a great deal of heat is produced by mixing water with spirit of nitre; and the stronger the spirit is, the greater is the heat produced. Now it appears from this experiment, that before the acid was diluted,

Congela-
tion.72
The thermometer broken by extreme cold.13
Mr Cavendish's experiment14
Heat sometimes produced by adding snow to spirit of nitre.

Congela-
tion.

luted, the heat produced by its union with the water formed from the melting snow, was greater than the cold produced by the same; and it was not until it was diluted by the addition of one quarter of its weight of that substance, that the cold, generated by the latter cause, began to exceed the heat generated by the former. From what has been said, it is evident, that a freezing mixture made with undiluted acid will not begin to generate cold until so much snow is dissolved as to increase its heat from 28 to 51°; so that no greater cold will be produced than would be obtained by mixing the diluted acid heated to 51° with snow of the heat of 28°. This method of adding snow gradually is much the best way I know of finding what strength it ought to be of, in order to produce the greatest effect possible. By means of this acid diluted in the above mentioned proportion, I froze quicksilver in the thermometer called G (A) by Mr Hutchins, on the 26th of February 1782. I did not indeed break the thermometer to examine the state of the quicksilver therein; for, as it sunk to -110, it certainly must have been in part frozen; but immediately took it out, and put the spirit thermometer in its room, in order to find the cold of the mixture. It sunk only to -30°; but by making allowance of the spirit in the tube being not so cold as that in the ball, it appears, that if it had not been for this cause, it would have sunk to -35° (B); which is 6° below the point of freezing, and is within one degree of as great a cold as that produced by Mr Hutchins.

"In this experiment the thermometer G sunk very rapidly; and, as far as I could perceive, without stopping at any intermediate point till it came to the above mentioned degree of -110°, where it stuck. The materials used in making the mixture were previously cooled, by means of salt and snow, to near nothing; the temperature of the air was between 20° and 25°; the quantity of acid used was 4½ oz; and the glass in which the mixture was made, was surrounded with wool, and placed in a wooden box, to prevent its losing its cold so fast as it would otherwise have done. Some weeks before this I made a freezing mixture with some spirit of nitre much stronger than that used in the foregoing experiment, though not quite so strong as the undiluted acid, in which the cold was less intense by 4½°. It is true the temper of the air was much less cold, namely 35°, but the spirit of nitre was at least as cold, and the snow not much less so.

15
Of the cold
produced
by oil of vi-
triol and
snow.

"The cold produced by mixing oil of vitriol, properly diluted with snow, is not so great as that produced by spirit of nitre, though it does not differ from it by so much as 8°; for a freezing mixture, prepared with diluted oil of vitriol, whose specific gravity, at 60° of heat, was 1,5642, sunk in the thermometer G to -37°, the experiment being tried at the same time, and with the same precautions, as the foregoing. It was previously found, by adding snow gradually to some of this acid, as was done by the nitrous acid, that it was a little, but not much stronger, than it ought to be, in order to produce the greatest effect."

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The experiment made by Mr Walker, in which he congealed quicksilver by means of spirit of nitre and Glauber's salt, without any snow, concludes the history of the artificial congelation of mercury. See the article COLD. It now remains that we say something of the congelation of it by the natural cold of the atmosphere.

Congela-
tion.

Dr Blagden, from whose paper in the Philosophical Transactions, vol. lxxiii. this account is taken, observes, that it was not till near the year 1730 that thermometers were made with any degree of accuracy; and in four or five years after this, the first observations were made which prove the freezing of quicksilver. On the accession of the Empress Anne Ivanouna to the throne of Russia, three professors of the Imperial academy were chosen to explore and describe the different parts of her Asiatic dominions, and to inquire into the communication betwixt Asia and America. These were Dr John George Gmelin, in the department of natural history and chemistry; M. Gerard Frederic Muller, as general historiographer; and M. Louis de l'Isle de la Croycere, for the department of astronomy; draughtsmen and other proper assistants being appointed to attend them. They departed from Petersburg in 1733; and such as survived did not return till ten years after. The thermometrical observations were communicated by Professor Gmelin, who first published them in his Flora Sibirica, and afterwards more fully in the Journal of his Travels. An abstract of them was likewise inserted in the Petersburg Commentaries for the years 1756 and 1765, taken, after the professor's death, from his original dispatches in possession of the imperial academy.

16
Congela-
tion of
quicksilver
by natural
cold.

In the winter of 1734 and 1735, Mr Gmelin being at Yeneseisk in 58½° N. Lat. and 92° E. Long. from Greenwich, first observed such a descent of the mercury, as we know must have been attended with congelation. "Here (says he) we first experienced the truth of what various travellers have related with respect to the extreme cold of Siberia; for, about the middle of December, such severe weather set in, as we were sure had never been known in our time at Petersburg. The air seemed as if it were frozen, with the appearance of a fog, which did not suffer the smoke to ascend as it issued from the chimnies. Birds fell down out of the air as dead, and froze immediately, unless they were brought into a warm room. Whenever the door was opened, a fog suddenly formed round it. During the day, short as it was, parhelia and haloes round the sun were frequently seen; and in the night mock moons, and haloes about the moon. Finally, our thermometer, not subject to the same deception as the senses, left us no doubt of the excessive cold; for the quicksilver in it was reduced, on the 5th of January O. S. to -120° of Fahrenheit's scale, lower than it had ever hitherto been observed in nature."

17
Excessive
cold of Si-
beria.

The next instance of congelation happened at Yakutsk, in N. Lat. 62. and E. Long. 130. The weather here was unusually mild for the climate, yet the

R r

ther-

(A) This was a small mercurial thermometer, made by Nairne and Blount, on an ivory scale, divided at every five degrees, and reaching from 215° above to 250° below the cypher.

(B) This is to be understood of a spirit thermometer, whose -29° = 40° of Fahrenheit's mercurial.

Congela-
tion

thermometer fell to 72 ; and one person informed the professor by a note, that the mercury in his barometer was frozen. He hastened immediately to his house to behold such a surprising phenomenon; but though he was witness to the fact, the prejudice he entertained against the possibility of the congelation, would not allow him to believe it. "Not feeling, (says he), by the way, the same effects of cold as I had experienced at other times in less distances, I began, before my arrival, to entertain suspicions about the congelation of his quicksilver. In fact, I saw that it did not continue in one column, but was divided in different places as into little cylinders, which appeared frozen; and, in some of these divisions between the quicksilver, I perceived like the appearance of frozen moisture. It immediately occurred to me, that the mercury might have been cleaned with vinegar and salt, and not sufficiently dried. The person acknowledged it had been purified in that manner. This same quicksilver, taken out of the barometer, and well dried, would not freeze again, though exposed to a much greater degree of cold, as shown by the thermometer."

Another set of observations, in the course of which the mercury frequently congealed, were made by Professor Gmelin at Kirenga fort, in $57\frac{1}{2}$ N. Lat. 108 . E. Long.; his thermometer, at different times, standing at -108° , -86° , -100° , -113° , and many other intermediate degrees. This happened in the winter of 1737 and 1738. On the 27th of November, after the thermometer had been standing for two days at -46° , he found it sunk at noon to 108° . Suspecting some mistake, after he had noted down the observation, he instantly ran back, and found it at 102° ; but ascending with such rapidity, that in the space of half an hour it had risen to -19° . This phenomenon, which appeared so surprising, undoubtedly depended on the expansion of the mercury frozen in the bulb of the thermometer, and which now melting, forced upwards the small thread in the stem.

A similar appearance was observed at the same fort a few days after; and on the 29th of December, O. S. he found the mercury, which had been standing at -4° in the morning, sunk to -100° at four in the afternoon. At this time, he says, he "saw some air in the thermometer separating the quicksilver for the space of about six degrees." He had taken notice of a similar appearance the preceding evening, excepting that the air, as he supposed it to be, was not then collected into one place, but lay scattered in several.

These appearances undoubtedly proceeded from a congelation of the mercury, though the prejudice entertained against the possibility of this phenomenon would not allow the professor even to inquire into it at all. Several other observations were made; some of which were lost, and the rest contain no farther information.

The second instance where a natural congelation of mercury has certainly been observed, is recorded in the transactions of the Royal Academy of Sciences at Stockholm. The weather, in January 1760, was remarkably cold in Lapland; so that, on the 5th of that month, the thermometers fell to -76° , -128° , or lower; on the 23d and following days they fell to -58° , -79° , -92° , and below -238° entirely into the ball. This was observed at Tornea, Sombio, Ja-

kasiers, and Utsioki, four places in Lapland, situated between the 65th and 78th degrees of N. Lat. and the 21st and 28th of E. Long. The person who observed them was M. Andrew Hellant, who makes the following remarks, of themselves sufficient to show that the quicksilver was frozen. "During the cold weather at Sombio (says he), as it was clear sun-shine, though scarcely the whole body of the sun appeared above the low woods that covered our horizon, I took a thermometer which was hanging before in the shade, and exposed it to the rising sun about eleven in the forenoon, to see whether, when that luminary was so low, it would have any effect upon the instrument. But to my great surprise, upon looking at it about noon, I found that the mercury had entirely subsided into the ball, though it was standing as high as -61° at 11 o'clock, and the scale reached down to 238° below 0." On bringing the instrument near a fire, it presently rose to its usual height; and the reason of its subsiding before was its being somewhat warmed by the rays of the sun; which, feeble as they were, had yet sufficient power to melt the small thread of congealed mercury in the stem of the thermometer, and allow it to subside along with the rest. Mr Hellant, however, so little understood the reason of this phenomenon, that he frequently attempted to repeat it by bringing the thermometer near a fire, when the cold was only a few degrees below the freezing point of water, but could never succeed until it fell to -58° , or lower, that is, until the cold was sufficiently intense to congeal the metal. The only seeming difficulty in his whole account, is, that when the mercury had subsided entirely into the ball of the thermometer, a vacuum or empty spot appeared, which run round the cavity like an air bubble, on turning the instrument; but this proceeded from a partial liquefaction of the mercury, which must necessarily melt first on the outside, and thus exhibit the appearance just mentioned.

The most remarkable congelation of mercury, which has ever yet been observed, was that related by Dr Peter Simon Pallas, who had been sent by the Empress of Russia, with some other gentlemen, on an expedition similar to that of Dr Gmelin. He did not, however, spend the winters in which he was in Siberia in the coldest parts of that country; that is about the middle of the northern part. Twice indeed he resided at Krasnoyarsk, in N. Lat. $56\frac{1}{2}^{\circ}$, E. Long. 93° ; where, in the year 1772, he had an opportunity of observing the phenomenon we speak of. "The winter (says he) set in early this year, and was felt with uncommon severity in December. On the 6th and 7th of that month happened the greatest cold I have ever experienced in Siberia; the air was calm at the time, and seemingly thickened; so that, though the sky was in other respects clear, the sun appeared as through a fog. I had only one small thermometer left, in which the scale went no lower than -7° ; and on the 6th in the morning, I remarked that the quicksilver in it sunk into the ball, except some small columns which stuck fast in the tube.—When the ball of the thermometer, as it hung in the open air, was warmed by being touched with the finger, the quicksilver rose; and it could plainly be seen, that the solid columns stuck and resisted a good while, and were at length pushed upward with a sort of violence. In the mean

Congela-
tion.18
Remark-
able ex-
periments of
Dr Pala-

time

time I placed upon the gallery, on the north side of my house, about a quarter of a pound of clean and dry quicksilver in an open bowl. Within an hour I found the edges and surface of it frozen solid, and some minutes afterwards the whole was condensed by the natural cold into a soft mass very much like tin. While the inner part was still fluid, the frozen surface exhibited a great variety of branched wrinkles; but in general it remained pretty smooth in freezing, as did also a larger quantity which I afterwards exposed to the cold. The congealed mercury was more flexible than lead; but on being bent short, it was found more brittle than tin; and when hammered out thin, it seemed somewhat granulated. If the hammer had not been perfectly cooled, the quicksilver melted away under it in drops; and the same thing happened when the metal was touched with the finger, by which also the finger was immediately benumbed. In our warm room it thawed on its surface gradually, by drops, like wax on the fire, and did not melt all at once. When the frozen mass was broken to pieces in the cold, the fragments adhered to each other and to the bowl on which they lay. Although the frost seemed to abate a little towards night, yet the congealed quicksilver remained unaltered, and the experiment with the thermometer could still be repeated. On the 7th of December, I had an opportunity of making the same observations all day; but some hours after sunset, a northwest wind sprung up, which raised the thermometer to -46° , when the mass of quicksilver began to melt.

¹⁹ In the beginning of the year 1780 M. Von Elterlein, of Vytegra, a town of Russia, in Lat. 61° . E. Long. 36° . froze quicksilver by natural cold; of which he gives the following account. "On the 4th of January 1780, the cold having increased to -34° that evening at Vytegra, I exposed to the open air three ounces of very pure quicksilver in a china tea-cup, covered with paper, pierced full of holes. Next day, at eight in the morning, I found it solid, and looking like a piece of cast lead, with a considerable depression in the middle. On attempting to loosen it in the cup, my knife raised shavings from it as if it had been lead, which remained sticking up; and at length the metal separated from the bottom of the cup in one mass. I then took it in my hand to try if it would bend: it was stiff like glue, and broke into two pieces; but my fingers immediately lost all feeling, and could scarcely be restored in an hour and an half by rubbing with snow. At eight o'clock a thermometer, made by Mr Lexmann of the Academy, stood at -57° ; by half after nine it was risen to -40° ; and then the two pieces of mercury which lay in the cup had lost so much of their hardness, that they could no longer be broken, or cut into shavings, but resembled a thick amalgam, which, though it became fluid when pressed by the fingers, immediately afterwards resumed the consistence of paper. With the thermometer at -39° , the quicksilver became fluid. The cold was never less on the 5th than -28° , and by nine in the evening it had increased again to -33° ."

An instance of the natural congelation of quicksilver also occurred in Jemtland, one of the provinces of Sweden, on the 11th of January 1782; and lastly, on the 26th of the same month, Mr Hutchins observed the same effect of the cold at Hudson's bay. "The

subject of this curious phenomenon (says he), was quicksilver put into a common two-ounce vial, and corked. The vial was about a third part full, and had constantly been standing by the thermometer for a month past. At eight o'clock this morning I observed it was frozen rather more than a quarter of an inch thick round the sides and bottom of the vial, the middle part continuing fluid. As this was a certain method of finding the point of congelation, I introduced a mercurial and a spirit thermometer into the fluid part, after breaking off the top of the vial, and they rose directly and became stationary; the former at 40° or $40^{\circ}\frac{1}{2}$, the latter at $29\frac{1}{2}$, both below the cypher. Having taken these out, I put in two others, G a mercurial one formerly described, and a spirit thermometer; the former of which became stationary at 40° and the latter at 30° . I then decanted the fluid quicksilver, to examine the internal surface of the frozen metal, which proved very uneven, with many radii going across; some of which resembled pin-heads. Urgent business called me away an hour. On my return I found a small portion only had liquefied in my absence. I then broke the vial entirely, and with a hammer repeatedly struck the quicksilver. It beat out flat, yielded a deadish sound, and became fluid in less than a minute afterwards.—It may be worth remarking, that the quicksilver in one of the thermometers, which had sunk to very near 500, and was then at 444, very readily run up and down the tube by elevating either end of the instrument."

These are all the well authenticated accounts of the congelation of mercury by the natural cold of the atmosphere. Some others have been published; but being either less important, or not so well authenticated, we forbear to mention them. A very considerable confirmation is obtained from the above history, of the theory of congelation delivered by Dr Black, and which is fully explained under the article CHEMISTRY. On Mr Hutchins's experiments, and on congelation in general, Mr Cavendish makes many valuable remarks; the substance of which is as follows.

"If a vessel of water, with a thermometer in it, be exposed to the cold, the thermometer will sink several degrees below the freezing point, especially if the water be covered up so as to be defended from the wind, and care taken not to agitate it; and then on dropping in a bit of ice, or on mere agitation, spiculae of ice shoot suddenly through the water, and the inclosed thermometer rises quickly to the freezing point, where it remains stationary." In a note he says, that though in conformity to the common opinion he has allowed that "mere agitation may set the water a freezing, yet some experiments lately made by Dr Blagden seem to show, that it has not much, if any, effect of that kind, otherwise than by bringing the water in contact with some substance colder than itself. Though in general also the ice shoots rapidly, and the inclosed thermometer rises very quick; yet he once observed it to rise very slowly, taking up not less than half a minute, before it ascended to the freezing point; but in this experiment the water was cooled not more than one or two degrees below freezing; and it should seem, that the more the water is cooled below the freezing point, the more rapidly the ice shoots and the inclosed thermometer rises."

Congelation.

²⁰ Experiment of Mr Hutchins.²¹ Mr Cavendish's remarks on congelation.

Congela-
tion.

Mr Cavendish then observes, "that from the foregoing experiments we learn that water is capable of being cooled considerably below the freezing point, without any congelation taking place; and that, as soon as by any means a small part of it is made to freeze, the ice spreads rapidly through the whole of the water. The cause of this rise of the thermometer is, that all, or almost all bodies, by changing from a fluid to a solid state, or from the state of an elastic to that of an unelastic fluid, generate heat; and that cold is produced by the contrary process. Thus all the circumstances of the phenomenon may be perfectly well explained; for, as soon as any part of the water freezes, heat will be generated thereby in consequence of the above-mentioned law, so that the new formed ice and remaining water will be warmed, and must continue to receive heat by the freezing of fresh portions of water, till it is heated exactly to the freezing point, unless the water could become quite solid before a sufficient quantity of heat was generated to raise it to that point, which is not the case: and it is evident, that it cannot be heated above the freezing point; for as soon as it comes thereto, no more water will freeze, and consequently no more heat will be generated.—The reason why the ice spreads all over the water, instead of forming a solid lump in one part, is, that, as soon as any small portion of ice is formed, the water in contact with it will be so much warmed as to be prevented from freezing, but the water at a little distance from it will still be below the freezing point, and will consequently begin to freeze.

"Were it not for this generation of heat, the whole of any quantity of water would freeze as soon as the process of congelation began; and in like manner the cold is generated by the melting of ice; which is the cause of the long time required to thaw ice and snow. It was formerly found that, by adding snow to warm water, and stirring it about until all was melted, the water was as much cooled as it would have been by the addition of the same quantity of water rather more than 150° degrees colder than the snow; or, in other words, somewhat more than 150° of cold are generated by the thawing of the snow; and there is great reason to believe that just as much heat is produced by the freezing of water. The cold generated in the experiment just mentioned was the same whether ice or snow was used.

"A thermometer kept in melted tin or lead till they become solid, remains perfectly stationary from the time the metal begins to harden round the sides of the pot till it is entirely solid; but it cannot be perceived at all to sink below that point, and rise up to it when the metal begins to harden. It is not unlikely, however, that the great difference of heat between the air and melted metal might prevent this effect from taking place; so that though it was not perceived in these experiments, it is not unlikely that those metals, as well as water and quicksilver, may bear being cool-

ed a little below the freezing or hardening point (for the hardening of melted metals, and freezing of water, seems exactly the same process), without beginning to lose their fluidity."

"The experiments of Mr Hutchins prove, that quicksilver contracts or diminishes in bulk by freezing; and that the very low degrees to which the thermometers have been made to sink, is owing to this contraction, and not to the cold having been in any degree equal to that shown by the thermometer. In the fourth experiment, one of the thermometers sunk to 450°, though it appeared, by the spirit thermometers that the cold of the mixture was not more than five or six degrees below the point of freezing quicksilver. In the first experiment also, it sunk to 448, at a time when the cold of the mixture was only 2½° below that point; so that it appears, that the contraction of quicksilver by freezing, must be at least equal to its expansion by 404 degrees of heat. (A) This, however, is not the whole contraction that it suffers; for it appears by an extract from a meteorological journal kept by Mr Hutchins at Albany fort, that his thermometer once sunk to 490° below 0; though it was known by a spirit thermometer, that the cold scarcely exceeded the point of freezing quicksilver. There are two experiments also of Professor Braun, in which the thermometer sunk to 544 and 556° below nothing; which is the greatest descent he ever observed without the ball being cracked. It is not indeed known how cold his mixtures were; but from Mr Hutchins's experiments, there is great reason to think they could not be many degrees below 40°. If so, the contraction which quicksilver suffers in freezing, is not much less than its expansion by 500° or 510° of heat, that is, almost $\frac{1}{8}$ of its whole bulk; and in all probability is never much more than that, though it is probable that this contraction is not always determinate: for a considerable variation may frequently be observed in the specific gravity of the same piece of metal cast different times over; and almost all cast metals become heavier by hammering. Mr Cavendish observed, that on casting the same piece of tin three times over, its density varied from 7.252 to 7.294, though there was great reason to think that no hollows were left in it, and that only a small part of this difference could proceed from the error of the experiment. This variation of density is as much as is produced in quicksilver by an alteration of 66° of heat; and it is not unlikely, that the descent of a thermometer, on account of the contraction of the quicksilver in its ball by freezing, may vary as much in different trials, though the whole mass of quicksilver is frozen without any vacuities.

"The cold produced by mixing spirit of nitre with snow is entirely owing to the melting of the snow. Now, in all probability, there is a certain degree of cold in which the spirit of nitre, so far from dissolving snow, will yield part of its own water, and suf-

(A) "The numbers here given are those shown by the thermometer without any correction; but if a proper allowance is made for the error of that instrument, it will appear, that the true contraction was 25° less than here set down; and from the manner in which thermometers have been usually adjusted, it is likely that in the 5th experiment of Mr Hutchins, as well as in those of Professor Braun, the true contraction might equally fall short of that by observation."

22
On metals when beginning to turn solid.

23
Variation of the density of metals by frequent casting.

24
Of freezing mixtures.

Congela-
tion.

suffer that to freeze, as is the case with solutions; of common salt; so that if the cold of the materials before mixing is equal to this, no additional cold can be produced. If the cold of the materials is less, some increase of cold will be produced; but the total cold will be less than in the former case, since the additional cold cannot be generated without some of the snow being dissolved, and thereby weakening the acid, and making it less able to dissolve more snow; but yet the less the cold of the materials is, the greater will be the additional cold produced. This is conformable to Mr Hutchins's experiments; for, in the fifth experiment, in which the cold of the materials was -40° , the additional cold produced was only 5° . In the first experiment, in which the cold of the materials was only -23° , an addition of at least 19° of cold was obtained; and by mixing some of the same spirit of nitre with snow in this climate, when the heat of the materials was $+26^{\circ}$, Mr Cavendish was able to sink the thermometer to -29° , so that an addition of 55 degrees of cold was produced.

"It is remarkable, that in none of Mr Hutchins's experiments the cold of the mixture was more than 6° of the spirit thermometer below the freezing point of quicksilver, which is so little, that it might incline one to think that the spirit of nitre used by him was weak. This, however, was not the case; as its specific gravity at 58° of heat was 1,4923. It was able

to dissolve $\frac{1}{1.42}$ its weight of marble, and contained very little mixture of the vitriolic or marine acid: as well as could be judged from an examination of it, it was as little phlogisticated as acid of that strength usually is."

25
Congela-
tion of oil
of vitriol.

Acids, especially those of the mineral kind, powerfully resist congelation. There is, however, a peculiarity with regard to that of vitriol. Mr Chaptal, a foreign chemist, observed that it condensed by the cold of the atmosphere, and the crystals began to melt only at $+70^{\circ}$ of his thermometer; which, if Reaumur's, corresponds to about 47° of Fahrenheit. The crystals were unctuous from the melting acid, and they felt warmer than the neighbouring bodies: the form was that of a prism of six sides, flattened and terminated by a pyramid of six sides; but the pyramid appeared on one end only; on the other, the crystal was lost in the general mass. The pyramid resulted from an assemblage of six isosceles triangles: the oil when the crystal was melted was of a yellowish black; on redistilling it in a proper apparatus, no peculiar gas came over. M. Chaptal repeated his experiments with the highly concentrated acid, but found that it did not freeze; that the density of the acid which he thought froze most easily was to the oil, of the usual strength for sale, as from 63 and 65 to 66; and the necessary degree of cold about 19 of Fahrenheit. Oil of vitriol once melted will not crystallize again with the same degree of cold.

M. Moré, a considerable manufacturer of oil of vitriol at Hadimont near Vervier, in the duchy of Limbourg in Germany, attributes this congelation to the addition of nitrous air. The acid of vitriol is usually separated from sulphur by burning it in close vessels; and the air is supplied by adding to the sulphur a little nitre. He found, that by mixing the acid, ca-

pable of being congealed, with water, or employing it for other purposes, orange-coloured fumes, and the smell of the true nitrous acid, were very evident. When this gas was destroyed, no degree of cold would congeal the acid, whatever was its degree of concentration; and the congelation was generally observed immediately after the process by which the acid was obtained.

Congela-
tion.

Mr Macquer relates, in the second edition of his Chemical Dictionary, article *Vitriolic Acid*, that the Duke d'Ayen had observed the congelation of concentrated vitriolic acid, which had been exposed to a cold expressed by 13 or 14 degrees below 0 on Reaumur's thermometer; but that mixtures, consisting of one part of the above mentioned concentrated acid, with two or more parts of water, could not be frozen by the cold to which he exposed them, till he had diluted the acid so much that its density was to that of water as 104½ to 96; in which latter case of congelation it is probable that the water only was frozen, as is the case in dilute solutions of salts. Similar experiments were made by M. de Morveau, and with equal success. Having produced an intense cold by pouring spirit of nitre on pounded ice, he congealed a part of some vitriolic acid which had been previously concentrated; but he observed, that though a very intense cold had been made use of to congeal the acid at first, it nevertheless remained congealed in much smaller degrees of cold, and that it thawed very slowly. This coincides with the observations of M. Chaptal; though the latter observes, that there is some difference between strong oil of vitriol lowered with water, and that produced of a given strength by rectification. The latter always has some colour; and it will not dissolve indigo in such a manner as to carry the colour into the stuff, though the stronger oil, diluted to the same degree, succeeds very well. Some observations were also made by Mr M'Nab at Hudson's Bay, an account of which is given in the Phil. Trans. for 1786 by Mr Cavendish, at whose desire they had been made. From them it appears, that a vitriolic acid, whose specific gravity was to that of water as 1843 to 1000, froze when exposed to a cold of -15° of Fahrenheit's scale; that another more dilute vitriolic acid, consisting of 629 parts of the former concentrated acid, and 351 parts of water, congealed in a temperature of -36 ; and that, when farther diluted, it was capable of sustaining a much greater degree of cold without freezing at all. In these experiments, as well as in those of Mr Morveau, it appeared that the whole of the acid did not congeal, but that part of it retained its fluidity; and on examining the strength of that which remained fluid, Mr Cavendish found that there was very little difference between it and the other; whence he was led to suppose, that the reason of this congelation does not arise from any difference in strength, but on some less obvious quality, and such as constitutes the difference between common and icy oil of vitriol.

In all the experiments hitherto made, however, Mr Cavendish had found some uncertainty in determining the point of easiest freezing; neither could he determine whether the cold necessary for congelation does not increase without any limitation in proportion to the strength of the acid. A new set of experiments

Congela-
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Mr Keir's
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were therefore made by Mr Keir to determine this point. He had observed, after a severe frost at the end of the year 1784 and beginning of 1785, that some vitriolic acid, contained in a corked phial, had congealed, while other bottles containing the same, some stronger and some weaker, retained their fluidity. As the congelation was naturally imputed to the extremity of the cold, he was afterwards surpris'd to find, when the frost ceased, that the acid remained congealed for many days, when the temperature of the atmosphere was sometimes above 40° of Fahrenheit; and when the congealed acid was brought into a warm room on purpose to thaw it, a thermometer placed in contact with it during its thawing continued stationary at 45° . Hence he concluded, that the freezing and thawing point of this acid was nearly at 45° ; and accordingly, on exposing the liquor which had been thawed to the air at the temperature of 30° , the congelation again took place in a few hours. From the circumstance of other parcels of the same acid, but of different strengths, remaining fluid, though they had been exposed to a much greater degree of cold, he was led to believe that there must be some certain strength at which the acid is more disposed to congeal than at any other. The specific gravity of the acid which had frozen was to that of water nearly as 1800 to 1000, and that of the stronger acid which had not frozen was as 1846 to 1000, which is the common density of that usually fold in England; and there was not the least difference, excepting in point of strength, between the acid which had frozen and that which had not; Mr Keir having taken the acid some weeks before with his own hands from the bottle which contained the latter, and diluted it with water, till it became of the specific gravity of 1800.

To render the experiment complete, Mr Keir immersed several acids of different strengths in melting snow, instead of exposing them to the air; the temperature of which was variable, whereas that of melting snow was certain and invariable. Those which would not freeze in melting snow were afterwards immersed in a mixture of common salt, snow, and water; the temperature of which, though not so constant and determinate as that of melting snow, generally remained for several hours at 18° , and was sometimes several degrees lower. The intention of adding water to the snow and salt was to lessen the intensity of the cold of this mixture, and to render it more permanent than if the snow and salt alone were mixed. The acids which had frozen in melting snow were five in number; which being thawed and brought to the temperature of 60° , were found on examination to have the following specific gravities, viz. 1786, 1784, 1780, 1778, 1775. Those which had not congealed with the melting snow, but which did so with the mixture of snow, salt, and water, were found, when brought to the temperature of 60° , to be of the following specific gravities, viz. 1814, 1810, 1804, 1794, 1790, 1770, 1759, 1750. Those which remained, and would freeze neither in melting snow nor in the mixture of snow, salt, and water, were of the gravities 1846, 1839, 1815, 1745, 1720, 1700, 1610, 1551. From the first of these it appears, that the medium density of the acids which froze with the na-

ture cold was 1780; and from the second, that at the densities of 1790 and 1770 the acid had been incapable of freezing with that degree of cold. Hence it follows, that 1780 is nearly the degree of strength of easiest freezing, and that an increase or diminution of that density equal to $\frac{1}{7}$ th of the whole, renders the acid incapable of freezing with the cold of melting snow, though this cold is something above the freezing point of the most congealable acid. From the second it appears, that by applying a more intense cold, viz. that produced by a mixture of snow, salt, and water, the limits of the densities of acids capable of congelation were extended to about $\frac{3}{8}$ th above or below the point of easiest freezing; and there seems little reason to doubt, that, by greater augmentations of cold, these limits may be further extended; but in what ratio these augmentations and extensions proceed, cannot be determined without many observations made in different temperatures.

“ But (says Mr Keir) though it is probable that the most concentrated acids may be frozen, provided the cold be sufficiently intense, yet there seems reason to believe, that some of the congelations which have been observed in highly concentrated acids, have been effected in consequence of the density of these acids being reduced nearly to the point of easy freezing by their having absorbed moisture from the air: for the Duke d'Ayen and M. de Morveau exposed their acids to the air in cups or open vessels; and the latter even acquaints us, that on examining the specific gravity of the acid which had frozen, he found it to that of water as 129 to 74; which density being less than that of easiest freezing, proves that the acid he employed, and which he had previously concentrated, had been actually weakened during the experiment. I have several times exposed concentrated oil of vitriol in open vessels in frosty weather; and I have sometimes, but not always, observed a congelation to take place. Upon separating the congealed part, and on examining the specific gravity of the latter after it had thawed, I found that it had been reduced to the point of easiest freezing. When the congealed acid was kept longer exposed it gradually thawed, even when the cold of the air increased; the reason of which is not to be imputed to the heat produced by the moisture of the air mixing with the acid, but principally to the diminution below the point of easiest freezing, which was occasioned by the continued absorption of moisture from the air, and which rendered the acid incapable of continuing frozen without a great increase of cold.

“ It appears, then, that the concentration of M. de Morveau's acid, at the time of its congelation, from which circumstance Mr Cavendish infers generally that the vitriolic acid freezes more easily as it is more dense, is not a true premise; and that therefore the inference, though justly deduced, is invalid. On the contrary, there seems every reason to believe, that as the density of the acids increases beyond the point of easiest freezing, the facility of the congelation diminishes; at least to as great density as we have ever been able to obtain the vitriolic acid: for if it were possible to divest it entirely of water, it would probably assume a solid form in any temperature of the air.

Congela-
tion

Congelation.

Congelation.

"The crystallization of the vitriolic acid is more or less distinct, according to the slowness of the formation of the crystals and other favourable circumstances. Sometimes they are very large, distinctly shaped, and hard. Their shape is like those of the common mineral alkali and selenite spar, but with angles different in dimensions from either of these. They are solid, consisting of ten faces; of which the two largest are equal, parallel, and opposite to each other; and are oblique-angled parallelograms or rhomboids, whose angles are, as near as could be measured, of 105 and 75 degrees. Between these two rhomboidal faces are placed eight of the form of trapeziums; and thus each crystal may be supposed to be compounded of two equal and similar frustums of pyramids joined together by their rhomboidal bases. They always sunk in the fluid acid to the bottom of the vessel, which showed that their density was increased by congelation. It was attempted to determine their specific gravity by adding to this fluid some concentrated acid, which should make them float in the liquor, the examination of whose specific gravity should ascertain that of the floating crystals; but they were found to sink even in the most concentrated acid, and were consequently denser. Some of the congealable acid previously brought to the freezing temperature was then poured into a graduated narrow cylindrical glass, up to a certain mark, which indicated a space equal to that occupied by 200 grains of water. The glass was placed in a mixture of snow, salt, and water; and when the acid was frozen, a mark was made on the part of the glass to which it had sunk. Having thawed the acid and emptied the glass, it was filled with water to the mark to which it had sunk by freezing; and it was then found that 15 grains more of water were required to raise it to the mark expressing 200 grains; which shows, that the diminution of bulk sustained by the acid in freezing had been equal to $\frac{1}{13.3}$ of the whole. Computing from

this datum, we should estimate the specific gravity of the congealed acid to have been 1924; but as it evidently contained a great number of bubbles, its real specific gravity must have been considerably greater than the above calculation, and cannot easily be determined on account of these bubbles. By way of comparison, Mr Keir observed the alteration of bulk which water contained in the same cylindrical vessel would suffer by freezing; and found that its expansion was equal to about $\frac{1}{10}$ th of its bulk. The water had been previously boiled, but nevertheless contained a great number of air bubbles; so that in this respect there is a considerable difference between the congelations of water and the vitriolic acid; though perhaps it may arise principally from the bubbles of elastic fluid being in greater proportion in the one than the other.

"Greater cold is produced by mixing snow or pounded ice with the congealed than with the fluid vitriolic acid, though the quantity is not yet determined. The greatest cold produced by Mr M'Nab at Hudson's Bay, was effected by mixing snow with a vitriolic acid which had been previously congealed; and to this circumstance Mr Cavendish imputes the intensity of the cold, as the liquefaction both of the acid and the snow had concurred in producing the

same effect; while in mixing fluid acids with snow, the thawing of the snow is probably the only productive cause.

"To compare the times requisite for the liquefaction of ice and of congealed oil of vitriol, two equal and similar glasses were filled, one with the congealable vitriolic acid, the other with water; and after having immersed them in a freezing mixture till both were congealed and reduced to the temperature of 28°, the glasses were withdrawn, wiped dry, and placed in a room where the thermometer stood at 62°. The ice thawed in 40 minutes, and the acid in 95; at the end of which time the thermometer, which stood near the glasses, had risen to 64°. Hence it appears that the congealed acid requires more than twice the time for its liquefaction that ice does, though it cannot thence be fairly inferred, that the cold generated by the liquefaction of the ice and of congealed acid are in the above proportions of the times, from the following considerations, viz. that as, during the liquefaction of the ice, its temperature remains stationary at 32°, and during the liquefaction of the acid, its temperature remains about 44 or 45°, it appears, that the ice being considerably colder than the acid, will take the heat from the contiguous air much faster. By this experiment, however, we know that a considerable quantity of cold is generated by the liquefaction of the acid; and hence it appears probable, that in producing cold artificially, by mixing snow with acids in very cold temperatures, it would probably be useful to employ a vitriolic acid of the proper density for congelation, and to freeze it previously to its mixture with snow. It must not, however, be imagined, that the cold generated by the mixture of these two frozen substances is nearly equal to the sum of the colds generated by the separate liquefactions of the congealed acid and ice, when singly exposed to a thawing temperature; for the mixture resulting from the liquefaction, consisting of the vitriolic acid and the water of the snow, appears from the generation of heat which occurs from the mixture of these ingredients in a fluid state, to be subject to different laws than those which rule either of the ingredients separately.

"The vitriolic acid, like water and other fluids, is capable of retaining its fluidity when cooled considerably below its freezing point. A phial containing some congealable vitriolic acid being placed in a mixture of salt, snow, and water, a thermometer was soon afterwards immersed in it while the acid was yet fluid, on which it quickly sunk from 50 to 29°. On moving the thermometer in the fluid, to make it acquire the exact temperature, the mercury was observed suddenly to rise; and on looking at the acid, numberless small crystals were observed floating in it, which had been suddenly formed. The degree to which the mercury then rose was 46 $\frac{1}{2}$ °; and at another time, while the acid was freezing, it stood at 45°."

From these experiments our author infers, "1. That the vitriolic acid has a point of easiest freezing, and that this is when its specific gravity is to that of water as 1780 to 1000. 2. That the greater or less disposition to congelation does not depend on any other circumstance than the strength of the acid. 3. That the freezing and thawing degree of the most congealable acid is about 45° of Fahrenheit's scale. It is, however,

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however, to be observed, that this degree is inferred from the temperature indicated by the thermometers immersed in the freezing and thawing acids; but the congelation of the fluid acid could never be accomplished without exposing it to a greater degree of cold, either by exposing it to the air in frosty weather or to the cold of melting snow. 4. Like water, this acid possesses the property of retaining its fluidity when cooled several degrees below the freezing point; and of rising suddenly to it when its congelation is promoted by agitation, or by contact even with a warmer thermometer. 5. That, like water and other congelable fluids, the vitriolic acid generates cold by its liquefaction, and heat during its congelation, though the quantity of this heat and cold remains to be determined by future experiments. 6. That the acid, by congelation, when the circumstances for distinct crystallization are favourable, assumes a regular crystalline form, a considerable solidity and hardness, and a density much greater than it possessed in its fluid state."

Phil. Transf.
vol. lxxvii.
p. 267.

Besides this species of congelation, the vitriolic acid is subject to another, probably the same described by Basil Valentine and some of the older chemists. This is effected in the ordinary temperature of the air, even in summer; and, according to Mr Keir*, is peculiar to that species of oil of vitriol which is distilled from green vitriol, and which is possessed of a smoking quality in a high degree; "for not only the authors (says Mr Keir), by whom this congelation has been observed, have given this description of the acid employed, but also the late experiments of Mr Dollfus, seem to show that this smoking quality is essential to the phenomenon: for neither the acid obtained from vitriol, when deprived by rectification of its smoking quality, nor the English oil of vitriol, which is known to be obtained by burning sulphur, and which does not smoke, were found by his trials to be susceptible of this species of congelation. It may, however, be worth the attention of those chemists who have an opportunity of seeing this *icy oil of vitriol*, as it is called, to observe more accurately than has yet been done, the freezing temperature and the density of the congelable acids; and to examine whether the density of this smoking acid also is connected with the glacial property. It seems also further deserving of investigation, whether there be not some analogy between the congelation of the smoking oil of vitriol and the very curious crystallization which Dr Priestley observed in a concentrated vitriolic acid saturated with nitrous acid vapours; and whether this smoking quality does not proceed from some marine or other volatile acid, which may be contained in the martial vitriol whence the vitriolic acid is obtained."

Mr Keir also observes, that M. Cornatter has effected the crystallization of vitriolic acid, by distilling it with nitrous acid and charcoal; and we can add from our own experience, that a crystallization instantly takes place on allowing the fumes of the nitrous and vitriolic acids to mix together; and this, whether the former be procured from martial vitriol or sulphur, and whether it be in a phlogisticated state or not, concentration in both acids is here the only requisite.

CONGER, in zoology. See MURENA.

CONGERIES, a Latin word, sometimes used in
N^o 88.

our language for a collection or heap of several parts or bodies united into one mass or aggregate.

CONGESTION, in medicine, a mass or collection of humours, crowded together and hardened in any part of the body, and there forming a preternatural tumor.

Congestion is effected by little and little: in which it differs from *desfluxion*, which is more sudden.

CONGIARIUM, CONGIARY, among medalists, a gift or donative represented on a medal. The word comes from the Latin *congius*; because the first presents made to the people of Rome consisted in wine and oil, which were measured out to them in *congii*. The congiary was properly a present made by the emperors to the people of Rome. Those made to the soldiers were not called *congariaries* but *donatives*. The legend on medals representing *congariaries*, is, *Congiarium* or *Liberalitas*. Tiberius gave a congiary of three hundred pieces of money to each citizen: Caligula twice gave three hundred sesterces a head: Nero, whose congiaries are the first that we find represented on medals, gave four hundred.

CONGIUS, a liquid measure of the ancient Romans, containing the eighth part of the amphora, or the fourth of the urna, or six sextarii. The congius in English measure contains 2,070,676 solid inches; that is, seven pints, 4,942 solid inches.

CONGLOBATE GLAND. See ANATOMY.

CONGLOMERATE GLAND. *Ibid.*

CONGLOMERATE Flowers, are those growing on a branching foot-stalk, to which they are irregularly but closely connected. This mode of inflorescence, as Linnæus terms it, is opposed to that in which the flowers are irregularly and loosely supported on their foot-stalks, hence termed a *diffuse panicle* *. The term is exemplified in several of the grasses, particularly in some species of the *poa*, *fescue* grass, and *agrostis*.

CONGLUTINATION, the gluing or fastening any two bodies together by the intromission of a third, whose parts are unctuous and tenacious, in the nature of glue. See GLUE.

CONGO, a kingdom of Africa, bounded on the north by the river Zair, or Zarah, which divides it from Loanga; on the south by the river Danda, which separates it from Angola; on the east by the kingdoms of Fungono and Metamba, and the burnt mountains of the sun, those of chrysal or salt-petre and silver, or (according to Anthony Cavazzi, a late traveller into those parts) by the mountains of Coanza, Berbela, and the great mountain of Chilandia or Aquilonda; and on the west by that part of the Atlantic ocean called the Ethiopic sea, or the sea of Congo. According to these limits, Congo Proper extends about three degrees from north to south; lying between 6° and 9° S. Lat.; but widens in its breadth inland, by the course of the river Zair, which runs winding above two degrees more to the north. Its length from east to west is very uncertain, as no observations have been taken of the exact situation of those mountains which bound it.

The history of this kingdom affords but few interesting particulars. Before its discovery by the Portuguese, the history is altogether uncertain and fabulous, as the inhabitants were totally unacquainted with
History uncertain and fabulous.
letters

Congestion
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Congo.

* See Panicle.

Extent.

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History uncertain and fabulous.

¹ **Congo.** letters and learning. So little were they acquainted with chronology, that it is said they did not even distinguish between day and night; much less could they compute their time by moons or years; and therefore could remember past transactions only by saying they happened in such a king's reign.

³ **The country discovered by the Portuguese.** The country was discovered by the Portuguese in 1484. The discoverer was named Diego Cam, an expert and bold sailor. He was very well received by the natives, and sent some of his men with presents to the king; but they being detained by unexpected accidents beyond the promised time of their return, Cam was obliged to sail away without them, and took with him four young Congoese, as hostages for the safety of his countrymen. These he taught the Portuguese language, in which they made such progress that king John was highly pleased, and sent them back next year to Congo with rich presents; charging them to exhort their monarch, in his name, to become a convert to the Christian religion, and to permit it to be propagated through his dominions. A firm alliance was concluded between the two monarchs, which continues to this day, though not without some interruptions, to which the Portuguese themselves have given occasion more than the natives.

⁴ **Cavazzi's account of Congo.** Any particular account we have of this kingdom, rests almost entirely on the credit of Anthony Cavazzi, the traveller above mentioned. He was a capuchin-friar, a native of the duchy of Modena, and was sent missionary into those parts *de propaganda fide*, in the year 1654, and arrived at Congo the same year. During his stay there, his zeal to make converts made him travel through all these different kingdoms; and the credit he gained, as well as the great employments he was intrusted with, gave him an opportunity of informing himself of every thing relating to them with great exactness. The extent and situation, however, he could not possibly ascertain, for want of instruments; nor hath this defect been since supplied. According to him, the dominions of Congo extended a great deal further eastward and southward before the introduction of Christianity than afterwards; a great number of the states that were under the Congoese monarchs, either as subjects, or tributary, having withdrawn their allegiance out of dislike to them on that account. Not content with opposing the officers and troops that came annually to raise the tribute imposed by the king, they made such frequent and powerful incursions into his dominions, that they obliged him to draw his forces nearer the centre of Congo to prevent an invasion; by which means the kingdom, from an extent of 600 leagues, was reduced to less than one half.

⁶ **Account of the climate and seasons.** Congo Proper being situated within the torrid zone, is liable to excessive heats: as it lies on the southern side of the equinoctial, the seasons are of course opposite to ours. They reckon only two principal seasons, the summer and winter; the former begins in October, and continues till February or March; during which time the sun's rays dart with such force, that the atmosphere appears to an European to be in a flame. The excessive heat, however, is mitigated by the equal length of the days and nights, as well as by the winds, breezes, rains, and dews. The winter takes up the other part of the year; and is said by the natives to

be proportionally cold, though to an European it would appear hot. These two seasons they divide into six lesser ones, *viz.* Massanza, Neafu, Ecundi, Quitombo, Quibiso, and Quibangala.

Massanza begins with the month of October, which is the beginning of their spring. The rains begin to fall at that time, and continue during the next two, and sometimes three, months. When they do so, the low lands are commonly overflowed by the extraordinary floods, and all their corn carried off. A disaster of this kind is commonly followed by a famine; for the lazy inhabitants take no care to lay up any provisions, although such misfortunes happen very frequently. This first season they reckon commences at the time the plants begin to spring.

The second season, Neafu, begins about the end of January, when the produce of their lands has arrived at its full height, and wants but a few days of being ripened for harvest. This first crop is no sooner gathered in, than they sow their fields afresh, their land commonly yielding them two harvests.

The third and fourth seasons, called *Ecundi* and *Quitombo*, are frequently blended together towards the middle of March, when the more gentle rains begin to fall, and continue to do so till the month of May. These two seasons are distinguished by the greater or lesser quantity of rain that falls during that interval. During the rest of the time, the air is either very clear, hot, and dry; or the clouds being overcharged with electric matter, burst out into the most terrible thunders and lightnings, without yielding the least drop of rain, though they seem loaded with it.

The two last, *viz.* the *Quibiso* and *Quibangala*, make up their short winter, which consists not in frost or snow, but in dry, blasting winds, which strip the earth of all its verdure, till the next Massanza begins to restore them to their former bloom.

They now divide their year into twelve lunar months, and begin it in September. They have also weeks consisting of four days only, the last of which is their sabbath; and on it they religiously abstain from every kind of work. This practice, the compilers of the Universal History conjecture to have arisen from the extreme laziness for which this people, and indeed all the African nations, are so remarkable. To this shameful indolence also is to be ascribed the little produce they reap from their lands, while the Portuguese settled among them, who are at more pains in the cultivation of theirs, enjoy all manner of plenty. The natives, however, had rather run the risk of the most terrible famines, than be at the tenth part of the labour they see the Portuguese take. They seem to think it below them to use any other exercises than those of dancing, leaping, hunting, shooting, &c.; the rest of their time they spend in smoking, and downright idleness, committing the laborious part of their household affairs to their slaves, or, in want of them, to their wives. Nothing is more common than to see these poor creatures toiling in the fields and woods with a child tied to their backs, and fainting under their excessive labour and heavy burdens, or (which is still worse) hunger and thirst. What is yet more surprisingly shameful is, that though they have plenty of domestic animals which they might easily make use of for cultivating their grounds, and for other labori-

Congo. ous services, and though they see the Portuguese do it every day to great advantage; yet they will rather see their tender females sink under their toil and labour, than be at the trouble of breeding up any of these useful creatures to their assistance.

8 Vegetables produced in Congo. The ground produces variety of grain, but no corn or rice except what is cultivated by the Portuguese. Their maize, or Indian wheat, grows very strong, and is well laden. This, being well ground, they make into bread, or boil with water into a kind of pap. Of this they have four kinds; one of which resembling what we call French wheat, is produced in plenty, and makes some amends for the want of industry in the people. They cultivate also a variety of the pease and bean kind; but what they chiefly live upon, as most suitable to their lazy disposition, is a kind of nut, like our silberds, which fall to the ground of themselves, and are to be found every where; every nut that falls to the ground producing a new shrub next year. They have scarcely any fruit-trees but what have been brought thither by the Portuguese. They have various sorts of palm-trees, useful both by their fruit, leaves, and their juice, which is easily converted into wine; also by affording a kind of oil with which they dress their victuals, though the Europeans use it only to burn in their lamps. They have also a vast number of plants and shrubs, which it would be impossible to describe or enumerate. Wheat is the only thing that the ground will not produce. It pushes forth, indeed, the straw and the ear; the former of which grows high enough, we are told, to hide a man on horseback, but the latter is empty, without one grain fit for use. Father Labat, however, who had lived a considerable time in some of the American islands, where he had observed the same thing, tells us, that he had the curiosity to examine those ears more carefully, and had found some few grains; and that, having sowed them afresh, they produced very long ears, full of large heavy grain. Whence he conjectures, that if the Portuguese had tried the same experiment in their African settlements, it might perhaps have been attended with the same success.

9 Hazardous travelling. In the low lands the grass grows so high, rank, and thick, that it becomes one of the most dangerous receptacles for wild beasts, serpents, and other venomous insects: on this account travelling is exceedingly hazardous, as they have few beaten roads in the whole country, and travellers are obliged to march over it through vast plains, in continual danger of being devoured or stung to death; to say nothing of the manifold diseases produced by the unwholesome dews with which the grass is covered during some part of the day. The only method of guarding against all these evils effectually, is by setting fire to the grass in the hot weather, when it is quite parched by the heat of the sun: but even this cannot be done without the greatest danger; because both the wild beasts and venomous reptiles, being roused out of their places of retirement, will fly furiously at those who happen to be in the way. In this case there is no possibility of escaping, but by climbing up the highest trees, or defending one's self by fire-arms or other weapons. In such emergencies, the natives have a much better chance than the Europeans; the former being able to climb trees with surprising swiftness;

Congo. while the latter must be assisted with rope-ladders, which they commonly cause their blacks to carry about with them, and to go up and fasten to one of the branches.

10 Great variety of flowers. The flowers are here exceedingly beautiful and numerous. Almost every field and grove yields a much nobler prospect than the European gardens can boast of, notwithstanding the pains bestowed on their cultivation. The flowers are remarkable, not only for the prodigious variety of their colours, but the vast quantity of heads which grow upon one stalk. In the day-time, indeed, they seem to have lost their natural fragrantcy; that being in some measure exhale by the heat of the sun: but this is amply compensated after its setting, and more especially a little before its rising, when their sweetness is again condensed, and revived by the coldness and dews of the night, after which they exhale their various refreshing scents in a much higher degree than ours. The lilies, which there grow naturally in the fields, valleys, and woods, exceed those of our gardens, not only in their extreme whiteness, but much more in a delightful fragrantcy, without offending the head, as the European lilies do by their faintish sweetness. The tulips which there grow wild, though generally called *Perfic*, have something so surprisingly charming in the variety and combination of their colours, that they dazzle the eyes of an intense beholder: neither do their flowers grow singly as with us, but ten or twelve upon one stalk; and with this double advantage, that they diffuse a very reviving and agreeable sweetness, and continue much longer in their full bloom. Of the same nature are their tuberoses, hyacinths, and other native flowers; which spring up in vast groups of 100 and 200 from one root, though somewhat smaller than ours; some of them finely variegated, and all of them yielding an agreeable smell. The roses, jessamines, and other exotics brought thither from Europe or America, come up likewise in great perfection; but require a constant supply of water, and diligent attendance, to prevent them from degenerating. The American jessamine, in particular, instead of single flowers, will grow up by dozens in a bunch; some of them of an exquisite white, and others of the colour of the most vivid fire.

11 Animals of different kinds. A vast variety of animals of different kinds are found in the kingdom of Congo; the chief of which are the elephant. This creature is mostly found in the province of Bamba, which abounds with woods, pasture, and plenty of water; the elephants delighting much to bathe themselves during the heat of the day. They commonly go in troops of an hundred or more; and some of them are of such a monstrous size, that we are told the print of their hoof hath measured four, nay *seven*, spans in diameter. From the hair of their tails, and that of some other animals, the natives, especially the women, weave themselves collars, bracelets, girdles, &c. with variety of devices and figures, which denote their quality; and are in such esteem, that the hair of two elephants tails is sufficient to buy a slave. The reason of this is, that the natives have not the art of taming them, but are obliged to send some of their bravest and stoutest men to hunt them in the woods; which is not done without great labour and danger, they being here exceedingly fierce. The most common way of hunting them

Congo. them is by digging deep holes in the ground, the top of which they cover with branches and leaves, as is practised in most parts of Asia.

Lions, leopards, tigers, wolves, and other beasts of prey, abound here in great plenty, and do much damage. Here are also a vast variety of monkeys of all sizes and shapes. The zebra, well known for its extreme beauty and swiftness, is also met with in this country. They have also a variety of buffaloes and wild asses; but the *dante* seems to be an animal peculiar to this kingdom. It is shaped and coloured much like an ox, though not so large. Its skin is commonly bought by the Portuguese, and sent into Germany to be tanned and made into targets, which are then called *dantes*. The natives make use of their raw hide dried to make their shields; which are so tough that no arrow or dart can pierce them; and they are also large enough to cover the whole body. The creature is vastly swift; and when wounded, will follow the scent or smoke of the gunpowder with such fury, that the hunter is obliged to climb up a tree with all possible speed; and this retreat he always takes care to secure before he ventures to fire. The wounded beast finding its enemy out of its reach, flays for him at the foot of the tree, and will not stir from it; of which the hunter taking the advantage, dispatches it with repeated shots. The forests of Congo also swarm with wild dogs, who, like the wolves, prey upon the tame cattle, and are so fierce that they will attack armed men. Their teeth are exceeding keen and sharp; they never bark, but make a dreadful howling when famished or in pursuit of their prey.

This country also abounds with all the different kinds of birds that are to be found in other warm climates. One sort, which they call *birds of music*, is greatly esteemed, inasmuch that persons of the highest rank have from time immemorial taken the greatest delight in keeping them in cages and aviaries for the sake of their surprising melody. On the other hand, as the Congoes are superstitious to the last degree, there are several kinds of birds which they look upon as ominous, and are so terrified at the sight or hearing of them, that if they were going to enter upon ever so momentous an expedition, if they were met in council, or going to engage an enemy with ever so great an advantage, the flight or cry of such birds would throw them into a general panic, and disperse them in the utmost haste and confusion. The most dreadful of the ominous kind are the crows, ravens, bats, and owls. The great owl is the most terrible of all, and to him they give the name of *kariam pamba*, by which words they likewise denote the devil.

Fish of different kinds abound on the coasts of Congo in great numbers; but the inland parts are infested with such numbers of serpents, scorpions, and other venomous insects, as are perhaps sufficient to overbalance every natural advantage we have yet mentioned. The most pernicious and dangerous kind are the ants; of which they reckon no less than six several species of different colours and sizes; all of them formidable on account of their prodigious numbers, and the mischief they do not only to the fruits of the earth, but to men and beasts; whom they will surround in the night time, and devour even to the very bone. It is a common practice, we are told, to condemn persons guilty of

some atrocious crimes to be stripped naked, tied hand and foot, and thrown into a hole where these insects swarm; where they are sure to be devoured by them in less than 24 hours to the very bones. But criminals are not the only persons who are in danger from the jaws of these little devouring insects. People may be attacked by them, as we have already hinted, in the night time, and while they are sleeping in their beds. This obliges the natives to be careful where they lie down, and to kindle a small fire, or at least to have a circle of burning hot embers round their beds. This caution is still more necessary in the country villages and hamlets, where persons are otherwise in danger of being attacked by millions of them in the dead of the night. In such a case, the only expedient to save one's self is to jump up as soon as one feels the bite, to brush them off with all possible speed, and then at once to set the house on fire. The danger is still greater in travelling through the country, where a person is often obliged to take up his lodging on the bare ground; and may be overtaken during the heat of the day with such profound sleep, as not to be awaked by these diminutive animals till they have made their way through the skin; and in such a case nothing will prevent their devouring a man alive, though there were ever so many hands to assist him: in such incredible quantities do these creatures abound, notwithstanding the great numbers of monkeys who are continually ferreting the ants out of their retreats, and feed upon them with the utmost avidity. This can only be ascribed to the natural laziness and indolence of the inhabitants; which is such, that they not only neglect to rid their lands of them by proper cultivation, but will suffer their houses, nay even their very churches, to be undermined by them. Another kind of these destructive vermin lie so thick upon the paths and highways, that a person cannot walk without treading upon, and having his legs and thighs almost devoured by them. A third sort of a white and red colour, but very small, will gnaw their way through the hardest wood, penetrate into a strong chest, and in a little while devour all the clothes, linen, and every thing that is in it. A fourth sort, small and black, leave a most intolerable stench upon every thing they touch or crawl over, whether clothes or household-stuff, which are not easily sweetened again; or if they pass over victuals, they are entirely spoiled. A fifth sort harbour chiefly on the leaves and branches of trees; and if a man chance to climb up thither to save himself from a wild beast, he is so tormented by them, that nothing but the fear of the jaws of the one could make him endure the stings of the other. A sixth sort is of the flying kind; and is probably one of the former kinds, that live wholly under ground, till nature furnishes them with wings. After this, they rise in such swarms as darken the air, and would make terrible havoc among all kinds of vegetables, did not the natives come out against them in whole companies, and by dint of flaps, and other flat weapons, knock them down by myriads, and then laying them in heaps, set fire to their wings, which half broils them for food. Amidst all this variety of pernicious insects, however, they have one species of a more friendly and profitable kind, *viz.* the industrious bee, which furnishes the inhabitants with honey and wax in such plenty, that there is

Congo.

12
Birds.13
Ants very
dangerous.

^{Congo.} scarce a hollow tree, cleft of a rock, or chop of the earth, in which their combs are not found in great quantities.

¹⁴ Congo very populous. With respect to the populousness of the kingdom of Congo, some authors, writing either from mere conjecture, or at best precarious inferences, have represented it as thinly peopled. The accounts of the missionaries and Portuguese, however, are directly opposite to these. They found the country for the most part covered with towns and villages, and these swarming with inhabitants; the cities well filled with people, particularly the metropolis, which is said to contain above 50,000 souls. The provinces, though not equally populous, yet in the whole make up such an amount, as plainly proves, that what is wanting in the one is amply made up by the other. We are told, that the duchy of Bamba is still able to raise 200,000 fighting men, and was formerly in a condition to raise double that number; and that the army of the king of Congo, in the year 1665, consisted of 900,000 fighting men, who were attended by an infinite number of women, children, and slaves. The numbers of the Congoese will appear the more credible, when we consider the extreme fecundity of their women, the hardness with which they bring up their children, and the stoutness and healthiness of their men. In some villages, if the missionaries are to be credited, the number of children is so great, that a father will part with one or two, for any commodity he wants, or even for some trifling bawble he fancies; so that the number of slaves they sell abroad seldom amounts, *communibus annis*, to less than 15,000 or 16,000.

¹⁵ Congoese have a high opinion of themselves. There is scarce a nation on earth that have a higher opinion of themselves or their country, than the Congoese, or that is more hardened against all conviction to the contrary, from reason, experience, or the most impartial comparison with other countries in Europe or Asia. Indeed, it is impossible they should think otherwise, when it is one of the fundamentals of their belief, that the rest of the world was the work of angels, but that the kingdom of Congo, in its full and ancient extent, was the handywork of the Supreme Architect; and must of course have vast prerogatives and advantages over all others. When told of the magnificence of the European and Asiatic courts, their immense revenues, the grandeur of their palaces and edifices, the riches and happiness of their subjects, the great progress they have made in the arts and sciences to which their country is wholly a stranger, they coolly answer, that all this comes vastly short of the dignity and splendor of the kings and kingdom of Congo; and that there can be but one Congo in the world, to the happiness of whose monarch and people all the rest were created to contribute, and to whose treasury the sea and rivers pay their constant tribute of 'zimbis (or shells, which are their current coin); whilst other princes must condescend to enrich themselves by digging through rocks and mountains, to come at the excrements of the earth, so they style gold and silver which are in such request among other nations. Accordingly, they imagine, that the nations which come to traffic with them, are forced to that servile employment by their poverty and the badness of their country, rather than induced to it by luxury or avarice; whilst they themselves can indulge their natural indo-

lenge or sloth, though attended with the most pinching poverty, rather than disgrace the dignity of their blood by the least effort of industry, which, how laudable and beneficial soever, is looked upon by them as only a lesser degree of slavery. But though they generally esteem it so much below their dignity to apply to any useful work, they think it no disgrace to beg or steal. With respect to the first, they are said to be the most shameless and importunate beggars in the world. They will take no denial, spare no crouching, lying, prayers, to obtain what they want, nor curses and ill language when sent away without it. With regard to the last, they deem no theft unlawful or scandalous, except it be committed in a private manner, without the knowledge of the person wronged. It is esteemed a piece of bravery and gallantry to wrench any thing from another by violence; and this kind of theft is so common, not only among the vulgar, but also among the great ones, that they make no scruple, in their travels from place to place, to seize not only upon all the provisions they meet with in towns and villages, but upon every thing else that falls in their way. These violences oblige the poor people to conceal the few valuables they have, in some secret place out of the knowledge and reach of those harpies; and they think themselves well off if they can escape a severe bastonading, or other cruel usage frequently inflicted upon them, in order to make them discover the place of their concealment.

¹⁷ Complexion, character, customs, &c. The complexion of the natives, both men and women, is black, though not in the same degree; some being of a much deeper black than others. Their hair is black and finely curled; some have it also of a dark sandy colour: their eyes are mostly of a fine lively black; but some are of a dark sea-colour. They have neither flat noses nor thick lips like the Nubians and other negroes. Their stature is mostly of the middle size; and, excepting their black complexion, they much resemble the Portuguese. In their temper they are mistrustful, envious, jealous, and treacherous; and where they once take a distaste or affront, will spare no pains, nor stick at any means, however base, to be avenged of, and crush their enemy under their feet. There is no such thing among them as natural affection. A husband, if an Heathen, may take as many wives as he pleases; and if a Christian, may have any number of concubines, whom he may divorce at pleasure, or even sell them though with child. So little regard have they for their children, that there is scarce one among them who will not sell a son or a daughter, or perhaps both, for a piece of cloth, a collar or girdle of coral or beads, and often for a bottle of wine or brandy.

¹⁸ Religion. The religion of the Congoese in many parts is downright idolatry, accompanied with the most ridiculous superstitions, and the most absurd and detestable rites invented by their gangas or priests; and even in those parts where Christianity is professed, it is so darkened by superstitions of one kind or other, that we may justly question whether the people are any gainers by the exchange.

¹⁹ Government. The government of this kingdom is monarchical, and as despotic as any in Asia or Africa. The kings are the sole proprietors of all the lands within their dominions; and these they can dispose of to whom they

Congo.

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Their sloth, pride, &c.

Complexion, character, customs, &c.

18

Religion.

19

Government.

Congo,
Congrega-
tion.

they please, upon condition they pay a certain tribute out of them : upon failure of the payment of which, or any other neglect, they turn them out. Even the princes of the blood are subjected to the same law ; so that there is no person of any rank or quality whatever that can bequeath a foot of land to his heirs or successors ; and when these owners under the crown die, the lands immediately return to it again, whether they were in their possession, or had been left to ever so many tenants under them ; so that it entirely depends on the prince whether these lands shall be continued in the same, or be disposed into other hands. The Portuguese, however, since their settling in these parts, have prevailed upon the monarchs to permit the heirs and successors to continue in the quiet possession of such lands, in order to avoid the confusions, or even rebellions, which the alienation and deprival of them frequently occasioned, and to oblige the tenants of them to pay their tribute more exactly and readily than they did before.

20
Commerce.

St Salvador is the chief place of traffic the Portuguese and other Europeans have in this country. There are thought to be about 4000 of them settled here, who trade with most parts of the kingdom. The chief commodities they bring thither are either the product of Brazil or European manufactures. The former consist chiefly of grains, fruits, plants, &c. ; the latter of Turkey carpets, English cloth, and other stuffs ; copper, brass vessels, some kinds of blue earthen ware, rings, and ornaments of gold, silver, and other baser metals ; coral, glass-beads, bugles, and other trinkets ; light stuffs made of cotton, woollen, and linen, for cloathing ; and a great variety of tools and other utensils. In return for these, they carry off a great number of slaves, amounting to 15,000 or 16,000 annually, as we have already observed. Formerly they used also to carry away elephants teeth, furs, and other commodities of the country ; but these branches of commerce are now greatly decayed, and the slave-trade is what the Portuguese merchants principally depend on.

CONG, a term applied to tea of the second quality.

CONGREGATION, an assembly of several ecclesiastics, united so as to constitute a body.

The term is principally used for assemblies of cardinals appointed by the pope, and distributed into several chambers, for the discharge of certain functions and jurisdictions, after the manner of our offices and courts. The first is the congregation of the holy office, or the inquisition : the second, that of jurisdiction over bishops and regulars : the third, that of councils ; this has power to interpret the council of Trent : the fourth, that of customs, ceremonies, precedences, canonizations, called the *congregation of rites* : the fifth, that of St Peter's fabric, which takes cognizance of all causes relating to piety and charity, part whereof is due to the church of St Peter : the sixth, that of waters, rivers, roads : the seventh, of fountains and streets : the eighth, that of the index, which examines the books to be printed or corrected : the ninth, that of the council of state, for the management of the territories belonging to the pope and church (see CAMERLINGO) : the tenth, *de bono regimine* ; of which two last the cardinal-nephew is chief : the eleventh,

that of money : the twelfth, that of bishops, wherein those who are to be promoted to bishoprics in Italy are examined ; this is held before the pope : the thirteenth, that of consistorial matters ; the chief whereof is the cardinal-dean : the fourteenth, a congregation for propagating the faith (see COLLEGE) ; and the fifteenth, that of ecclesiastical immunity, for settling suits against churchmen. There is also a congregation of alms, which takes care of every thing that relates to the subsistence of Rome and the state of the church.

CONGREGATION is also used for a company or society of religious cantoned out of this or that order ; and making, as it were, an inferior order, or a subdivision of the order itself. Such are the congregations of the oratory, and those of Cluny, &c. among the Benedictines.

The word is also used for assemblies of pious persons in manner of fraternities, frequent among the Jesuits in honour of the Virgin, &c. It is likewise applied to the audience in a church, particularly as consisting of the inhabitants of the same parish.

CONGREGATIONALISTS, in church-history, a sect of Protestants who reject all church-government, except that of a single congregation under the direction of one pastor.

CONGRESS, in political affairs, an assembly of commissioners, envoys, deputies, &c. from several courts meeting to concert matters for their common good.

CONGRESS, in America, is the assembly of delegates from the United States. See AMERICA.

CONGRESS, in a judicial sense, the trial made by appointment of a judge before surgeons and matrons, in order to prove whether or no a man be impotent, before sentence is passed for the dissolution of a marriage solicited upon such a complaint.

Neither the civil nor canon law makes any mention of the trial of virility by congress. It had its origin in France from the boldness of a young fellow, who, in open court, having been hard pressed by his wife, demanded the congress. The judge, surpris'd with the novelty of the demand, found it could not be denied, as being the surest evidence that the case could admit of. In time it became a branch in the French jurisprudence, and was authorized by decreets and arrets. It obtained for about 120 years ; and was annulled by an arret of parliament in 1677, as being found precarious ; some having failed under the experiment out of mere modesty and shame, which is found to have the same effect with actual impotency.

CONGREVE (William), a younger brother of an ancient family in Staffordshire. His father was employed in the stewardship of the great estate of the Earl of Burlington in Ireland, where he resided many years ; and our author was born there in 1672. Mr Congreve entered into the Middle-Temple when he came to England, and began to study the law ; but his bias was toward polite literature and poetry. His first performance was a novel, intitled, *Incognita*, or *Love and Duty reconciled*. He soon after began his comedy of the *Old Bachelor* ; which was the amusement of some leisure hours during a slow recovery from a fit of illness soon after his return to England ; yet was in itself so perfect, that Mr Dryden, on its being shown to him, declared he had never in his life seen such a first play.

When

Congreve. When brought on the stage in 1693, it met with such universal approbation, that Mr Congreve, though he was but 19 years old at the time of his writing it, became now considered as a prop to the declining stage, and a rising genius in dramatic poetry. The next year he produced the *Double Dealer*; which, for what reason is not obvious, did not meet with so much success as the former. The merit of his first play, however, had obtained him the favour and patronage of Lord Halifax, and some peculiar mark of distinction from Queen Mary; on whose death, which happened in the close of this year, he wrote a very elegant elegiac pastoral. In 1695, when Betterton opened the new house in Lincoln's-Inn Fields, Mr Congreve joining with him, gave him his comedy of *Love for Love*, with which the company opened their campaign; and which met with such success, that they immediately offered the author a share in the management of the house, on condition of his furnishing them with one play yearly. This offer he accepted; but whether through indolence, or that correctness which he looked upon as necessary to his works, his *Mourning Bride* did not come out till 1697, nor his *Way of the World* till two years after that. The indifferent success this last mentioned play, though an exceeding good one, met with from the public, completed that disgust to the theatre, which a long contest with Jeremy Collier, who had attacked the immoralities of the English stage, and more especially some of his pieces, had begun, and he determined never more to write for the stage. However, though he quitted dramatic writing, he did not lay down the pen entirely; but occasionally wrote many little pieces both in prose and verse, all of which stand on the records of literary fame. It is very possible, however, that he might not so soon have given way to this disgust, had not the easiness of his circumstances rendered any subservience to the opinions and caprice of the town absolutely unnecessary to him. For his abilities having very early in life raised him to the acquaintance of the Earl of Halifax, who was then the Mæcenas of the age; that nobleman, desirous of raising so promising a genius above the necessity of too hasty productions, made him one of the commissioners for licensing hackney-coaches; or, according to Coxeter, a commissioner of the wine-licence. He soon after bestowed on him a place in the pipe-office; and not long after gave him a post in the customs worth 600 l. *per annum*. In the year 1718, he was appointed secretary of Jamaica; so that, with all together, his income towards the later part of his life was upwards of 1200 l. a-year.

The greatest part of the last 20 years of his life was spent in ease and retirement; and he either did not, or affected not to give himself any trouble about reputation. Yet some part of that conduct might proceed from a degree of pride; to which purpose, T. Cibber, in his lives of the poets, Vol. IV. p. 93. relates the following anecdote of him: "When the celebrated Voltaire was in England, he waited upon Mr Congreve, and passed some compliments upon the merit and reputation of his works. Congreve thanked him; but at the same time told that ingenious foreigner, that he did not choose to be considered as an author, but only as a private gentleman, and in that light expected to be visited. Voltaire answered, that

if he had never been any thing but a private gentleman, in all probability he had never been troubled with that visit." He observes, in his own account of the transaction, that he was not a little disgusted with so unseasonable a piece of vanity.

Towards the close of his life he was much afflicted with the gout; and making a tour to Bath for the benefit of the waters, was unfortunately overturned in his chariot; by which, it is supposed, he got some inward bruise, as he ever after complained of a pain in his side; and, on his return to London, continued gradually declining in his health, till the 19th of January 1729, when he died, aged 57; and, on the 26th following, was buried in Westminster Abbey, the pall being supported by persons of the first distinction.

CONGRUITY, a suitableness or relation of agreement between things.

The terms *congruity* and *propriety* are not applicable to any single object: they imply a plurality, and obviously signify a particular relation between different objects. Thus we currently say, that a decent garb is suitable or proper for a judge; modest behaviour for a young woman; and a lofty style for an epic poem: and, on the other hand, that it is unsuitable or incongruous to see a little woman sunk in an overgrown farthingale, a coat richly embroidered covering coarse and dirty linen, a mean subject in an elevated style, an elevated subject in a mean style, a first minister darning his wife's stocking, or a reverend prelate in lawn sleeves dancing a hornpipe.

The perception we have of this relation, which seems peculiar to man, cannot proceed from any other cause, but from a *sense* of congruity or propriety; for, supposing us destitute of that sense, the terms would be to us unintelligible.

It is a matter of experience, that congruity or propriety, wherever perceived, is agreeable; and that incongruity or impropriety, wherever perceived, is disagreeable. The only difficulty is, to ascertain what are the particular objects that in conjunction suggest these relations; for there are many objects that do not: the sea, for example, viewed in conjunction with a picture, or a man viewed in conjunction with a mountain, suggest not either congruity or incongruity. It seems natural to infer, what will be found true by induction, that we never perceive congruity nor incongruity but among things that are connected together by some relation; such as a man and his actions, a principal and his accessories, a subject and its ornaments. We are indeed so framed by nature, as, among things so connected, to require a certain suitableness or correspondence, termed *congruity* or *propriety*; and to be displeased when we find the opposite relation of *incongruity* or *impropriety*.

If things connected be the subject of congruity, it is reasonable before-hand to expect, that a degree of congruity should be required proportioned to the degree of the connection. And upon examination we find this to hold in fact: where the relation is intimate, as between a cause and its effect, a whole and its parts, we require the strictest congruity; but where the relation is slight, or accidental, as among things jumbled together in the same place, we require little or no congruity: the strictest propriety is required

Congruity quired in behaviour and manner of living; because a man is connected with these by the relation of cause and effect: the relation between an edifice and the ground it stands upon, is of the most intimate kind; and therefore the situation of a great house ought to be lofty; its relation to neighbouring hills, rivers, planes, being that of propinquity only, demands but a small share of congruity: among members of the same club, the congruity ought to be considerable, as well as among things placed for show in the same niche: among passengers in a stage-coach, we require very little congruity; and less still at a public spectacle.

Congruity is so nearly allied to beauty, as commonly to be held a species of it; and yet they differ so essentially as never to coincide: beauty, like colour, is placed upon a single subject; congruity upon a plurality: further, a thing beautiful in itself, may, with relation to other things, produce the strongest sense of incongruity.

Congruity and propriety are commonly reckoned synonymous terms; but they are distinguishable; and the precise meaning of each must be ascertained. Congruity is the genus of which propriety is a species; for we call nothing *propriety*, but that congruity or suitability which ought to subsist between sensible beings and their thoughts, words, and actions.

In order to give a full view of these secondary relations, we shall trace them through some of the most considerable primary relations. The relation of a part to the whole, being extremely intimate, demands the utmost degree of congruity; even the slightest deviation is disagreeable.

Examples of congruity and incongruity are furnished in plenty by the relation between a subject and its ornaments. A literary performance intended merely for amusement, is susceptible of much ornament, as well as a music-room or a play-house; for in gaiety, the mind hath a peculiar relish for show and decoration. The most gorgeous apparel, however improper in tragedy, is not unsuitable to opera-actors: the truth is, an opera, in its present form, is a mighty fine thing; but as it deviates from nature in its capital circumstances, we look not for nature nor propriety in those which are accessory. On the other hand, a serious and important subject admits not much ornament; nor a subject that of itself is extremely beautiful; and a subject that fills the mind with its loftiness and grandeur, appears best in a dress altogether plain.

To a person of a mean appearance, gorgeous apparel is unsuitable; which, besides the incongruity, has a bad effect; for by contrast it shows the meanness of appearance in the strongest light. Sweetness of look and manner, requires simplicity of dress, joined with the greatest elegance. A stately and majestic air requires sumptuous apparel, which ought not to be gaudy, nor crowded with little ornaments. A woman of consummate beauty can bear to be highly adorned, and yet shows best in a plain dress:

For loveliness

Need not the foreign aid of ornament,

But is when unadorn'd, adorn'd the most.

Thomson's Autumn, 208.

Congruity regulates not only the quantity of ornament, but also the kind. The ornaments that em-

bellish a dancing-room ought to be all of them gay. No picture is proper for a church but what has religion for its subject. All the ornaments upon a shield ought to relate to war; and Virgil, with great judgment, confines the carvings upon the shield of Æneas to the military history of the Romans: but this beauty is overlooked by Homer; for the bulk of the sculpture upon the shield of Achilles, is of the arts of peace in general, and of joy and festivity in particular: the author of Telemachus betrays the same inattention, in describing the shield of that young hero.

In judging of propriety with regard to ornaments, we must attend, not only to the nature of the subject that is to be adorned, but also to the circumstances in which it is placed: the ornaments that are proper for a ball, will appear not altogether so decent at public worship; and the same person ought to dress differently for a marriage-feast and for a burial.

Nothing is more intimately related to a man, than his sentiments, words, and actions; and therefore we require here the strictest conformity. When we find what we thus require, we have a lively sense of propriety: when we find the contrary, our sense of impropriety is not less lively. Hence the universal distaste of affectation, which consists in making a show of greater delicacy and refinement than is suited either to the character or circumstance of the person.

Congruity and propriety, wherever perceived, appear agreeable; and every agreeable object produceth in the mind a pleasant emotion: incongruity and impropriety, on the other hand, are disagreeable; and of course produce painful emotions. These emotions, whether pleasant or painful, sometimes vanish without any consequence; but more frequently occasion other emotions, which we proceed to exemplify.

When any slight incongruity is perceived in an accidental combination of persons or things, as of passengers in a stage-coach, or of individuals dining at an ordinary; the painful emotion of incongruity, after a momentary existence, vanisheth without producing any effect. But this is not the case of propriety and impropriety: voluntary acts, whether words or deeds, are imputed to the author; when proper, we reward him with our esteem; when improper, we punish him with our contempt. Let us suppose, for example, a generous action suited to the character of the author, which raises in him and in every spectator the pleasant emotion of propriety: this emotion generates in the author both self esteem and joy; the former when he considers the relation to the action; and the latter when he considers the good opinion that others will entertain of him: the same emotion of propriety produceth in the spectators esteem for the author of the action; and when they think of themselves, it also produceth, by means of contrast, an emotion of humility. To discover the effects of an unsuitable action, we must invert each of these circumstances: the painful emotion of impropriety generates in the author of the action both humility and shame; the former when he considers his relation to the action, and the latter when he considers what others will think of him: the same emotion of impropriety produceth in the spectators contempt for the author of the action; and it also produceth, by means of contrast, when they think of them-

Congruity.

Congruity. themselves, an emotion of self-esteem. Here then are many different emotions, derived from the same action, considered in different views by different persons; a machine provided with many springs, and not a little complicated. Propriety of action, it would seem, is a chief favourite of nature, when such care and solicitude is bestowed upon it. It is not left to our own choice; but, like justice, is required at our hands; and, like justice, is enforced by natural rewards and punishments: a man cannot, with impunity, do any thing unbecoming or improper; he suffers the chastisement of contempt inflicted by others, and of shame inflicted by himself. An apparatus so complicated, and so singular, ought to rouse our attention: for nature doth nothing in vain; and we may conclude with great certainty, that this curious branch of the human constitution is intended for some valuable purpose.

A gross impropriety is punished with contempt and indignation, which are vented against the offender by corresponding external expressions: nor is even the slightest impropriety suffered to pass without some degree of contempt. But there are improprieties, of the slighter kind, that provoke laughter; of which we have examples without end, in the blunders and absurdities of our own species: such improprieties receive a different punishment, as will appear by what follows. The emotions of contempt and of laughter occasioned by an impropriety of this kind, uniting intimately in the mind of the spectator, are expressed externally by a peculiar sort of laugh, termed a *laugh of derision* or *scorn*. An impropriety that thus moves not only contempt, but laughter, is distinguished by the epithet of *ridiculous*; and a laugh of derision or scorn is the punishment provided for it by nature. Nor ought it to escape observation, that we are so fond of inflicting this punishment, as sometimes to exert it even against creatures of an inferior species: witness a turkeycock swelling with pride, and strutting with displayed feathers; a ridiculous object, which in a gay mood is apt to provoke a laugh of derision.

We must not expect, that these different improprieties are separated by distinct boundaries: for of improprieties, from the slightest to the most gross, from the most risible to the most serious, there are degrees without end. Hence it is, that in viewing some unbecoming actions, too risible for anger, and too serious for derision, the spectator feels a sort of mixt emotion, partaking both of derision and of anger; which accounts for an expression, common with respect to the impropriety of some actions, that we know not whether to laugh or be angry.

It cannot fail to be observed, that in the case of a risible impropriety, which is always slight, the contempt we have for the offender is extremely faint, tho' derision, its gratification, is extremely pleasant. This disproportion between a passion and its gratification, seems not conformable to the analogy of nature. In looking about for a solution, we must reflect upon what is laid down above, that an improper action not only moves our contempt for the author, but also, by means of contrast, swells the good opinion we have of ourselves. This contributes, more than any other article, to the pleasure we have in ridiculing follies and absurdities; and accordingly, it is well known, that they who put the greatest value upon themselves

are the most prone to laugh at others. Pride, which is a vivid passion, pleasant in itself, and not less so in its gratification, would singly be sufficient to account for the pleasure of ridicule, without borrowing any aid from contempt. Hence appears the reason of a noted observation, That we are the most disposed to ridicule the blunders and absurdities of others, when we are in high spirits; for in high spirits, self-conceit displays itself with more than ordinary vigour.

With regard to the final causes of congruity and impropriety; one, regarding congruity, is pretty obvious, that the sense of congruity, as one principle of the fine arts, contributes in a remarkable degree to our entertainment. Congruity, indeed, with respect to quantity, coincides with proportion: when the parts of a building are nicely adjusted to each other, it may be said indifferently, that it is agreeable by the congruity of its parts, or by the proportion of its parts. But propriety, which regards voluntary agents only, can never be the same with proportion: a very long nose is disproportioned, but cannot be termed *improper*. In some instances, it is true, impropriety coincides with disproportion in the same subject, but never in the same respect; for example, a very little man buckled to a long toledo: considering the man and the sword with respect to size, we perceive a disproportion; considering the sword as the choice of the man, we perceive an impropriety.

The sense of impropriety with respect to mistakes, blunders, and absurdities, is happily contrived for the good of mankind. In the spectators, it is productive of mirth and laughter, excellent recreation in an interval from business. But this is a trifle in respect of what follows. It is painful to be the subject of ridicule; and to punish with ridicule the man who is guilty of an absurdity, tends to put him more upon his guard in time coming. Thus even the most innocent blunder is not committed with impunity; because, were errors licensed where they do no hurt, inattention would grow into a habit, and be the occasion of much hurt.

The final cause of propriety as to moral duties, is of all the most illustrious. To have a just notion of it, the moral duties that respect others must be distinguished from those that respect ourselves. Fidelity, gratitude, and the forbearing injury, are examples of the first sort; temperance, modesty, firmness of mind, are examples of the other: the former are made duties by the sense of justice; the latter by the sense of propriety. Here is a final cause of the sense of propriety, that must rouse our attention. It is undoubtedly the interest of every man, to suit his behaviour to the dignity of his nature, and to the station allotted him by Providence; for such rational conduct contributes in every respect to happiness, by preserving health, by procuring plenty, by gaining the esteem of others, and, which of all is the greatest blessing, by gaining a justly-founded self-esteem. But in a matter so essential to our well-being, even self-interest is not relied on: the powerful authority of duty is superadded to the motive of interest. The God of nature, in all things essential to our happiness, hath observed one uniform method: to keep us steady in our conduct, he hath fortified us with natural laws and principles, which prevent many aberrations, that would daily happen were we totally surrendered to so fallible a guide as human

Congruity. human reason. Propriety cannot rightly be considered in another light, than as the natural law that regulates our conduct with respect to ourselves; as justice is the natural law that regulates our conduct with respect to others. We call propriety a law, not less than justice; because both are equally rules of conduct that ought to be obeyed: propriety includes this obligation; for to say an action is proper, is, in other words, to say, that it *ought* to be performed; and to say it is improper, is, in other words, to say that it ought to be forborne. It is this very character of *ought* and *should* that makes justice a law to us; and the same character is applicable to propriety, though perhaps more faintly than to justice: but the difference is in degree only, not in kind; and we ought, without hesitation or reluctance, to submit equally to the government of both.

But it must, in the next place, be observed, that to the sense of propriety, as well as of justice, are annexed the sanctions of rewards and punishments; which evidently prove the one to be a law as well as the other. The satisfaction a man hath in doing his duty, joined with the esteem and good-will of others, is the reward that belongs to both equally. The punishments also, though not the same, are nearly allied; and differ in

degree more than in quality. Disobedience to the law of justice, is punished with remorse; disobedience to the law of propriety, with shame, which is remorse in a lower degree. Every transgression of the law of justice raises indignation in the beholder; and so doth every flagrant transgression of the law of propriety. Slighter improprieties receive a milder punishment: they are always rebuked with some degree of contempt, and frequently with derision. In general, it is true, that the rewards and punishments annexed to the sense of propriety, are slighter in degree than those annexed to the sense of justice: which is wisely ordered, because duty to others is still more essential to society than duty to ourselves; for society could not subsist a moment were individuals not protected from the headstrong and turbulent passion of their neighbours.

**Congruity,
Coni.**

CONI, a strong town of Italy in Piedmont, and capital of a territory of that name, with a good citadel. The town being divided into two factions, it surrendered to the French in 1641; but was restored to the Duke of Savoy soon after. It is seated at the confluence of the rivers Gresse and Sture. E. Long. 7. 29. N. Lat. 44. 23.

C O N I C S E C T I O N S

ARE curve lines formed by the intersections of a cone and plane.

If a cone be cut by a plane through the vertex, the section will be a triangle ABC, Plate CXLVI. fig. 1.

If a cone be cut by a plane parallel to its base, the section will be a circle. If it be cut by a plane DEF, fig. 1. in such a direction, that the side AC of a triangle passing through the vertex, and having its base BC perpendicular to EF, may be parallel to DP, the section is a parabola; if it be cut by a plane DR, fig. 2. meeting AC, the section is an ellipse; and if it be cut by a plane DMO, fig. 3. which would meet AC extended beyond A, it is an hyperbola.

If any line HG, fig. 1. be drawn in a parabola perpendicular to DP, the square of HG will be to the square of EP, as DG to DP; for let LHK be a section parallel to the base, and therefore a circle, the rectangle LGK will be equal to the square of HG, and the rectangle BPC equal to the square of EP; therefore these squares will be to each other as their rectangles; that is, as BP to LG, that is DP to DG.

SECT. I. *Description of Conic Sections on a Plane.*

1. P A R A B O L A.

“LET AB, fig. 4. be any right line, and C any point without it, and DKF a ruler, which let be placed in the same plane in which the right line and point are, in such a manner that one side of it, as DK, be applied to the right line AB, and the other side KF coincide with the point C; and at F, the extremity of the side KF, let be fixed one end of the thread FNC, whose length is equal to KF, and the other extremity of it at the point C, and let part of the thread, as FG, be brought close to the side KF by a small pin G; then let the square DKF be moved

“from B towards A, so that all the while its side DK “be applied close to the line BA, and in the mean “time the thread being extended will always be applied to the side KF, being stopt from going from “it by means of the small pin; and by the motion of “the small pin N there will be described a certain “curve, which is called a *semi-parabola*.

“And if the square be brought to its first given position, and in the same manner be moved along the “line AB, from B towards H, the other semi-parabola will be described.”

The line AB is called the *directrix*; C, the focus; any line perpendicular to AB, a diameter; the point where it meets the curve, its vertex; and four times the distance of the vertex from the directrix, its latus rectum or parameter.

2. E L L I P S E.

“If any two points, as A and B, fig. 5. be taken “in any plane, and in them are fixed the extremities “of a thread, whose length is greater than the distance between the points, and the thread extended “by means of a small pin C, and if the pin be moved “round from any point until it return to the place “from whence it began to move, the thread being “extended during the whole time of the revolution, “the figure which the small pin by this revolution “describes is called an *ellipse*.”

The points AB are called the *foci*; D, the *centre*; EF, the *transverse axis*; GH, the *lesser axis*; and any other line passing through D, a *diameter*.

3. H Y P E R B O L A.

“If to the point A, fig. 6. in any plane, one end “of the rule AB be placed, in such a manner, that “about that point, as a centre, it may freely move;

T t

“and

“ and if to the other end B, of the rule AB, be fixed
 “ the extremity of the thread BDC, whose length is
 “ smaller than the rule AB, and the other end of the
 “ thread, being fixed in the point C, coinciding with
 “ the side of the rule AB, which is in the same plane
 “ with the given point A; and let part of the thread,
 “ as BD, be brought close to the side of the rule AB,
 “ by means of a small pin D; then let the rule be
 “ moved about the point A, from C towards T, the
 “ thread all the while being extended, and the re-
 “ maining part coinciding with the side of the rule
 “ being stopt from going from it by means of the
 “ small pin, and by the motion of the small pin D, a
 “ certain figure is described which is called the *semi-*
 “ *hyperbola.*”

The other semi-hyperbola is described in the same way, and the opposite HKF, by fixing the ruler to C, and the thread to A, and describing it in the same manner. A and C are called *foci*; the point G, which bisects AC, the centre; KE, the transverse axis; a line drawn through the centre meeting the hyperbolas, a transverse diameter; a line drawn through the centre, perpendicular to the transverse axis, and cut off by the circle MN, whose centre is E, and radius equal to CG, is called the *second axis*.

If a line be drawn through the vertex E, equal and parallel to the second axis GP and GO be joined, they are called *asymptotes*. Any line drawn through the centre, not meeting the hyperbolas, and equal in length to the part of a tangent parallel to it, and intercepted betwixt the asymptotes, is called a *second diameter*.

An ordinate to any section is a line bisected by a diameter and the abscissa, the part of the diameter cut off by the ordinate.

Conjugate diameters in the ellipse and hyperbola are such as mutually bisect lines parallel to the other; and a third proportional to two conjugate diameters is called the *latus rectum* of that diameter, which is the first in the proportion.

In the parabola, the lines drawn from any point to the focus are equal to perpendiculars to the directrix; being both equal to the part of the thread separated from the ruler.

In the ellipse, the two lines drawn from any point in the curve to the foci are equal to each other, being equal to the length of the thread; they are also equal to the transverse axis. In the hyperbola the difference of the lines drawn from any point to the foci is equal, being equal to the difference of the lengths of the ruler and thread, and is equal to the transverse axis.

From these fundamental properties all the others are derived.

The ellipse returns into itself. The parabola and hyperbola may be extended without limit.

Every line perpendicular to the directrix of a parabola meets it in one point, and falls afterwards within it; and every line drawn from the focus meets it in one point, and falls afterwards without it. And every line that passes through a parabola, not perpendicular to the directrix, will meet it again, but only once.

Every line passing through the centre of an ellipse is bisected by it; the transverse axis is the greatest of

all these lines; the lesser axis the least; and these nearer the transverse axis greater than those more remote.

In the hyperbola, every line passing through the centre, is bisected by the opposite hyperbola, and the transverse axis is the least of all these lines; also the second axis is the least of all the second diameters. Every line drawn from the centre within the angle contained by the asymptotes, meets at once, and falls afterwards within it; and every line drawn through the centre without that angle, never meets it; and a line which cuts one of the asymptotes, and cuts the other extended beyond the centre, will meet both the opposite hyperbolas in one point.

If a line GM, fig. 4. be drawn from a point in a parabola perpendicular to the axis, it will be an ordinate to the axis, and its square will be equal to the rectangle under the abscissa MI and latus rectum; for, because GMC is a right angle, GM^2 is equal to the difference of GC^2 and CM^2 ; but GC is equal to GE, which is equal to MB; therefore GM^2 is equal to $BM^2 - CM^2$; which, because CI and IB are equal, is (8 *Euc.* 2.) equal to four times the rectangle under MI and IB, or equal to the rectangle under MI and the latus rectum.

Hence it follows, that if different ordinates be drawn to the axis, their squares being each equal to the rectangle under the abscissa and latus rectum, will be to each other in the proportion of the abscissas, which is the same property as was shown before to take place in the parabola cut from the cone, and proves those curves to be the same.

This property is extended also to the ordinates of other diameters, whose squares are equal to the rectangle under the abscissas and parameters of their respective diameters.

In the ellipse, the square of the ordinate is to the rectangle under the segments of the diameter, as the square of the diameter parallel to the ordinate to the square of the diameter to which it is drawn, or as the first diameter to its latus rectum; that is, LK^2 fig. 5. is to EKF as EF^2 to GH^2 .

In the hyperbola, the square of the ordinate is to the rectangle contained under the segments of the diameters betwixt its vertices, as the square of the diameter parallel to the ordinate to the square of the diameter to which it is drawn, or as the first diameter to its latus rectum; that is, SX^2 is to EXK as MN^2 to KE^2 .

Or if an ordinate be drawn to a second diameter, its square will be to the sum of the squares of the second diameter, and of the line intercepted betwixt the ordinate and centre, in the same proportion: that is, RZ^2 fig. 6. is to ZG^2 added to GM^2 , as KE^2 to MN^2 . These are the most important properties of the conic sections; and, by means of these, it is demonstrated, that the figures are the same described on a plane as cut from the cone; which we have demonstrated in the case of the parabola.

SECT. II. Equations of the Conic Sections

ARE derived from the above properties. The equation of any curve, is an algebraic expression, which denotes the relation betwixt the ordinate and abscissa; the abscissa being equal to x , and the ordinate equal to y .

If

If p be the parameter of a parabola, then $y^2 = px$; which is an equation for all parabolas.

If a be the diameter of an ellipse, p its parameter; then $y^2 = ax - xx : : p : a$; and $y^2 = \frac{p}{a} \times \overline{ax - xx}$; an equation for all ellipses.

If a be a transverse diameter of a hyperbola, p its parameter; then $y^2 = a x + xx : : p : a$, and $y^2 = \frac{p}{a} \times \overline{ax + xx}$.

If a be a second diameter of a hyperbola, then $y^2 = aa + xx : : p : a$; and $y^2 = \frac{p}{a} \times \overline{aa + xx}$; which are equations for all hyperbolas.

As all these equations are expressed by the second powers of x and y , all conic sections are curves of the second order; and conversely, the locus of every quadratic equation is a conic section, and is a parabola, ellipse, or hyperbola, according as the form of the equation corresponds with the above ones, or with some other deduced from lines drawn in a different manner with respect to the section.

Sect. III. General Properties of Conic Sections.

A tangent to a parabola bisects the angle contained by the lines drawn to the focus and directrix; in an ellipse and hyperbola, it bisects the angle contained by the lines drawn to the foci.

In all the sections, lines parallel to the tangent are ordinates to the diameter passing through the point of contact; and in the ellipse and hyperbola, the diameters parallel to the tangent, and those passing through the points of contact, are mutually conjugate to each other. If an ordinate be drawn from a point to a diameter, and a tangent from the same point which meets the diameter produced; in the parabola, the part of the diameter betwixt the ordinate and tangent will be bisected in the vertex; and in the ellipse and hyperbola, the semi-diameter will be a mean proportion betwixt the segments of the diameter betwixt the centre and ordinate, and betwixt the centre and tangent.

The parallelogram formed by tangents drawn thro' the vertices of any conjugate diameters, in the same ellipse or hyperbola, will be equal to each other.

SECT. IV. Properties peculiar to the Hyperbola.

As the hyperbola has some curious properties arising from its asymptotes, which appear at first view almost incredible, we shall briefly demonstrate them,

1. The hyperbola and its asymptotes never meet: if not, let them meet in S , fig. 6.; then by the property of the curve the rectangle KXE is to SX^2 as GE^2 to GM^2 or EP^2 ; that is, as GX^2 to SX^2 ; wherefore, KXE will be equal to the square of GX ; but the rectangle KXE , together with the square of GE , is also equal to the square of GX ; which is absurd.

2. If a line be drawn through a hyperbola parallel to its second axis, the rectangle, by the segments of that line, betwixt the point in the hyperbola and the asymptotes, will be equal to the square of the second axis.

For if SZ , fig. 6. be drawn perpendicular to the second axis, by the property of the curve, the square of

MG , that is, the square of PE is to the square of GE , as the squares ZG and the square of MG together, to the square of SZ or GX : and the squares of RX and GX are in the same proportion, because the triangles RXG , PEG are equiangular; therefore the squares ZG and MG are equal to the square of RX ; from which, taking the equal squares of SX and ZG , there remains the rectangle RSV , equal to the square of MG .

3. Hence, if right lines be drawn parallel to the second axis, cutting an hyperbola and its asymptotes, the rectangles contained betwixt the hyperbola and points where the lines cut the asymptotes will be equal to each other; for they are severally equal to the square of the second axis.

4. If from any points, d and S , in a hyperbola, there be drawn lines parallel to the asymptotes da SQ and Sb dc , the rectangle under da and dc will be equal to the rectangle under QS and Sb ; also the parallelograms da , Gc , and SQ b , which are equiangular, and consequently proportional to the rectangles, are equal.

For draw YW RV parallel to the second axis, the rectangle Yd W is equal to the rectangle RSV ; wherefore, WD is to SV as RS is to dY . But because the triangles RQS , AYD , and GSV cd W , are equiangular, Wd is to SV as cd to Sb , and RS is to dY as SQ to da ; wherefore, dc is to Sb as SQ to da : and the rectangle dc , da , is equal to the rectangle QS , Sb .

5. The asymptotes always approach nearer the hyperbola.

For, because the rectangle under SQ and Sb or QG , is equal to the rectangle under da and dc , or AG , and QG is greater than aG ; therefore ad is greater than QS .

9. The asymptotes come nearer the hyperbola than any assignable distance.

Let X be any small line. Take any point, as d , in the hyperbola, and draw da , dc , parallel to the asymptotes; and as X is to da , so let aG be to GQ . Draw QS parallel to ad , meeting the hyperbola in S , then QS will be equal to X . For the rectangle SQG will be equal to the rectangle da G ; and consequently SQ is to da as AG to GQ .

If any point be taken in the asymptote below Q , it can easily be shown that its distance is less than the line X .

SECT. V. Areas contained by Conic Sections.

THE area of a parabola is equal to $\frac{2}{3}$ the area of a circumscribed parallelogram.

The area of an ellipse is equal to the area of a circle whose diameter is a mean proportional betwixt its greater and lesser axes.

If two lines, ad and QS , be drawn parallel to one of the asymptotes of an hyperbola, the space $aQSd$, bounded by these parallel lines, the asymptotes and the hyperbola will be equal to the logarithm of aQ , whose module is ad , supposing aG equal to unity.

SECT. VI. Curvature of Conic Sections.

THE curvature of any conic section, at the vertices of its axis, is equal to the curvature of a circle whose diameter is equal to the parameter of its axis.

If a tangent be drawn from any other point of a conic section, the curvature of the section in that point will be equal to the curvature of a circle to which the same line is a tangent, and which cuts off from the diameter of the section, drawn through the point, a part equal to its parameter.

SECT. VII. *Uses of Conic Sections.*

ANY body, projected from the surface of the earth, describes a parabola, to which the direction wherein it is projected is a tangent: and the distance of the directrix is equal to the height from which a body must fall to acquire the velocity wherewith it is projected: hence the properties of the parabola are the foundation of gunnery.

All bodies acted on by a central force, which decreases as the square of the distances increases, and impressed with any projectile motion, making any angle with the direction of the central force, must describe conic sections, having the central force in one of the foci, and will describe parabolas, ellipses, and hyperbolas, according to the proportion betwixt the central and projectile force. This is proved by direct demonstration.

The great principle of gravitation acts in this manner; and all the heavenly bodies describe conic sections having the sun in one of the foci; the orbits of the planets are ellipses, whose transverse and lesser diameters are nearly equal: it is uncertain whether the comets describe ellipses with very unequal axes, and so return after a great number of years; or whether they describe parabolas and hyperbolas, in which case they will never return.

SECT. VIII. *Uses of Conic Sections in the Solution of Geometrical Problems.*

MANY problems can be solved by conic sections that cannot be solved by right lines and circles. The following theorems, which follow from the simpler properties of the sections, will give a specimen of this.

A point equally distant from a given point and a given line, is situated in a given parabola.

A point, the sum of whose distances from two given points is given, is situated in a given ellipse.

A point, the difference of whose distances from two given points is given, is situated in a given hyperbola.

C O N

Conichthy-
odontes
||
Conifalæ.

CONICHTHYODONTES, or PLECTRONITÆ, in natural history, one of the three names the fossil teeth of fishes are known by.

CONIFERÆ, in botany, an order of plants in the *Fragmenta methodi naturalis* of Linnæus, containing the following genera, viz. cupressus, ephedra, equisetum, juniperus, pinus, taxus, thuja.

CONIFEROUS TREES, such as bear hard dry seed-vessels of a conical figure; consisting of several woody parts, being mostly scaly, adhering closely together, and separating when ripe.

CONIMBRICA (anc. geog.), a town of Lusitania, on the south side of the river Monda; from the ruins of which arose *Coimbra*, in its neighbourhood, a city of Portugal. W. Long. 9. 5. Lat. 40. 16.

CONINGSECK, a town of Suabia in Germany, and capital of a county of the same name. E. Long. 9. 23. N. Lat. 47. 50.

CONJOINT, in a general sense, signifies united or connected.

CONJOINT Degrees, in music, two notes which follow each other immediately in the order of the scale, as *ut* and *re*.

CONJOINT Tetrachords, two tetrachords, or fourths, where the same chord is the highest of one and the lowest of the other.

CONISSALÆ, in natural history, a class of fossils naturally and essentially compounded, not inflammable, nor soluble in water, found in detached masses, and formed of crystalline matter debased by earth.

Of this class there are two orders, and of each of these only one genus. Conifalæ of the first order are found in form of a naturally regular and uniform powder; all the genuine particles of which are nearly of one determinate shape, appearing regularly concreted, and not fragments of others once larger. Conifalæ of

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the second order are found in form of a rude, irregular, and shapeless powder, the particles of which are never of any determinate figure, but seem broken fragments of once larger masses.

To the former genus belong the different kinds of sand; and to the latter the *faburræ*, or grits.

CONJUGATE DIAMETER, or *Axis*, of an *Ellipse*, the shortest of the two diameters, or that bisecting the axis.

CONJUGATION, in grammar, a regular distribution of the several inflexions of verbs in their different voices, moods, tenses, numbers, and persons, so as to distinguish them from one another. See GRAMMAR and LANGUAGE.

CONIUM, HEMLOCK: A genus of the digynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 45th order, *Umbellatæ*. The partial involucre are halved, and mostly triphyllous; the fruit subglobose and quinque-striated, the striæ crenated on each side. The species are three; 1. The *maculatum*, or *greater hemlock*, grows naturally on the sides of banks and roads in many parts of Britain. It is a biennial plant which perishes after it has ripened its seeds. It hath a long taper root like a parsnip, but smaller. The stalk is smooth, spotted with purple, and rises from four to upwards of six feet high; branching out toward the top into several smaller stalks, garnished with decomposed leaves, whose lobes are cut at the top into three parts; these are of a lucid green, and have a disagreeable smell. The stalks are terminated by umbels of white flowers, each being composed of about ten rays or small umbels, and have a great number of flowers, which spread open, each sitting upon a distinct footstalk; the seeds are small and channelled, and like those of aniseed. It flowers in June, and the seeds ripen in autumn.

Conjugate
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Conium.

Conium
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Conjuration.

2. The *tenuifolium*, with striated seeds, differs from the first in having taller stalks, which are not so much spotted. The leaves are much narrower, and of a paler green; and this difference is constant. It is a biennial plant, and grows naturally in Germany. 3. The *africanum*, with prickly seeds, is a native of the Cape of Good Hope. The plant rarely grows above nine inches high; the lower leaves are divided like those of the small wild rue, and are of a greyish colour; those upon the stalk are narrower, but of the same colour; these are terminated by umbels of white flowers, each of the larger umbels being composed of three small ones; the involucre hath three narrow leaves situated under the umbel. This flowers in July and ripens seed in autumn, soon after which the plants decay.

Medicinal Uses. The first species is sometimes applied externally, in the form of decoction, infusion, or poultice, as a discutient. These are apt to exco-riate, and their vapour is to some particularly disagreeable and hurtful. The stalks are insignificant, and the roots very virulent. With regard to its virtue when taken internally, it has been generally accounted poisonous; which it doubtless is, in a high degree, when used in any considerable quantity. But Dr Stoerk has lately found, that in certain small doses it may be taken with great safety; and that, without at all disordering the constitution, or even producing any sensible operation, it sometimes proves a powerful resolvent in many obstinate disorders. In scirrhus, the internal and external use of hemlock has been found useful, but then mercury has been generally used at the same time. In open cancer, it often abates the pains, and is free from the constipating effects of opium. It is likewise used in scrophulous tumors and ulcers, and in other ulcers that are only defined by the term ill-conditioned. It is also recommended by some in chincough, and various other diseases. Its common, and perhaps best form, is that of the powdered leaves, in the dose at first of two or three grains a-day, which in some cases has been gradually increased to upwards of two ounces a-day, without producing giddiness. An extract from the seeds is said to produce giddiness sooner than that from the leaves. Hence, while both the London and Edinburgh colleges have given a place to the succus spissatus cicutæ, into the pharmacopœia of the latter an extractum feminum cicutæ is also introduced.

CONJUNCT, in a general sense, signifies conjoined, concurrent, or united.

CONJUNCT Rights, in Scots law. See **LAW**, Part III. n° clxxx. 15, &c.

CONJUNCT, or *Confident Persons*, in Scots law. *Ibid.* n° clxxxiii. 8.

CONJUNCTION, in astronomy, the meeting of two or more stars or planets in the same degree of the zodiac.

CONJUNCTION, in grammar, an indeclinable word or particle, which serves to join words and sentences together, and thereby shows their relation or dependence upon one another. See **GRAMMAR**.

CONJURATION, magic words, characters, or ceremonies, whereby evil spirits, tempests, &c. are supposed to be raised, or driven away. The Romish priests pretend to expel devils, by preparing holy wa-

ter in a particular manner, and sprinkling it over the possessed, with a number of conjurations and exorcisms.

Some authors make the difference between conjuration and witchcraft to consist in this; that the former effects its end by prayers and invocation of God's name, &c. to compel the devil to do what is desired; so that the conjurer is supposed to be at war with the devil, and that evil spirit to act merely out of constraint: whereas the latter attains its end by an immediate application to the devil himself; and the devil's complaisance is supposed to be the consequence of some compact between them, so that the devil and the witch have a good understanding together. Both these, again, differ from enchantment and forcery; in that these latter operate secretly and slowly by spells, charms, &c. without ever calling on the devil, or having any conference with him.

CONN. See **COND.**

CONNAUGHT, one of the four provinces of Ireland, bounded on the east by that of Leinster, on the west by the ocean, on the north and north-west by part of the ocean and province of Ulster, and on the south and east by Munster. It is about 130 miles in length, and 84 in breadth. It has no rivers of any great note besides the Shannon. It has several convenient bays and creeks, and is fertile in many places. It had several dangerous bogs, over-run with woods, which are now in some measure cleared away. This province produces abundance of cattle, sheep, deer, hawks, and honey; but the inhabitants being lazy, it is the least cultivated of all the four provinces. It contains 1 archbishopric, 5 bishoprics, 6 counties, 7 market-towns, 8 places of trade, 10 boroughs that send members to parliament, 47,256 houses, 24 old castles, besides fortresses that have been erected of late, and 330 parishes. The principal town is Galway.

CONNARUS, **CEYLON SUMACH**: A genus of the decandria order, belonging to the monodelphia class of plants; and in the natural method ranking with those of which the order is doubtful. The stigma is simple, the capsule bivalved, unilocular, and monospermous. There is but one species, viz. the monocarpus. This is a native of India, and rises with a ligneous stalk eight or ten feet high, which is hard, rigid, and covered with a black bark, and divides upward into two or three branches garnished with trifoliate leaves, having long footstalks placed alternate. It is propagated by cuttings, and is to be treated in the same manner with other tender exotics.

CONNECTICUT, a large river in New England, which gives name to one of the five colonies of that province (see the next article). It rises in a swamp on the height of land, in Lat. 45. 10. Long. 4. E. After a sleepy course of eight or ten miles, it tumbles over four separate falls, and turning west keeps close under the hills which form the northern boundary of the vale through which it runs. The Amonoosuck and Israel rivers, two principal branches of Connecticut river, fall into it from the east, between the latitudes 44° and 45°. Between the towns of Walpole on the east, and Westminster on the west, side of the river, are the great Falls. The whole river, compressed between two rocks scarcely 30 feet asunder, shoots with amazing rapidity into a broad basin below. Over these

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these falls, a bridge 160 feet in length, was built in 1784, under which the highest floods may pass without detriment. This is the first bridge that was ever erected over this noble river. Above Deerfield in Massachusetts it receives Deerfield river from the west, and Miller's river from the east, after which it turns westerly in a sinuous course to Fighting falls, and a little after tumbles over Deerfield falls, which are impassable by boats. At Windsor in Connecticut it receives Farmington river from the west; and at Hartford meets the tide. From Hartford it passes on in a crooked course, until it falls into Long Island sound, between Saybrook and Lyme.

The length of this river, in a straight line, is nearly 300 miles. Its general course is several degrees west of south. It is from 80 to 100 rods wide, 130 miles from its mouth. At its mouth is a bar of sand which considerably obstructs the navigation. Ten feet water at full tides is found on this bar, and the same depth to Middleton. The distance of the bar from this place, as the river runs, is 36 miles. Above Middleton are several shoals which stretch quite across the river. Only six feet water is found on the shoal at high tide, and here the tide ebbs and flows but about eight inches. About three miles below Middleton the river is contracted to about 40 rods in breadth by two high mountains. Almost every where else the banks are low, and spread into fine extensive meadows. In the spring floods, which generally happen in May, these meadows are covered with water. At Hartford the water sometimes rises 20 feet above the common surface of the river, and having all to pass through the above-mentioned strait, it is sometimes two or three weeks before it returns to its usual bed. These floods add nothing to the depth of water on the bar at the mouth of the river; this bar lying too far off in the sound to be affected by them.

On this beautiful river, whose banks are settled almost to its source, are many pleasant, neat, well-built towns. On its western bank, from its mouth northward, are the towns of Saybrook, Haddam, Middleton, Weathersfield, Hartford, Windsor, and Suffield, in Connecticut; West Springfield, Northampton, Hatfield, and Deerfield, in Massachusetts; Guilford, Brattleborough; in which is Fort Dummer, Westminster, Windsor, Hartford, Fairlee, Newbury, Brunswick, and many others in Vermont. Crossing the river into New Hampshire, and travelling on the eastern bank, you pass through Woodbury nearly opposite to Brunswick, Northumberland, the Coos country, Lyman, Orford, Lyme, Hanover, in which is Dartmouth College, Lebanon, Cornish, Clermont, Charleston, or N^o 4, Chesterfield, and many others in New Hampshire, Sunderland, Hadley, Springfield, Long Meadow, in Massachusetts; and in Connecticut, Enfield, East Windsor, East Hartford, Glastenbury, East Haddam, and Lyme.

This river is navigable to Hartford, upwards of 50 miles from its mouth, and the produce of the country for 200 miles above is brought thither in boats. The boats which are used in this business are flat-bottomed, long, and narrow, for the convenience of going up stream, and of so light a make as to be portable in carts. They are taken out of the river at three different carrying places, all of which make 15 miles.

Sturgeon, salmon, and shad, are caught in plenty in their season, from the mouth of the river upwards, excepting sturgeon, which do not ascend the upper falls; besides a variety of small fish, such as pike, carp, perch, &c.

From this river are employed three brigs of 180 tons each, in the European trade; and about 60 sail from 60 to 150 tons, in the West India trade; besides a few fishermen, and 40 or 50 coasting vessels.

CONNECTICUT, one of the five states of New England in America; bounded on the north by Massachusetts; on the east by Rhode Island; on the south, by the sound, which divides it from Long Island; and on the west, by the province of New York.

The divisional line between Connecticut and Massachusetts, as settled in 1713, was found to be about 72 miles in length. The line dividing Connecticut from Rhode Island was settled in 1728, and found to be about 45 miles. The sea coast, from the mouth of Paukatuk river, which forms a part of the eastern boundary of Connecticut, in a direct southwardly line to the mouth of Byram river, is reckoned at about 90 miles. The line between Connecticut and New York runs from latitude 41. 0. to latitude 42. 2.; 72 miles. Connecticut contains about 4674 square miles; equal to about 2,960,000 acres.

This state is watered by several fine rivers, the principal of which are, *Connecticut* described in the preceding article, Housatonic, and the Thames. One branch of the Housatonic rises in Laneshorough, the other in Windsor, both in Berkshire county in Massachusetts. It passes through a number of pleasant towns, and empties into the sound between Stratford and Milford. It is navigable 12 miles, to Derby. A bar of shells, at its mouth, obstructs its navigation for large vessels. In this river, between Salisbury and Canaan, is a cataract, where the water of the whole river, which is 150 yards wide, falls about sixty feet perpendicularly, in a perfectly white sheet. A copious mist arises, in which floating rainbows are seen in various places at the same time, exhibiting a scene exceedingly grand and beautiful.

The Thames empties into Long Island sound at New London. It is navigable 14 miles, to Norwich Landing. Here it loses its name, and branches into Shetucket on the east, and Norwich or Little river on the west. The city of Norwich stands on the tongue of land between these rivers. Little river, about a mile from its mouth, has a remarkable and very romantic cataract. A rock 10 or 12 feet in perpendicular height, extends quite across the channel of the river. Over this the whole river pitches, in one entire sheet, upon a bed of rocks below. Here the river is compressed into a very narrow channel between two craggy cliffs, one of which towers to a considerable height. The channel descends gradually, is very crooked, and covered with pointed rocks. Upon these the water swiftly tumbles, foaming with the most violent agitation, 15 or 20 rods, into a broad basin which spreads before it. At the bottom of the perpendicular falls, the rocks are curiously excavated by the constant pouring of the water. Some of the cavities, which are all of a circular form, are five or six feet deep. The smoothness of the water above its descent—the regularity and beauty of the perpendicular fall—the tremendous

Connecticut.

I Rivers.

roughness of the other, and the craggy, towering cliff which impends the whole, present to the view of the spectator a scene indescribably delightful and majestic. On this river are some of the finest mill seats in New England, and those immediately below the falls, occupied by Lathrop's mills, are perhaps not exceeded by any in the world. Across the mouth of this river is a broad, commodious bridge in the form of a wharf, built at a great expence.

Shetucket river, the other branch of the Thames, four miles from its mouth, receives Quinnabog, which has its source in Brimfield in Massachusetts; thence passing through Sturbridge and Dudley in Massachusetts, it crosses into Connecticut, and divides Pomfret from Killingly, Canterbury from Plainfield, and Lisbon from Preston, and then mingles with Shetucket. In passing through this hilly country, it tumbles over many falls, and affords a vast number of mill seats. The source of the Shetucket is not far from that of Quinnabog. It has the name of Willamantik while passing through Stafford, and between Tolland and Willington, Coventry and Mansfield. Below Windham it takes the name of Shetucket, and empties as above. These rivers are fed by numberless brooks from every part of the adjacent country. At the mouth of Shetucket is a bridge of timber 124 feet in length, supported at each end by pillars, and held up in the middle by braces on the top, in the nature of an arch.

The two principal harbours are at New London and New Haven. The former opens to the south. From the light-house, which stands at the mouth of the harbour, to the town, is about three miles; the breadth is three quarters of a mile, and in some places more. The harbour has from five to six fathoms water—a clear bottom—tough ooze, and as far as one mile above the town is entirely secure and commodious for large ships. New Haven harbour is greatly inferior to that of New London. It is a bay which sets up northerly from the sound about four miles. Its entrance is about half a mile wide. It has very good anchorage, and two and an half fathoms at low water, and three fathoms and four feet at common tides. The whole of the sea coast is indented with harbours, many of which are safe and commodious, but are not sufficiently used to merit a description.

Connecticut, though subject to the extremes of heat and cold in their seasons, and to frequent sudden changes, is very healthful. As many as one in 46 of the inhabitants of Connecticut, who were living in 1774, were upwards of 70 years old. From accurate calculation it is found, that about one in eight live to the age of 70 years and upwards; one in 13 to the age of 80 years, and one in about 30 to the age of 90.

In the maritime towns the weather is variable, according as the wind blows from the sea or land. As you advance into the country, the sea breezes have less effect upon the air, and consequently the weather is less variable. The shortest day is 8 hours and 58 minutes, and the longest 15 hours. The northwest winds, in the winter-season, are often extremely severe and piercing, occasioned by the great body of snow which lies concealed from the dissolving influence of sun in the immense forests north and northwest. The

clear and serene temperature of the sky, however, makes amends for the severity of the weather, and is favourable to health and longevity. Connecticut is generally broken land, made up of mountains, hills, and valleys; and is exceedingly well watered. Some small parts of it are thin and barren. It lies in the fifth and sixth northern climates, and has a strong fertile soil. Its principal productions are Indian corn, rye, wheat in many parts of the state, oats and barley, which are heavy and good, and of late buck-wheat—flax in large quantities—some hemp, potatoes of several kinds, pumpkins, turnips, peas, beans, &c. &c. fruits of all kinds, which are common to the climate. The soil is very well calculated for pasture and mowing, which enables the farmers to feed large numbers of neat cattle and horses. A actual calculation has evinced, that any given quantity of the best mowing land in Connecticut, produces about twice as much clear profit as the same quantity of the best wheat land in the state of New York. Many farmers, in the eastern part of the state, have lately found their advantage in raising mules, which are carried from the ports of Norwich and New London to the West India islands, and yield a handsome profit. The beef, pork, butter, and cheese of Connecticut, are equal to any in the world.

The trade of Connecticut is principally with the West India islands, and is carried on in vessels from 60 to 140 tons. The exports consist of horses, mules, oxen, oak staves, hoops, pine boards, oak planks, beans, Indian corn, fish, beef, pork, &c. Horses, live cattle, and lumber, are permitted in the Dutch, Danish, and French ports. Beef and fish are liable to such heavy duties in the French islands, as that little profit arises to the merchant who sends them to their ports. Pork and flour are prohibited. As the ordinance making free ports in the French West India islands extends to all foreigners, the price of molasses and other articles, has been greatly enhanced by the English purchases for Canada and Nova Scotia; so that the trade of Connecticut with the French West India islands is not profitable. Cotton, cocoa, indigo, and sugars, are not permitted to be brought away by Americans. The severity with which these prohibitory laws are administered is such, as that these articles cannot be smuggled.

Connecticut has a large number of coasting vessels employed in carrying the produce of the state to other states—To Rhode Island, Massachusetts, and New Hampshire, they carry pork, wheat, corn, and rye. To North and South Carolinas and Georgia, butter, cheese, salted beef, cyder, apples, potatoes, hay, &c. and receive in return rice, indigo, and money. But as New York is nearer, and the state of the markets always well known, much of the produce of Connecticut, especially of the western parts, is carried there; particularly pot and pearl ashes, flax-seed, beef, pork, cheese, and butter, in large quantities. Most of the produce of Connecticut river, from the parts of Massachusetts, New Hampshire, and Vermont, as well as of Connecticut, which are adjacent, goes to the same market. Considerable quantities of the produce of the eastern parts of the state are marketed at Boston and Providence.

The value of the whole exported produce and commodities from this state, before the year 1774, was then estimated at about L. 200,000 lawful money annually.

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productions.4
Trade.

Connecticut.

nually. Since this time no accurate estimate has been made, so that it is impossible to tell whether the amount has since been increased or diminished.

In 1774, the number of shipping in Connecticut was 180; their tonnage 10,317; seafaring men 1162; besides upwards of 20 sail of coasting vessels, which employed about 90 seamen. This state has not yet fully recovered the confusion in which it was involved by the late war; so that the number of shipping, &c. has not, at any period since 1774, been ascertained with accuracy. It is probable, however, considering the losses sustained by the war, the decay of the ship-building business, and the number of unfortunate shipwrecks, and losses by hurricanes in the West Indies, that the shipping and seamen are not now so numerous as in 1774.

5
Manufactures.

The number of shipping from the port of New London employed in 1788 in the European and West India trade, was four ships, one snow, 54 brigantines, 32 schooners, and 45 sloops. The number of horses and cattle exported from the district round New London, from the 10th of January 1787 to the 10th of January 1788, was 6917; besides jack-asses imported and exported, not included. From 1786 to 1787, the number was 6671; so that the last year exceeded the other 246. From March 1787 to January 1788, 1454 horses, 700 oxen, and 23 cows, were exported from the port of Middleton.

The farmers in Connecticut and their families are mostly clothed in plain, decent, homespun cloth. Their linens and wollens are manufactured in the family way; and although they are generally of a coarser kind, they are of a stronger texture, and much more durable than those imported from France and Great Britain. Many of their cloths are fine and handsome.

In New Haven is a linen manufactory which flourishes, and one for cotton is about to be established. In East Hartford is a glass-work, a snuff and powder mill, and an iron-work and slitting-mill. Iron works are established also at Salisbury, Norwich, and other parts of the state. At Stafford is a furnace at which is made large quantities of hollow ware and other ironmongery, sufficient to supply the whole state. Paper is manufactured at Norwich, Hartford, New Haven, and in Litchfield county. Nails of every size are made in almost every town and village in Connecticut; so that considerable quantities can be exported to the neighbouring states, and at a better rate than they can be had from Europe. Ironmongery, hats of the best kinds, candles, leather, shoes, and boots, are manufactured in this state. We must not omit to mention wooden dishes and other wooden ware, which are made in vast quantities in Suffield and some few other places, and sold in almost every part of the eastern states. Oil-mills, of a new and very ingenious construction, have been erected in several parts of the state.

It appears from experiments made formerly in this state, that a bushel of sun-flower seed yields a gallon of oil; and that an acre of ground planted with the seed at three feet apart, will yield between forty and fifty bushels of the seed. This oil is as mild as sweet oil, and is equally agreeable with fallads, and as a medicine. It may, moreover, be used with advantage in paints, varnishes, and ointments. From its being ma-

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nufactured in our own country, it may always be procured and used in a fresh state. The oil is pressed from the seed in the same manner that cold drawn linseed oil is obtained from flax-seed, and with as little trouble. Sweet olive oil sells for six shillings a quart. Should the oil of the sun-flower sell for only two-thirds of that price, the produce of an acre of ground, supposing it to yield only 40 bushels of the seed, will be L. 32, a sum far beyond the product of an acre of ground in any kind of grain. The seed is raised with very little trouble, and grows in land of moderate fertility. It may be gathered and shelled, fit for the extraction of the oil, by women and children.

Connecticut is divided into eight counties, viz. Hartford, New Haven, New London, Fairfield, Windham, Litchfield, Middlesex, and Tolland. The counties are subdivided into upwards of 80 townships; each of which is a corporation, invested with power to hold lands, choose their own town-officers, to make prudential laws, the penalty of transgression not to exceed 20s. and to choose their own representatives to the general assembly. The townships are generally divided into two or more parishes, in each of which is one or more places for public worship.

Connecticut is the most populous, in proportion to its extent, of any of the thirteen states. It is laid out in small farms from 50 to 300 or 400 acres each, which are held by the farmers in fee simple; and are generally cultivated as well as the nature of the soil will admit. The state is chequered with innumerable roads or highways, crossing each other in every direction. A traveller in any of these roads, even in the most unsettled parts of the state, will seldom pass more than two or three miles without finding a house or cottage, and a farm under such improvements as to afford the necessaries for the support of a family. The whole state resembles a well-cultivated garden; which, with that degree of industry that is necessary to happiness, produces the necessaries and conveniences of life in great plenty.

In 1756, the number of inhabitants in Connecticut was 130,611; in 1774, there were 197,856 souls. In 18 years, the increase was 67,245; from 1774 to 1782, the increase was but 11,294 persons. This comparatively small increase of inhabitants may be satisfactorily accounted for from the destruction of the war, and the numerous emigrations to Vermont, the western parts of New Hampshire, and other states.

The inhabitants are almost entirely of English descent. There are no Dutch, French, or Germans, and very few Scotch or Irish people, in any part of New England.

In addition to what has been already said on these particulars under New England, it may be observed, that the people of Connecticut are remarkably fond of having all their disputes, even those of the most trivial kind, settled according to law. The prevalence of this litigious spirit affords employment and support for a numerous body of lawyers. The number of actions entered annually upon the several dockets in the state, justifies the above observations. That party spirit, however, which is the bane of political happiness, has not raged with such violence in this state as in Massachusetts and Rhode-Island. Public proceedings have been conducted, generally, and especially of

Connecticut.

6
Civil divisions and population7
Character, manners, &c.

Connecticut

Connecticut

late, with much calmness and candour. The people are well informed in regard to their rights, and judicious in the methods they adopt to secure them.

The clergy, who are numerous, and, as a body, very respectable, have hitherto preserved a kind of aristocratical balance in the very democratical government of the state; which has happily operated as a check upon the overbearing spirit of republicanism. It has been lamented that the unhappy religious disputes which have too much prevailed among some of the clergy, and the too great attention that others have paid to their temporal concerns, to the neglect of their flocks, and an inattention to the qualifications of those who have been admitted to the sacred office, have, heretofore, considerably diminished their influence. It is a pleasing circumstance that the rage for theological disputation is abating; and greater strictness is observed in the admission of candidates to the ministry. Their influence is on the increase; and it is no doubt to be attributed, in part, to their increasing influence, that an evident reformation in the manners of the people of this state has taken place since the peace. In regard to learning and abilities, the clergy, at the present day, are equal to their predecessors at any former period.

8 Religion.

As to ecclesiastical government and discipline, each church is a separate jurisdiction, and claims authority to choose their own minister, to exercise government, and to enjoy gospel ordinances within itself. The churches, however, are not independent of each other; they are associated for mutual benefit and convenience. The associations have power to licence candidates for the ministry, to consult for the general welfare, and to recommend measures to be adopted by the churches, but have no authority to enforce them. When disputes arise in churches, councils are called, by the parties, to settle them; but their power is only advisory. There are as many associations in the state as there are counties; and they meet twice in a year. These are all combined in one general association, who meet annually.

All religions that are consistent with the peace of society are tolerated in Connecticut; and a spirit of liberality and catholicism is increasing. There are very few religious sects in this state; the bulk of the people are congregationalists. Besides these there are episcopalians and baptists; and formerly there was a society of Sandimanians at New-Haven; but they are now reduced to a very small number. The episcopal churches are respectable, and are under the superintendance of a bishop. There were 29 congregations of the baptists in 1784. These congregations, with those in the neighbouring states, meet in associations, by delegation, annually.

9 Chief towns.

There are a great number of very pleasant towns, both maritime and inland, in Connecticut. It contains five incorporated towns or cities. Two of these, Hartford and New Haven, are the capitals of the state. The general assembly is holden at the former in May, and at the latter in October, annually. See HARTFORD and New-HAVEN.

10 Colleges, academies, and schools.

In no part of the world is the education of all ranks of people more attended to than in Connecticut. Almost every town in the state is divided into districts, and each district has a public school kept in it a greater

or less part of every year. Somewhat more than one third of the monies arising from a tax on the polls and rateable estate of the inhabitants, is appropriated to the support of schools, in the several towns, for the education of children and youth. The law directs that a grammar school shall be kept in every county town throughout the state.

There is a grammar school at Hartford, and another at New Haven, supported by a donation of governor Hopkins. This venerable and benevolent gentleman, in his last will, dated 1657, left in the hands of Theophilus Eaton, Esq; and three others, a legacy of L. 1324, "as an encouragement, in these foreign plantations, of breeding up hopeful youths both at the grammar school and college." In 1664, this legacy was equally divided between New Haven and Hartford; and grammar schools were erected, which have been supported ever since.

At Greenfield there is a respectable academy, under the care and instruction of the Rev. Dr Dwight. At Plainfield is another, under the care of the Rev. Mr Benedict. This academy has flourished for several years, and furnished a number of students for Yale and Dartmouth colleges. At Norwich and Windham, likewise, are academies furnished with able instructors; each of these academies have 60 or 70 scholars.

Yale College was founded in 1700, and remained at Killingworth until 1707—then at Saybrook until 1716, when it was removed and fixed at New Haven. See NEW HAVEN.

On the bank of Connecticut river, two miles from Middleton, is a lead mine, which was wrought during the war, at the expence of the state, and was productive. It is too expensive to work in time of peace. Copper mines have been discovered and opened in several parts of the state, but have proved unprofitable, and are much neglected. Iron mines are numerous and productive. Steel ore has been found in the mountains between Woodbury and New Milford. Tales of various kinds, white, brown, and chocolate coloured crystals, zink or spelter, a semimetal, and several other fossils and metals, have been found in Connecticut.

11 Mines, minerals, and fossils.

All freeholders in the state are required by law to give in lists of their polls and rateable estate, to persons appointed in the respective towns to receive them, on or before the 20th of August annually. These are valued according to law, arranged in proper order, and sent to the general assembly annually in May.

12 Mode of levying taxes.

The sum total of the list of the polls and rateable estate of the inhabitants of Connecticut, as brought into the general assembly in May 1787, were as follows:

Sum total of the single list	L. 1,484,901 6 4½
Assessments,	47,790 2 9
One quarter of the fourfolds,	1,176 9 4

Total, - L. 1,533,867 18 5½

On this sum taxes are levied, so much on the pound, according to the sum proposed to be raised. A tax of two-pence on the pound would raise L. 12,782, 4s.

The ordinary annual expences of government before the war amounted to near L. 4000 Sterling, exclusive of that which was appropriated to the support of schools. The expences have since increased.

U u At

Connecticut.

13
Mineral
springs.14
Constitution
and courts of
justice.

At Stafford is a medicinal spring, which is said to be a sovereign remedy for scorbutic, cutaneous, and other disorders. At Guilford is a spring, whose water, it is said, when separated from the fountain, will evaporate even when put into a bottle and tightly corked.

It is difficult to say what is the constitution of this state. Contented with the form of government which originated from the charter of Charles II. granted in 1662, the people have not been disposed to run the hazard of framing a new constitution since the declaration of independence. They have tacitly adopted their old charter as the ground of civil government, so far as it is applicable to an independent people.

Agreeable to this charter, the supreme legislative authority of the state is vested in a governor, deputy-governor, twelve assistants or counsellors, and the representatives of the people, styled the *General Assembly*. The governor, deputy-governor, and assistants, are annually chosen by the freemen in the month of May. The representatives (their number not to exceed two from each town) are chosen by the freemen twice a year, to attend the two annual sessions, on the second Thursdays of May and October. This assembly has power to erect judicatories, for the trial of causes civil and criminal, and to ordain and establish laws for settling the forms and ceremonies of government. By these laws the general assembly is divided into two branches, called the upper and lower houses. The upper house is composed of the governor, deputy-governor, and assistants; the lower house, of the representatives of people. No law can pass without the concurrence of both houses. The judges of the superior court hold their offices during the pleasure of the general assembly. The judges of the county courts, and justices, are annually appointed. Sheriffs are appointed by the governor and council, without limitation of time. The governor is captain-general of the militia, the deputy-governor lieutenant-general. All other military offices are appointed by the assembly, and commissioned by the governor.

The mode of electing the governor, deputy governor, assistants, treasurer, and secretary, is as follows: The freemen in the several towns meet on the Monday next after the first Tuesday in April, annually, and give in their votes for the persons they choose for the said offices respectively, with their names written on a piece of paper, which are received and sealed up by a constable in open meeting, the votes for each office by themselves, with the name of the town and office written on the outside. These votes, thus sealed, are sent to the general assembly in May, and there counted by a committee from both houses. All freemen are eligible to any office in government. In choosing assistants, twenty persons are nominated, by the vote of each freeman, at the freemen's meeting for choosing representatives in September annually. These votes are sealed up, and sent to the general assembly in October, and are there counted by a committee of both houses, and the twenty persons who have the most votes stand in nomination; out of which number the twelve who have the greatest number of votes, given by the freemen at their meeting in April, are in May declared assistants in the manner above mentioned. The qualifications of freemen are, maturity in years,

quiet and peaceable behaviour, a civil conversation, and freehold estate to the value of forty shillings *per annum*, or forty pounds personal estate in the list, certified by the select men of the town; it is necessary also that they take the oath of fidelity to the state. Their names are enrolled in the town clerk's office, and they continue freemen for life, unless disfranchised by sentence of the superior court, on conviction of misdemeanor.

The courts are as follows: The justices of the peace, of whom a number are annually appointed in each town by the general assembly, have authority to hear and determine civil actions, where the demand does not exceed four pounds. If the demand exceeds forty shillings, an appeal to the county is allowed. They have cognizance of small offences, and may punish by fine not exceeding forty shillings, or whipping not exceeding ten stripes, or sitting in the stocks. There are eight county courts in the state, held in the several counties by one judge and four justices of the quorum, who have jurisdiction of all criminal cases, arising within their respective counties, where the punishment does not extend to life, limb, or banishment. They have original jurisdiction of all civil actions which exceed the jurisdiction of a justice. Either party may appeal to the superior court, if the demand exceeds twenty pounds, except on bonds or notes vouched by two witnesses.

There are several courts of probate in each county, consisting of one judge. The peculiar province of this court is, the probate of wills, granting administration of intestate estates, ordering distribution of them, and appointing guardians for minors, &c. An appeal lies from any decree of this court to the superior court.

The superior court consists of five judges. It has authority in all criminal cases extending to life, limb, or banishment, and other high crimes and misdemeanors, to grant divorces, and to hear and determine all civil actions brought by appeal from the county courts, or the court of probate, and to correct the errors of all inferior courts. This is a circuit court, and has two stated sessions in each county annually. The superior and county courts try matters of fact by a jury, or without if the parties will agree.

There is a supreme court of errors, consisting of the deputy governor and the twelve assistants. Their sole business is to determine writs of error brought on judgments of the superior court, where the error complained of appears on the record. They have two stated sessions annually, *viz.* on the Tuesdays of the weeks preceding the stated sessions of the general assembly.

The county court is a court of chancery, empowered to hear and determine cases in equity, where the matter in demand does not exceed one hundred pounds. The superior court has cognizance of all cases where the demand exceeds that sum. Error may be brought from the county to the superior court, and from the superior court to the supreme court of errors, on judgment in cases of equity as well as of law.

The general assembly only have power to grant pardons and reprieves, to grant commissions of bankruptcy, or protect the persons and estates of unfortunate debtors.

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The common law of England, so far as it is applicable to this country, is considered as the common law of this state. The reports of adjudication in the courts of king's bench, common pleas, and chancery, are read in the courts of this state as authorities; yet the judges do not consider them as conclusively binding, unless founded on solid reasons which will apply in this state, or sanctioned by concurrent adjudications of their own courts.

The feudal system of descents was never adopted in this state. All the real estate of intestates is divided equally among the children, males and females, except that the eldest son has a double portion. And all estates given in tail, must be given to some person then in being, or to their immediate issue, and shall become fee-simple estates to the issue of the first donee in tail. The widow of an intestate is intitled to a third part of the personal estate for ever, and to her dower, or third part of the houses and lands belonging to the intestate at the time of his death, during her life.

15
Practice of
law.

The practice of law in this state has more simplicity, but less precision, than in England. Assistants and judges are empowered to issue writs through the state, and justices through their respective counties. In these writs, the substance of the complaints or the declarations must be contained; and if neither of the parties show good reason for delay, the causes are heard and determined the same term to which the writs are returnable. Few of the fictions of law, so common in the English practice, are known in this state. The plaintiff always has his election to attach or summon the defendant. Attornies are admitted and qualified by the county courts. Previous to their admission to the bar, they must study two years with a practising attorney in the state, if they have had a college education, and three years if they have not; their morals must be good, and their characters unblemished; and they must sustain an examination by the attorneys of the court of the county where they are admitted, and be by them recommended to the court. When admitted to the county court, they can practice, without other qualifications, in any court in the state. There are upon an average about thirteen attorneys to each county, one hundred and four in the state; a very great proportion for the real exigencies of the people. Yet from the litigious spirit of the citizens, the most of them find employment and support. There is no attorney general, but there is one attorney to the state in each county.

16
History.

The present territory of Connecticut, at the time of the first arrival of the English, was possessed by the Pequot, the Mohegan, Podunk, and many other smaller tribes of Indians.

The Pequots were numerous and warlike. Their country extended along the sea coast from Paukatuk to Connecticut river. About the year 1630, this powerful tribe extended their conquests over a considerable part of Connecticut, over all Long Island, and part of Narraganset. Saslacus, who was the grand monarch of the whole country, was king of this nation. The seat of his dominion was at New London; the ancient Indian name of which was Pequot.

The Mohegans were a numerous tribe, and their territory extensive. Their ancient claim, which was

surveyed and settled by commissioners from queen Anne in 1705, comprehended all New London county, except a narrow strip of about eight miles wide, on the sea coast, almost the whole of the county of Windham, and a part of the counties of Tolland and Hartford. Uncas, distinguished for his friendship to the English, was the Sachem of this tribe.

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The Podunks inhabited East Hartford, and the circumjacent country. The first Sachem of this tribe, of whom the English had any knowledge, was Tatanimoo. He was able to bring into the field more than 200 fighting men.

The first grant of Connecticut was made by the Plymouth council to the earl of Warwick, in 1630, and confirmed by his majesty in council the same year. This grant comprehended all that part of New England which lies west from Narragansett river, 120 miles on the sea coast, from thence, in latitude and breadth aforesaid, to the south sea. The year following, the earl assigned this grant to lord Say and Seal, lord Brook, and nine others.

No English settlements were attempted in Connecticut until the year 1633, when a number of Indian traders, having purchased of Zequasson and Natawanute, two principal Sachems, a tract of land at the mouth of Little river in Windsor, built a house and fortified it, and ever after maintained their right of soil upon the river.

The same year, a little before the arrival of the English, a company of Dutch traders came to Hartford, and built a house which they called the *Hirfe of Good Hope*, and erected a small fort, in which they planted two cannon. The remains of this settlement are still visible on the bank of Connecticut river. This was the only settlement of the Dutch in Connecticut in these ancient times. The Dutch, and after them the province of New York, for a long time claimed as far east as the western bank of Connecticut river. It belongs to the professed historian to prove or disprove the justice of this claim. Douglas says, "The partition line between New York and Connecticut, as established December 1. 1664, run from the mouth of Memorocok river, a little west from Byram river, N. N. W. and was the *ancient easterly limits of New York*, until November 23. 1683, when the line was run nearly the same as it is now settled." If Douglas is right, the New York claim could not have been well founded.

In 1634, Lord Say and Seal, &c. sent over a small number of men, who built a fort at Saybrook, and held a treaty with the Pequot Indians, who in a formal manner gave to the English their right to Connecticut river and the adjacent country.

In 1635, the Plymouth council granted to the Duke of Hamilton, all lands between Narragansett and Connecticut rivers, and back into the country as far as Massachusetts south line. This covered a part of the Earl of Warwick's patent, and occasioned some disputes in the colony. There were several attempts to revive the Hamilton claim, but were never prosecuted.

In October of this year, about sixty persons from Newtown, Dorchester, and Watertown, in Massachusetts, came and settled at Hartford, Wethersfield, and Windsor, in Connecticut; and the June following the

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famous Mr Hooker and his company came and settled at Hartford, and was a friend and father to the colony to the day of his death.

The first court held in Connecticut was at Hartford, April 26. 1636.

The year 1637 was distinguished by the war with the Pequots. This warlike nation had, for some time, been troublesome neighbours. They solicited the Narragansetts to join them in extirpating the English. They had surprized and killed several of the English upon Connecticut river. These threatening appearances and actual hostilities induced the three colonies of Massachusetts, Plymouth, and Connecticut, to combine their forces, to carry the war into their country, and to attempt the entire destruction of the whole tribe. Myantonomo, the Narraganset Sachem, and Uncas, Sachem of the Mohegans, sent to the English and offered their service to join with them against the Pequots. Forces were accordingly raised in all the colonies; but those of Connecticut, on account of their vicinity to the enemy, were first in action. Captain Mason, with 80 English and 100 Indians from Connecticut river, proceeded by water to the Narragansett's country, where 200 of that tribe joined him. On the 24th of May, they began their march for Sasacus fort on Pequot, now Thames river. They afterwards determined first to assault Mystic fort, which was situated between them and Pequot river. On the morning of the 26th of May the attack was made. The Indians, after a midnight revel, were buried in a deep sleep. At the moment of their approach, the sentinel happened to be gone into a wigwam to light his pipe. The barking of a dog gave the alarm. The Indians awoke, seized their arrows, and began their hideous yell. They were joined in their tremendous noise by the Indians in the English army, who were in the rear and afraid to approach. The battle was warm and bloody, and the victory complete. The fort was taken—about 70 wigwams burnt—50 or 60 of the Indians were killed—many were wounded and taken, and the rest escaped. Sasacus and his warriors at Pequot, struck with terror at the news of this defeat, demolished their principal fort, burnt their wigwams, and fled to the westward. Capt. Stoughton, with 160 men from Massachusetts, had by this time arrived at Saybrook. He with his forces joined Captain Mason and pursued the Indians, and overtook and surrounded them in a great swamp near Fairfield. A Sachem and ninety-nine women and children came out and delivered themselves up to their pursuers. Terms of peace were offered to the rest: but after a short parley they determined, that as they had lived they would die together. There were about 80 who made this resolution. Part of these escaped by means of the darkness of the night. The rest were either killed or taken. In this action the Indians had guns, which is the first account of their having used them. Sasacus fled to the Mohawks, by whom it is reported he was murdered; but it is more probable that he and his company incorporated with them. Many of the Indian captives were unjustifiably sent to Bermudas and sold for slaves. The Pequot tribe was wholly extinguished. This successful expedition struck the Indians that remained with such terror, as restrained them from open hostilities for near forty years after.

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The English thus obtained the country east of the Dutch settlements, by right of conquest. The pursuit of the Indians led to an acquaintance with the lands on the sea coast from Saybrook to Fairfield. It was reported to be a very fine country. This favourable report induced Messrs Eaton and Hopkins, two very respectable London merchants, and Mr Davenport, a man of distinguished piety and abilities, with their company, who arrived this year (1637) from London, to think of this part of the country as the place of their settlement. Their friends in Massachusetts, sorry to part with so valuable a company, dissuaded them from their purpose. Influenced, however, by the promising prospects which the country afforded, and flattering themselves that they should be out of the jurisdiction of a general governor, with which the country was from time to time threatened, they determined to proceed. Accordingly, in March 1638, with the consent of their friends on Connecticut river, they settled at New Haven, and laid the foundation of a flourishing colony, of which Quinnipiack, now New Haven, was the chief town. The first public worship, in this new plantation, was attended on Lord's day, April 18. 1638, under a large spreading oak. The Rev. Mr Davenport preached from Matt. iii. 1. on the temptations of the wilderness. Both colonies, by voluntary compact, formed themselves into distinct commonwealths, and remained so until their union in 1665.

In 1639, the three towns on Connecticut river, already mentioned, finding themselves without the limits of any jurisdiction, formed themselves into a body politic, and agreed upon articles of civil government. These articles were the foundation of Connecticut charter, which was granted in 1662. The substance of the articles, so far as they respect the holding of assemblies, the time and manner of electing magistrates and other civil officers (except that in the old confederation no person was to be chosen governor more than once in two years), and the extent of legislative powers, was transferred into, and established in said charter.

The first church was gathered in New Haven this year, and consisted of seven members. These were chosen by the settlers after Mr Davenport had preached from the words of Solomon, 'Wisdom hath builded her house, she hath hewed out her seven pillars.' These men were indeed the pillars of the church, to whom the rest were added as they became qualified. They were also the court to try all civil actions.

The first settlers in New Haven had all things common; all purchases were made in the name and for the use of the whole plantation; and the lands were apportioned out to each family according to their number and original stock.

At their first election, in October 1639, Mr Theophilus Eaton was chosen governor for the first year. Their elections, by agreement, were to be annual; and the word of God their only rule in conducting the affairs of government in the plantation.

In 1643, the articles of confederation between the four New England colonies, mentioned under the article NEW ENGLAND, were unanimously adopted by the colonies of New Haven and Connecticut.

The English settlement on Delaware, which was under

Connecticut.

under the jurisdiction of New Haven, was surprized by the Swedes, and the people put in irons, under a false pretence that they were entering into a conspiracy with the Indians to extirpate the Swedes.

The general court of New Haven, this year, established it as a fundamental article not to be disputed, That none be admitted as free burgeses but church members, and that none but such should vote at elections. They also ordained, That each town choose from among themselves judges (church members) to be a court, to have cognizance of all civil actions not exceeding twenty pounds; and of criminal causes, where the punishment was, sitting in the stocks, whipping, and fining not exceeding five pounds. There was liberty of appeal from this to the court of magistrates. The court of magistrates consisted of all the magistrates throughout the colony, who were to meet twice a-year at New Haven, for the trial of all capital causes. Six made a quorum. The general court was to consist of the governor, deputy-governor, magistrates, and two representatives from each town. The annual election of officers of government was at this time established, and has ever since continued.

The unsettled state of the colony had hitherto prevented their establishing a code of laws. To supply this defect, the general court ordered, 'That the judicial laws of God, as they were delivered to Moses, and as they are a fence to the moral, being neither typical nor ceremonial, nor having any reference to Canaan, shall be accounted of moral equity and generally bind all offenders, and be rule to all the courts in this jurisdiction, in their proceedings against offenders, until they be branched out into particulars hereafter.'

About this time a war broke out between the Mohegan and Narragansett Indians. A personal quarrel between Myantonomo, sachem of the Narragansetts, and Uncas sachem of the Mohegans, was the foundation of the war. Myantonomo raised an army of 900 warriors, and marched towards the Mohegan country. Uncas by his spies received timely notice of their approach. His seat of residence was in some part of Norwich. He quickly collected 600 of his bravest warriors, and told them, 'The Narragansetts must not come into our town; we must meet them.' They accordingly marched about three miles to a large plain, where the two armies met, and halted within bow-shot of each other. A parley was proposed by Uncas, and agreed to by Myantonomo. The sachems met, and Uncas addressed his enemy as follows. 'You have a great many brave men: so have I. You and I have quarrelled; but these warriors, what have they done? Shall they die to avenge a private quarrel between us? No. Come like a brave man, as you pretend to be, and let us fight. If you kill me, my men shall be yours; if I kill you, your men shall be mine.' Myantonomo replied: 'My men came to fight, and they shall fight.' Uncas, like an experienced warrior, aware of the result of the conference from the superior force of his enemy, had previously signified to his men, that if Myantonomo refused to fight him in single combat, he would immediately fall, which was to be the signal for them to begin the attack. As soon therefore as Myantonomo had finished his laconic speech, Uncas dropped: his men instantly obeyed the

signal, and poured in a shower of arrows upon the unsuspecting Narragansetts, and rushing on with their horrid yells and savage fierceness, put them to flight. Many were killed on the spot, the rest were closely pursued; and some were precipitately driven down craggy precipices, and dashed in pieces. At a place called, from this event, *Sachem's plain*, Uncas overtook and seized Myantonomo by the shoulder. They sat down together; and Uncas with a hoop called in his men, and the battle ceased. Doubtful what to do with the royal prisoner, Uncas and his warriors, in council, determined to carry him to the governor and council at Hartford, and be advised by them. Thither he was accordingly conducted. The governor having advised with his council, told Uncas, that the English were not then at war with the Narragansetts, and of course that it was not proper for them to intermeddle in the matter. Uncas was left to do with him as he pleased. Myantonomo was conducted back to the plain where he was taken, and put to death by Uncas himself. The tragic scene did not end with his death. Uncas, after the manner of the Indians, with his tomahawk cut off a large piece of flesh from the shoulder of his slaughtered enemy, broiled and eat it, saying, with an air of savage triumph, 'It is the sweetest meat I ever eat. It makes me have a stout heart.' His body was afterwards buried, and a pillar erected over it, the remains of which are visible to this day.

The Narragansetts were greatly enraged at the death of their prince, and resolved to take vengeance on the Mohegans. The united colonies interposed to prevent a war between them, but in vain. The Narragansetts resolutely declared, they would continue the war until they had Uncas's head. But as Uncas had ever been a friend to the English, they joined him against his enemies, and were victorious. Such, however, was the enmity of the Narragansetts to the English, that they afterwards sent some of their men to Uncas, with large presents, to induce him to join with them in a war with the colonies. Uncas replied, 'Go tell your king that I will go to Norwich, and advise with Major John Mason and Mr Fitch; if they tell me to join him and fight against the English, I will join him.' In the war that happened soon after, Uncas assisted the English, and the Narragansetts were subdued, and never after were formidable.

In consideration of the success and increase of the New England colonies, and that they had been of no charge to the nation, and in prospect of their being in future very serviceable to it, the English parliament, March 10. 1643, granted them an exemption from all customs, subsidies, and other duties, until further order.

In 1644, the Connecticut adventurers purchased of Mr Fenwick, agent for Lord Say and Seal, and Lord Brook, their right to the colony of Connecticut, for L. 1600.

The history of Connecticut is marked with traces of the same spirit which has been mentioned as characteristic of the Massachusetts, in different stages of their history. Indeed, as Massachusetts was the stock whence Connecticut proceeded, this is to be expected.

The colonies of Connecticut and New Haven, from their first settlement, increased rapidly; tracts of land were

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were purchased of the Indians, and new towns settled from Stamford to Stonington, and far back into the country, when, in 1661, Major John Mason, as agent for the colony, bought of the natives all lands which had not before been purchased by particular towns, and made a public surrender of them to the colony, in the presence of the general assembly. Having done these things, the colonies petitioned King Charles II. for a charter, and their petition was granted. His Majesty, on the 23d of April 1662, issued his letters patent under the great seal, ordaining that the colony of Connecticut should for ever hereafter be one body corporate and politic, in fact and in name, confirming to them their ancient grant and purchase, and fixing their boundaries as follows, viz. "All that part of his Majesty's dominions in New England, in America, bounded east by Narragansett river, commonly called *Narragansett bay*, where the river falleth into the sea; and on the north by the line of Massachusetts plantation, and on the south by the sea, and in longitude as the line of the Massachusetts colony, running from east to west, that is to say, from the said Narragansett bay on the east, to the south sea on the west part, with the islands thereunto belonging." This charter has ever since remained the basis of the government of Connecticut.

Such was the ignorance of the Europeans respecting the geography of America, when they first assumed the right of giving away lands which the God of nature had long before given to the Indians, that their patents extended they knew not where, many of them were of doubtful construction, and very often covered each other in part, and have produced innumerable disputes and mischiefs in the colonies, some of which are not settled to this day. Connecticut construed her charter literally, and passing over New York, which was then in possession of the subjects of a Christian prince, claimed, in latitude and breadth mentioned therein, to the South Sea. Accordingly purchases were made of the Indians, on the Delaware river, west of the western bounds of New York, and within the supposed limits of Connecticut charter, and settlements were made thereon by people from, and under the jurisdiction of, Connecticut. The charter of Pennsylvania, granted to William Penn, in 1681, covered these settlements. This laid the foundation for a dispute, which for a long time was maintained with warmth on both sides. The matter was at last submitted to gentlemen chosen for the purpose, who decided the dispute in favour of Pennsylvania. Many, however, still assert the justice of the Connecticut claim. The state of Connecticut has lately ceded to Congress all their lands west of Pennsylvania, except a reserve of 20 miles square. This cession Congress have accepted, and thereby indubitably established the right of Connecticut to the reserve.

The colony of New Haven, though unconnected with the colony of Connecticut, was comprehended within the limits of their charter, and, as they concluded, within their jurisdiction. But New Haven remonstrated against their claim, and refused to unite with them until they should hear from England. It was not until the year 1665, when it was believed that the king's commissioners had a design upon the New England charters, that these two colonies

formed a union, which has ever since amicably subsisted between them.

In 1672, the laws of the colony were revised, and the general court ordered them to be printed; and also, that "every family should buy one of the law books; such as pay in silver, to have a book for 12 d. such as pay in wheat, to pay a peck and half a book; and such as pay in pease, to pay 2s. a book, the pease at 3s. the bushel." Perhaps it is owing to this early and universal spread of law books, that the people of Connecticut are to this day so fond of the law. In 1750, the laws of Connecticut were again revised, and published in a small folio volume of 258 pages. Dr Douglas observes, that they were the most natural, equitable, plain, and concise code of laws for plantations hitherto extant." There has been a revision of them since the peace, in which they were greatly and very judiciously simplified.

The years 1675 and 1676 were distinguished by the wars with Philip and his Indians, and with the Narragansetts, by which the colony was thrown into great distress and confusion. The incursions of the enraged savages were marked with cruel murders, and with fire and devastation.

In 1684, the charter of Massachusetts bay and Plymouth were taken away, in consequence of Quo warrantos which had been issued against them. The charter of Connecticut would have shared the same fate, had it not been for ——— Wadsworth, Esq; who, having very artfully procured it when it was on the point of being delivered up, buried it under an oak tree in Hartford, where it remained until all danger was over, and then was dug up and reassumed.

Connecticut has ever made rapid advances in population. There have been more emigrations from this than from any of the other states, and yet it is at present full of inhabitants. This increase, under the divine benediction, may be ascribed to several causes. The bulk of the inhabitants are industrious, sagacious husbandmen. Their farms furnish them with all the necessaries, most of the conveniences, and but few of the luxuries, of life. They of course are generally temperate, and, if they choose, can subsist with as much independence as is consistent with happiness. The subsistence of the farmer is substantial, and does not depend on incidental circumstances, like that of most other professions. There is no necessity of serving an apprenticeship to the business, nor of a large stock of money to commence it to advantage. Farmers, who deal much in barter, have less need of money than any other class of people. The ease with which a comfortable subsistence is obtained, induces the husbandman to marry young. The cultivation of his farm makes him strong and healthful. He toils cheerfully through the day—eats the fruit of his own labour with a gladsome heart—at night devoutly thanks his bounteous God for his daily blessings—retires to rest, and his sleep is sweet. Such circumstances as these have greatly contributed to the amazing increase of inhabitants in this state.

Besides, the people live under a free government, and have no fear of a tyrant. There are no overgrown estates, with rich and ambitious landlords, to have an undue and pernicious influence in the election of civil officers. Property is equally enough divided, and must

continue

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Connor.

continue to be so as long as estates descend as they now do. No person is prohibited from voting, or from being elected into office, on account of his poverty. He who has the most merit, not he who has the most money, is generally chosen into public office. As instances of this, it is to be observed, that many of the citizens of Connecticut, from the humble walks of life, have arisen to the first offices in the state, and filled them with dignity and reputation. That base business of electioneering, which is so directly calculated to introduce wicked and designing men into office, is yet but little known in Connecticut. A man who wishes to be chosen into office, acts wisely for that end, when he keeps his desires to himself.

A thirst for learning prevails among all ranks of people in the state. More of the young men in Connecticut, in proportion to their numbers, receive a public education, than in any of the states. Dr Franklin and other literary characters have honoured this state by saying, that it is the *Athens of America*.

The revolution, which so essentially affected the governments of most of the colonies, produced no very perceptible alteration in the government of Connecticut. While under the jurisdiction of Great Britain, they elected their own governors, and all subordinate civil officers, and made their own laws in the same manner and with as little control as they now do. Connecticut has ever been a republic, and perhaps as perfect and as happy a republic as has ever existed. While other states, more monarchical in their government and manners, have been under a necessity of undertaking the difficult task of altering their old, or forming new constitutions, and of changing their monarchical for republican manners, Connecticut has uninterruptedly proceeded in her old track, both as to government and manners; and by these means has avoided those convulsions which have rent other states into violent parties.

CONNECTION, or CONNEXION, the relation or dependence of one thing upon another.

CONNECTION, or *Continuity*, in the drama, consists in the joining of the several scenes together.

The connection is said to be observed, when the scenes of an act succeed one another immediately, and are so joined as that the stage is never left empty.

CONNECTIVES, in grammar, one of the four species under which, according to Mr Harris, all words may be included. They are of two kinds; and as they connect sentences or words, are called by the different names of *conjunctions* and *prepositions*. See GRAMMAR.

CONNIVENT VALVES, in anatomy, those wrinkles, cellules, and vascules, which are found in the inside of the two intestines ilium and jejunum. See ANATOMY n^o 93. *et seq.*

CONNOISSEUR, a French term, of late used in English: it literally denotes a person well versed in any thing; being formed of the verb *connoître*, "to know, understand." Hence it comes to be used in our language for a critic, or person who is a thorough judge or master in any way, particularly in matters of painting and sculpture.

CONNOR (Bernard), a learned physician, was born in the county of Kerry, in Ireland, about the year 1666. Having determined to apply himself to the study

of physic, he went to France, and resided sometime in the university of Montpellier. Afterwards he went to Paris; where he obtained great skill in medicine, anatomy, and chemistry. From thence he travelled to Venice, with the two sons of the high-chancellor of Poland; and then taking a tour through great part of Germany, went to Warfaw, where he was made physician to king John Sobieski. In 1695, he came to England, read a course of lectures in London and Oxford, and became member of the Royal Society and College of Physicians; afterwards, being invited to Cambridge, he read public lectures there, and made various experiments in chemistry. He has rendered himself memorable for a philosophical and medical treatise in Latin, entitled *Evangelium Medici*, i. e. "the Physician's Gospel;" tending to explain the miracles performed by Christ as natural events, upon the principles of natural philosophy. He wrote also a history of Poland; and died in 1698, aged 32.

CONNOR, a city of Ireland, in the county of Antrim and province of Ulster. W. Long. 6. 30. N. Lat. 54. 50.

CONOCARPUS, BUTTON-WOOD: A genus of the monogynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 48th order, *Aggregate*. The corolla is pentapetalous; the seeds naked, solitary, inferior; the flowers aggregate. There are two species, the erecta and procumbens, both natives of the West Indies. They rise to the height of about 16 feet, but are trees of no beauty, nor is the wood of them used for any mechanic purpose in the countries where they grow naturally. They are, however, preserved in some botanic gardens in Britain for the sake of variety.

CONOID, in geometry, a solid body, generated by the revolution of a conic section about its axis. See CONIC Sections.

CONOIDES, in anatomy, a gland found in the third ventricle of the brain, called *pinealis*, from its resemblance to a pine-apple. See ANATOMY, n^o 132.

CONON, the renowned Athenian general and admiral, flourished 394 years before Christ. See ATTICA, n^o 162, 163. After his defeat by Lyfander, he fled to Evagoras king of Cyprus: after which he put himself under the protection of Artaxerxes king of Persia; with whose army he delivered Athens from the oppression of strangers, and rebuilt its walls. In the 360th year of Rome, he beat the Lacedemonians in a sea-fight near Cnidus upon the coast of Asia, deprived them of the sovereign rule they had on sea ever since the taking of Athens, and had some other considerable advantages over them: but falling into the hands of Teribazus a Persian, who envied his glory, he was put to death.

CONOPS, in zoology; a genus of insects belonging to the order diptera, the characters of which are: The rostrum is porrected, and jointed like a knee. The antennæ terminate by a flat and solid articulation, resembling the bowl of a spoon, with a lateral bristle, which when closely examined appears to be very hairy. Of this genus there are several species. 1. The calcitrans is to be found every where, especially in autumn, when it harasses the horses, and draws blood from them with its sting. 2. The macrocephala might at first sight be mistaken for a species of wasp.

Conovium
||
Conrad.

wasp. It is smooth; the forepart of the head is lemon-colour, as are the poisers; the feet are dun-coloured. The thorax is variegated with black and reddish dun. The same takes place with respect to the segments of the abdomen; some of which are edged with lemon-colour, chiefly the second, and part of the third, towards the sides. The wings are brown, watered, and clouded. This beautiful conops is found in meadows. There are eleven or twelve other species.

CONOVIVM, (anc. geog.) a town of the Ordovices, in Britain. From its ruins arose, at the distance of four miles, *Aberconwey*, the mouth of the Conwey, in Caernarvonshire; and on the spot where *Conovium* stood is a hamlet, called *Carbean*, the old town, (Camden.)

CONQUEST, in civil jurisprudence, is the acquisition of property in common by a number of persons.

In some countries they confound acquisition with conquest; but, according to the most general acceptance, acquisition is the gaining of unappropriated goods before the establishment of a community: whereas by the term *conquest*, is ordinarily intended whatever is acquired by a number of persons in community; or by some one for all the others.—As it is more especially in the union of persons by marriage that a community of property takes place; so it is in reference to them that we frequently use the word *conquest*. There are nevertheless conquests also among other persons who are in a tacit community or society; such as obtain by particular local customs. According to this sense of the word, it has been contended by several, that William I. claimed this kingdom; that is, not by right of arms, but by right of conquest or conquest; under promise of succession made by Edward the Confessor, and a contract entered into by Harold to support his pretensions to that succession: and by old writers, *conquestus*, *acquisitio*, and *perquisitio*, are frequently used as synonymous terms.

CONQUEST, in the law of nations, is the acquisition of sovereignty by force of arms, by some foreign prince; who reduces the vanquished under his empire. The right of conquest is derived from the laws of war; and when a people is subjected, the conduct of the conqueror is regulated by four kinds of law. First, the law of nature, which dictates whatever tends to self-preservation; secondly, our reason, which teaches us to use others, as we would be treated ourselves; thirdly, the laws of political society, to which nature has not assigned any precise boundary; lastly, the law which is derived from the particular circumstances attending the conquest. Thus, a state conquered by another will be treated in one of the four methods following: Either the conqueror will continue it under its own laws, and will only claim the exercise of civil and ecclesiastical sovereignty; or he will impose a new form of government; or he will destroy the frame of their society, and incorporate the inhabitants with others; or he will exterminate them.

CONRAD II. elected emperor of Germany in 1004. He was obliged to take the field against most of the German dukes who had revolted from him; and he put Ernest duke of Suabia under the ban of the em-

N^o 89.

pire. This being one of the earliest instances of such a proscription, the formula is inserted here for its singularity. "We declare thy wife a widow, thy children orphans; and we send thee, in the name of the devil, to the four corners of the world." It was in the reign of this prince that the German fiefs became hereditary. He died in 1039.

CONRAD III. emperor of Germany in 1138. The duke of Bavaria opposed his election, and being put under the ban of the empire, and deprived of his duchy, he could not sur vive his disgrace. The margrave of Austria was ordered by the Emperor to take possession of Bavaria; but Welsti, uncle to the deceased Duke, attacked him, and was defeated near the castle of Winsburgh: the battle fought upon this occasion is famous in history, as having given rise to the party names of *Guelphs* and *Gibbelines*, afterwards assumed in Italy. The parole of the day with the Bavarians was *Welsti*, from the name of their general; that of the Imperialists *Werblingen*, from a small village where Frederic Duke of Suabia, their commander, had been nursed: by degrees these names served to distinguish the two parties; and the Italians, who could not accustom themselves to such rough words, formed from them their *Guelphs* and *Gibbelines*. He died in 1152.

CONRAD of Lichtenau, or Abbas Uspergensis, was author of an Universal Chronology from the creation to 1229, continued by an anonymous writer to Cha. V. He collected a fine library, and died about the year 1240.

CONRADIN, or CONRAD junior, son of Conrad IV. was acknowledged Emperor by the Gibbelines, who received him in triumph at Rome: but Pope Alexander IV. had published a crusade against this orphan; and Urban VII. his successor, gave the empire to Charles of Anjou, brother to Louis IX. king of France; and the unfortunate youth, though powerfully supported even by the Turks, lost a battle, in which he was taken prisoner, and was beheaded, by order of his base opponent, publicly at Naples in 1229, in the 18th year of his age. In him ended the race of the Dukes of Suabia, which had produced several kings and emperors.

CONSANGUINITY, or KINDRED, is defined by the writers on these subjects to be, *vinculum personarum ab eodem stipite descendendum*; "the connection or relation of persons descended from the same stock or common ancestor." This consanguinity is either lineal or collateral.

Lineal consanguinity is that which subsists between persons of whom one is descended in a direct line from the other; as between John Stiles (the *propositus* in the table of consanguinity) and his father, grandfather, great-grandfather, and so upwards in the direct ascending line; or between John Stiles and his son, grand-son, great-grandson, and so downwards in the direct descending line. Every generation, in this direct lineal consanguinity, constitutes a different degree, reckoning either upwards or downwards: the father of John Stiles is related to him in the first degree, and so likewise is his son; his grandfire and grandson, in the second; his great grandfire and great-grandson in the third. This is the only natural way of reckoning

Conrad
||
Consanguinity.

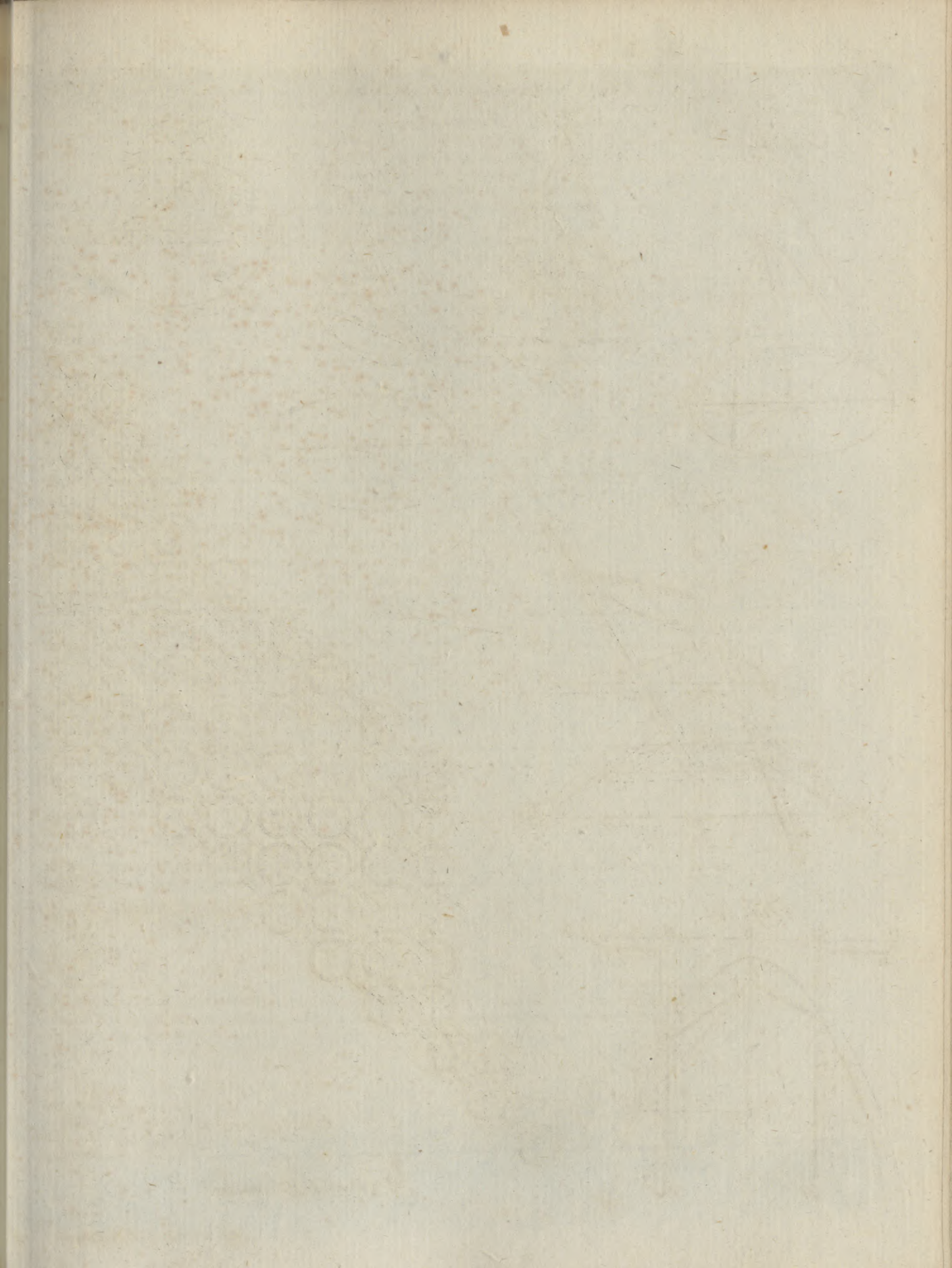


Fig. 3.

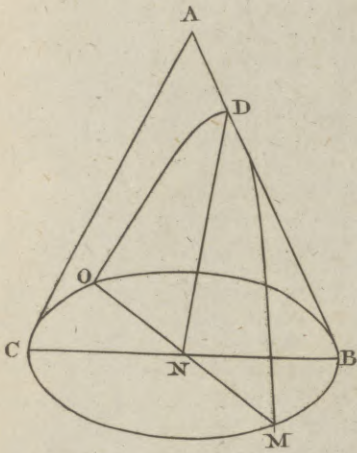


Fig. 1.

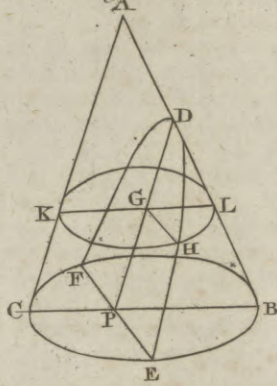


Fig. 2.

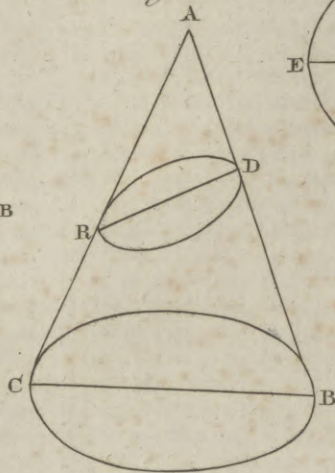


Fig. 5.



Fig. 6.

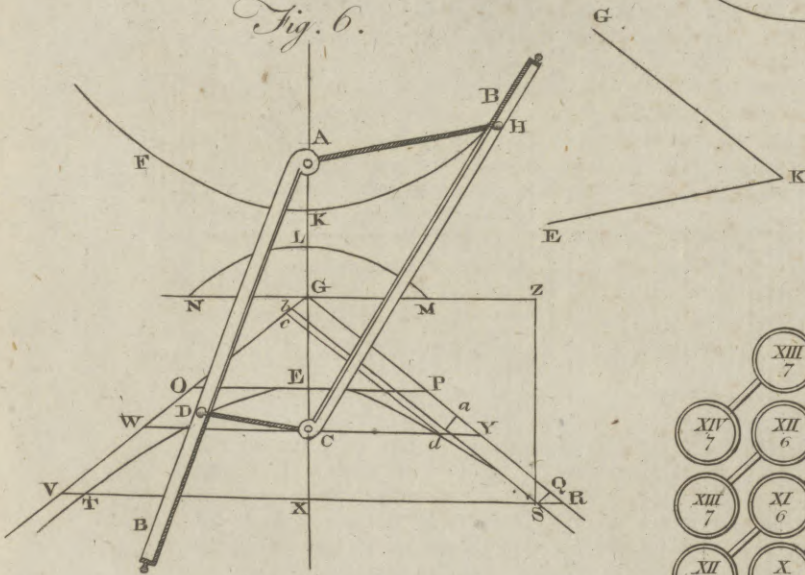
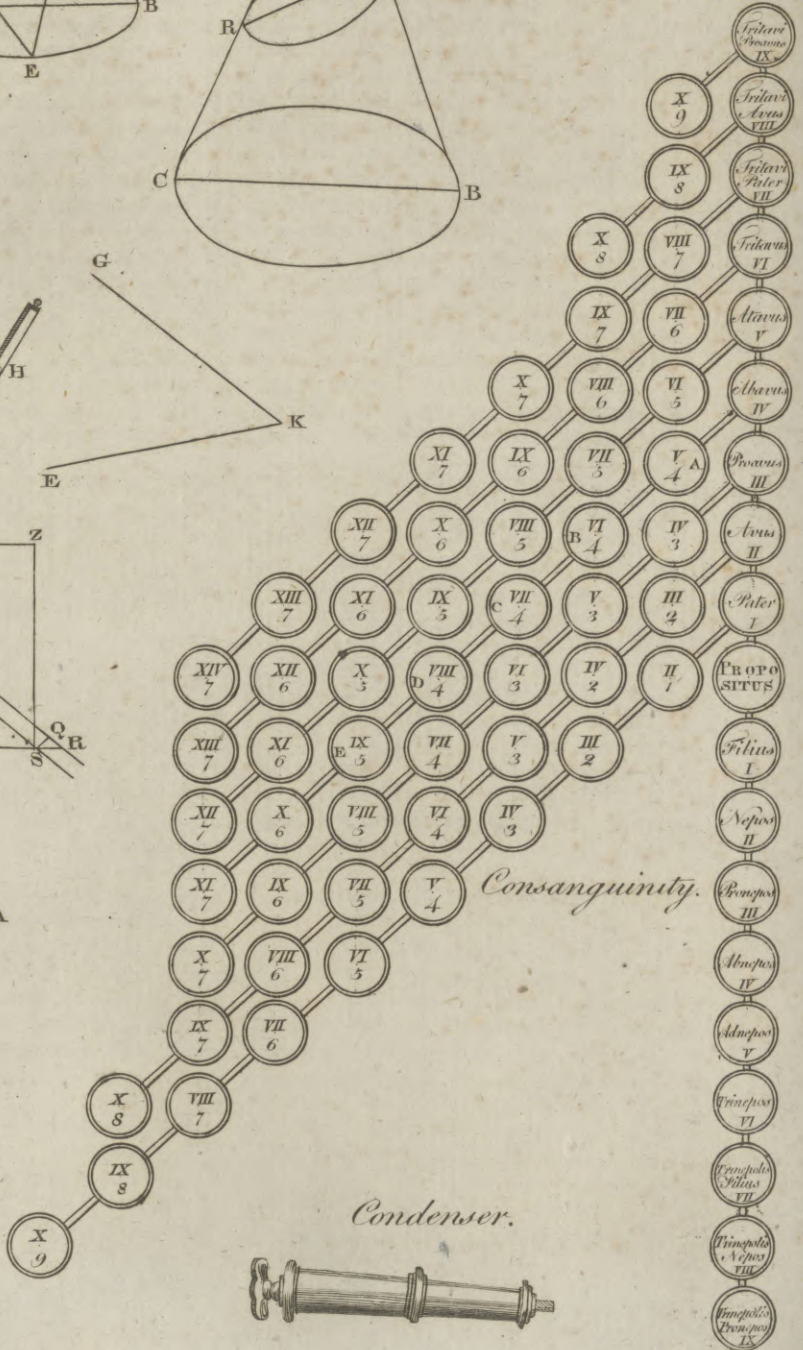
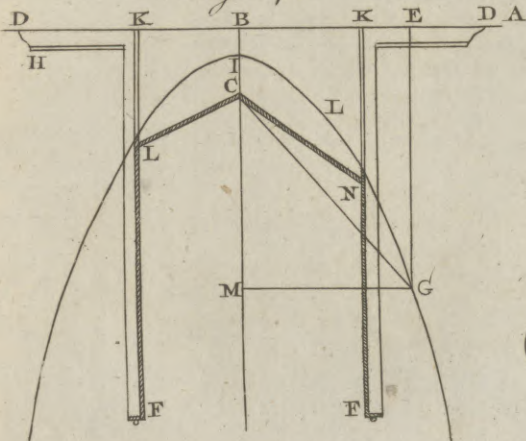


Fig. 4.



Confanguinity. reckoning the degrees in the direct line; and therefore universally obtains, as well in the civil and canon, as in the common law.

The doctrine of lineal confanguinity is sufficiently plain and obvious; but it is, at the first view, astonishing to consider the number of lineal ancestors which every man has, within no very great number of degrees: and so many different bloods is a man said to contain in his veins, as he hath lineal ancestors. Of these he hath two in the first descending degree; his own parents: he hath four in the second; the parents of his father, and the parents of his mother: he hath eight in the third, the parents of his two grandfathers, and of his two grandmothers: and, by the same rule of progression, he hath 128 in the seventh; 1024 in the tenth; and at the 20th degree, or the distance of 20 generations, every man hath above a million of ancestors, as common arithmetic will demonstrate (A). This lineal confanguinity, we may observe, falls strictly within the definition of *vinculum personarum ab eodem stipite descendendum*; since lineal relations are such as descend one from the other, and both of course from the same common ancestor.

Collateral kindred answers to the same description: collateral relations agreeing with the lineal in this, that they descend from the same stock or ancestor; but differing in this, that they do not descend the one from the other. Collateral kinsmen, then, are such as lineally spring from one and the same ancestor, who is the *stirps*, or "root," the *stipes*, "trunk," or common stock, from whence these relations are branched out. As if John Stiles hath two sons, who have each a nu-

merous issue: both these issues are lineally descended from John Stiles as their common ancestor; and they are collateral kinsmen to each other, because they are all descended from this common ancestor, and all have a portion of his blood in their veins, which denominates them *consanguineous*.

We must be careful to remember, that the very being of collateral confanguinity consists in this descent from one and the same common ancestor. Thus Titius and his brother are related; why? because both are derived from one father: Titius and his first cousin are related; why? because both descend from the same grandfather; and his second cousin's claim to confanguinity is this, that they are both derived from one and the same great-grandfather. In short, as many ancestors as a man has, so many common stocks he has from which collateral kinsmen may be derived. And as we are taught by holy writ, that there is one couple of common ancestors belonging to us all, from whom the whole race of mankind is descended, the obvious and undeniable consequence is, that all men are in some degree related to one another. For, indeed, if we only suppose each couple of our ancestors to have left, one with another, two children; and each of those children to have left, on an average, two more (and without such a supposition the human species must be daily diminishing); we shall find that all of us have now subsisting near 270 millions of kindred in the 15th degree, at the same distance from the several common ancestors as we ourselves are; besides those that are one or two degrees nearer to or farther from the common stock, who may amount to as many

X x

more.

(A) This will seem surprising to those who are unacquainted with the increasing power of progressive numbers; but is palpably evident from the following table of a geometrical progression, in which the first term is 2, and the denominator also 2: or, to speak more intelligibly, it is evident, for that each of us has two ancestors in the first degree, the number of whom is doubled at every remove; because each of our ancestors has also two immediate ancestors of his own.

1	2
2	4
3	8
4	16
5	32
6	64
7	128
8	256
9	512
10	1024
11	2048
12	4096
13	8192
14	16384
15	32768
16	65536
17	131072
18	262144
19	524288
20	1048576

A shorter way of finding the number of ancestors at any even degree, is by squaring the number of ancestors at half that number of degrees. Thus, 16, the number of ancestors at 4 degrees, is the square of 4, the number of ancestors at two; 256 is the square of 16; 65536 of 256; and the number of ancestors at 40 degrees would be the square of 1,048,576, or upwards of a million of millions.

Confanguinity.

more (b). And if this calculation should appear incompatible with the number of inhabitants on the earth, it is because, by intermarriages among the several descendants from the same ancestor, a hundred or a thousand modes of confanguinity may be consolidated in one person; or he may be related to us a hundred or a thousand different ways.

The method of computing these degrees in the canon law, which we have adopted, is as follows. We begin at the common ancestor, and reckon downwards; and in whatsoever degree the two persons, or the most remote of them, is distant from the common ancestor, that is the degree in which they are related to each other. Thus, Titius and his brother are related in the first degree; for from the father to each of them is counted only one: Titius and his nephew are related in the second degree; for the nephew is two degrees removed from the common ancestor, *viz.* his own grandfather, the father of Titius: or (to give a more illustrious instance from the English annals) King Henry VII. who slew Richard III. in the battle of Bosworth, was related to that prince in the fifth degree. Let the *propositus*, therefore, in the table of confanguinity, represent King Richard III. and the class marked *b*, King Henry VII. Now their common stock

Confanguinity.

or ancestor was King Edward III. the *abavus* in the same table: from him to Edmund Duke of York, the *proavus* is one degree; to Richard Earl of Cambridge, the *avus*, two; to Richard Duke of York, the *pater*, three; to King Richard III. the *propositus*, four; and from King Edward III. to John of Gant (A) is one degree; to John Earl of Somerset (B) two; to John Duke of Somerset (c) three; to Margaret Countess of Richmond (d) four; to King Henry VII. (E) five. Which last-mentioned prince, being the farthest removed from the common stock, gives the denomination to the degree of kindred in the canon and municipal law. Though according to the computation of the civilians (who count upwards from either of the persons related, to the common stock, and then downwards again to the other; reckoning a degree for each person both ascending and descending) these two princes were related in the ninth degree: for from King Richard III. to Richard Duke of York is one degree; to Richard Earl of Cambridge two; to Edmund Duke of York three; to King Edward III. the common ancestor, four; to John of Gant five; to John Earl of Somerset six; to John Duke of Somerset seven; to Margaret Countess of Richmond eight; to King Henry VII. nine. See the Table of Confanguinity

(b) This will swell more considerably than the former calculation: for here, though the first term is but 1, the denominator is 4; that is, there is *one* kinsman (a brother) in the first degree, who makes, together with the *propositus*, the two descendants from the first couple of ancestors; and in every other degree, the number of kindred must be the *quadruple* of those in the degree which immediately precedes it. For since each couple of ancestors has two descendants who increase in a duplicate ratio, it will follow, that the ratio in which all the descendants increase downwards, must be double to that in which the ancestors increase upwards: but we have seen, that the ancestors increase in a duplicate ratio: therefore the descendants must increase in a double duplicate; that is, in a quadruple ratio.

Collateral Degrees. Number of Kindred.

1	1
2	4
3	16
4	64
5	256
6	1024
7	4096
8	16384
9	65536
10	262144
11	1048576
12	4194304
13	16777216
14	67108864
15	268435456
16	1073741824
17	4294967296
18	17179869184
19	68719476736
20	274877906944

This calculation may also be formed by a more compendious process, *viz.* by squaring the couples, or half the number of ancestors, at any given degree; which will furnish us with the number of kindred we have in the same degree, at equal distance with ourselves from the common stock, besides those at unequal distances. Thus, in the tenth lineal degree, the number of ancestors is 1024; its half, or the couples, amount to 512; the number of kindred in the tenth collateral degree amounts therefore to 262144, or the square of 512. And if we will be at the trouble to recollect the state of the several families within our own knowledge, and observe how far they agree with this account; that is, whether, on an average, every man has not one brother or sister, four first-cousins, sixteen second-cousins, and so on; we shall find, that the present calculation is very far from being overcharged.

Confanguinity,
Conscience.

Confanguinity (Plate CXLVI), wherein all the degrees of collateral kindred to the *propofitus* are computed, as far as the tenth of the civilians and the seventh of the canonists inclusive; the former being distinguished by the numeral letters, the latter by the common ciphers.

CONSANGUINITY and *Affinity* (degrees of), forbidden in marriage. See MARRIAGE; and LAW, Part III. N^o clx. 4.

CONSANGUINITY and *Affinity*, an objection against a judge. See LAW, Part III. N^o clvi. 12. Against a witness, *ibid.* clxxxiv. 12.

CONSCIENCE, a secret testimony of the soul, whereby it gives its approbation to things that are naturally good, and condemns those that are evil. See *MORAL Philosophy*.

A man of integrity will never listen to any reason, or give way to any measure, or be misled by any inducement, against conscience.—The inhabitants of a great town offered Marshal de Turenne 100,000 crowns, upon condition he would take another road, and not march his troops their way. He answered them, “As your town is not on the road I intend to march, I cannot accept the money you offer me.”—The Earl of Derby, in the reign of Edward III. making a descent in Guienne, carried by storm the town of Bergerac, and gave it up to be plundered. A Welch knight happened by chance to light upon the receiver’s office. He found there such a quantity of money that he thought himself obliged to acquaint his general with it, imagining that so great a booty naturally belonged to him. But he was agreeably surpris’d when the earl told him, with a pleasant countenance, that he wished him joy of his good fortune; and that he did not make the keeping of his word to depend upon the great or little value of the thing he had promised.—In the siege of Falisci by Camillus general of the Romans, the schoolmaster of the town, who had the children of the senators under his care, led them abroad under the pretext of recreation, and carried them to the Roman camp, saying to Camillus, that by this artifice he had delivered Falisci into his hands. Camillus abhorring this treachery, observed, “That there were laws for war as well as for peace; and that the Romans were taught to make war with integrity not less than with courage.” He ordered the schoolmaster to be stripped, his hands to be bound behind his back, and to be delivered to the boys to be lashed back into the town. The Falerians, formerly obstinate in resistance, struck with an act of justice so illustrious, delivered themselves up to the Romans; convinced that they would be far better to have the Romans for their allies than their enemies.

It is a saying, That no man ever offended his own conscience, but first or last it was revenged upon him. The power of conscience indeed has been remarked in all ages, and the examples of it upon record are innumerable. The following is related by Mr Fordyce, in his *Dialogues on Education* †, as a real occurrence which happened in a neighbouring state not many years ago. A jeweller, a man of good character and considerable wealth, having occasion in the way of his business to travel at some distance from the place of his abode, took along with him a servant, in order to take care of his portmanteau. He had with him some

of his best jewels, and a large sum of money, to which his servant was likewise privy. The master having occasion to dismount on the road, the servant watching his opportunity, took a pistol from his master’s saddle and shot him dead on the spot; then rifled him of his jewels and money, and hanging a large stone to his neck, he threw him into the nearest canal. With this booty he made off to a distant part of the country, where he had reason to believe that neither he nor his master were known. There he began to trade in a very low way at first, that his obscurity might screen him from observation, and in the course of a good many years seemed to rise, by the natural progress of business, into wealth and consideration; so that his good fortune appeared at once the effect and reward of industry and virtue. Of these he counterfeited the appearance so well, that he grew into great credit, married into a good family, and by laying out his sudden stores discreetly, as he saw occasion, and joining to all an universal affability, he was admitted to a share of the government of the town, and rose from one post to another, till at length he was chosen chief magistrate. In this office he maintained a fair character, and continued to fill it with no small applause, both as a governor and a judge; till one day as he sat on the bench with some of his brethren, a criminal was brought before him who was accused of murdering his master. The evidence came out full, the jury brought in their verdict that the prisoner was guilty, and the whole assembly waited the sentence of the president of the court (which he happened to be that day) with great suspense. Mean while he appeared to be in unusual disorder and agitation of mind, and his colour changed often; at length he arose from his seat, and coming down from the bench, placed himself just by the unfortunate man at the bar. “You see before you (said he, addressing himself to those who had sat on the bench with him), a striking instance of the just awards of heaven, which this day, after 30 years concealment, presents to you a greater criminal than the man just now found guilty.” Then he made an ample confession of his guilt, and of all its aggravations. “Nor can I feel (continued he) any relief from the agonies of an awakened conscience, but by requiring that justice be forthwith done against me in the most public and solemn manner.” We may easily suppose the amazement of all the assembly, and especially of his fellow-judges. However, they proceeded, upon this confession, to pass sentence upon him, and he died with all the symptoms of a penitent mind.

Courts of CONSCIENCE, are courts for recovery of small debts, constituted by act of parliament in London, Westminster, &c. and other populous and trading districts.

CONSCIOUSNESS. Metaphysicians, in lieu of the word *conscience*, which seems appropriated to theological or moral matters, ordinarily use that of *consciousness*; whereby they mean an inner sentiment of a thing, whereof one may have a clear and distinct notion. In this sense they say that we do not know our own soul, nor are assured of the existence of our own thoughts, otherwise than by self consciousness. See METAPHYSICS.

CONSCRIPT, in Roman antiquity, an appellation given to the senators of Rome, who were called *con-*

Conscience
||
Conscript.

† Vol. II.
p. 401.

Confecra-
tion,
Consent.

script fathers, on account of their names being all entered in one register.

CONSECRATION, the act of devoting any thing to the service and worship of God. The Mosaical law ordained, that all the first-born, both of man and beast, should be sanctified or consecrated to God. We find also, that Joshua consecrated the Gibeonites, as Solomon and David did the Nethinims, to the service of the temple; and that the Hebrews sometimes consecrated their fields and cattle to the Lord, after which they were no longer in their power.

Among the ancient Christians, the consecration of churches was performed with a great deal of pious solemnity. In what manner it was done for the three first ages, is uncertain; the authentic accounts reaching no higher than the fourth, when, in the peaceable reign of Constantine, churches were every where built, and dedicated with great solemnity. Some think the consecration consisted in setting up the sign of the cross, or in placing a communion-table in the church; and others, that no more was done than preaching a panegyric sermon in commemoration of the founder, and that then they proceeded to prayers, one of which was composed on purpose for the church to be consecrated. The Romaniſts have a great deal of pious foppery in the ceremonies of consecration; which they bestow on almost every thing, as bells, candles, books, water, oil, ashes, palms, swords, banners, pictures, crosses, agnus-dei's, roses, childrens clouts, &c.

In England, churches have been always consecrated with particular ceremonies, the form of which was left to the discretion of the bishop. That observed by bishop Laud, in consecrating St Catherine Creed church, in London, gave great offence.

CONSECRATION is particularly used for the benediction of the elements in the eucharist.

CONSECRATION, among medalists, is the ceremony of the apotheosis of an emperor, or his translation into heaven and reception among the gods. On medals the consecration is thus represented: on one side is the emperor's head, crowned with laurel, sometimes veiled; and the inscription gives him the title of *divus*: on the reverse is a temple, a bustum, an altar, or an eagle taking its flight towards heaven, either from off the altar, or from a cippus: at other times the emperor is seen in the air, borne up by the eagle; the inscription always, *consecratio*. These are the usual symbols: yet on the reverse of that of Antoninus is the Antonine column. In the apotheosis of empresses, instead of an eagle there is a peacock. As to the honours rendered these princes after death, they were explained by the words *consecratio, pater, divus, and deus*. Sometimes around the temple or altar are put, *memoria felix, or memorie aeternae*: for princesses, *aeternitas, and fideribus recepta*; on the side of the head, *dea, or cœta*.

CONSENT, in a general sense, denotes much the same with **ASSENT**.

CONSENT of Paris, in the animal economy, an agreement or sympathy, whereby when one part is immediately affected, another at a distance becomes affected in the same manner.

This mutual accord or consent is supposed to be effected by the commerce of the nerves, and their artificial distribution and ramification throughout the body. The effect is so sensible as even to come under the

physician's cognizance: thus, the stone in the bladder, by vellicating the fibres there, will pain and draw them so much into spasms, as to affect the coats of the bowels, in the same manner, by the intermeditation of nervous threads, and make a colic there; and also extend their twitches sometimes as far as the stomach, and occasion grievous vomitings: the remedy, therefore, in such cases, is to regard the part originally affected, how remote and grievous soever may be the consequences and symptoms in other places.

The fifth conjugation of nerves branched to the parts of the eye, the ear, those of the mouth, cheeks, præcordia, and parts adjacent, &c. is supposed by naturalists to be the instrument of that particular and extraordinary consent between those parts. Hence it is, that a favourable thing seen or smelled excites the appetite, and affects the glands and parts of the mouth; that a shameful thing seen or heard affects the cheeks with blushes; on the contrary, if it please, it affects the præcordia, and excites the muscles of the mouth and face to laughter; if it grieve, it affects the glands of the eyes, so as to occasion tears, and the muscles of the face, putting them into an aspect of crying. Dr Willis, quoted by Mr Derham, imputes the pleasure of kissing, and its effects, to this pair of nerves; which being branched both to the lips and the genital parts, when the former are affected an irritation is occasioned in the latter. See **SYMPATHY**.

CONSENTES, the name which the Romans gave to the 12 superior gods, the *Dii majorum gentium*. The word signifies as much as *consentientes*; that is, who consented to the deliberations of Jupiter's council. They were twelve in number, whose name Ennius has briefly expressed in these lines,

*Juno, Vesta, Minerva, Ceres, Diana, Venus, Mars,
Mercurius, Jovi, Neptunus, Vulcanus, Apollo.*

CONSEQUENCE, in logic, the conclusion, or what results from reason or argument. See **CONCLUSION**.

The consequence is that other proposition in which the extremes or premises of a syllogism are joined, or separated; and is gained from what was asserted in the premises.

This word, in a more restrained sense, is used for the relation or connection between two propositions, whereof one is inferred from the other.

CONSEQUENT, something deduced or gathered from a former argumentation. But, in a more precise sense, it is used for the proposition which contains the conclusion, considered in itself, without any regard to the antecedent: in which sense the consequent may be true, though the consequence be false. See the preceding article.

CONSERVATOR, an officer ordained for the security and preservation of the privileges of some cities and communities, having a commission to judge of and determine the differences among them.

In most catholic universities there are two conservators; the conservator of royal privileges, or those granted by kings; and the conservator of apostolical privileges, or those granted by the pope. The first takes cognizance of personal and mixed causes between the regents, students, &c. and the latter of spiritual matters between ecclesiastics.

Consentes
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Conservator.

Conser-
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Consign-
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Anciently there were appointed conservators of treaties of peace between princes; which conservators became judges of the infractions made on a treaty, and were charged with procuring satisfaction to be made. These were usually the feudatories of the several powers. In lieu of conservators, princes now have recourse to other indifferent princes to guarantee their treaties.

CONSERVATOR of Scots Privileges, at Campvere, is an officer belonging to the royal boroughs of Scotland, who takes care of the mercantile affairs of Scotland, agreeable to the staple contract between them and the States-General.

CONSERVATOR of the Peace, in the ancient English customs, was a person who had an especial charge, by virtue of his office, to see the king's peace kept. Till the erection of justices of the peace by king Edward III. there were several persons who by common law were interested in keeping the same: some having that charge as incident to other offices; and others simply, or of itself, called *custodes*, or *conservators of the peace*. The chamberlain of Chester is still a conservator in that county; and petty constables are, by the common law, conservators, &c. in the first sense, within their own jurisdiction: so are also the coroner and the sheriff within their own county. The king is the principal conservator of the peace within all his dominions: the lord chancellor, lord treasurer, lord high steward, lord marshal, lord high constable, all the justices of the court of king's bench, by their office, and the master of the rolls, by prescription, are general conservators of the peace through the whole kingdom, and may commit breakers of the peace, and bind them in recognisances to keep it.

CONSERVATOR of the Truce, and Safe Conducts, was an officer appointed in every sea-port, under the king's letters patent. His charge was to inquire of all offences committed against the king's truce, and safe conducts upon the main sea, out of the franchises of the cinque-ports, as the admirals were wont to do, and such other things as are declared *anno 3 Hen. V. cap. 6.*

CONSERVATORIOS, are musical schools established for the instruction of children in the profession of music. There are four of these at Venice, designed for the education of girls, and three at Naples, for the education of boys. It has been suggested that the operation of castration was performed in the conservatorios; but the practice is absolutely prohibited; and the young castrati are brought from Lucia in Puglia: but before the operation is performed, their voices are tried in a conservatorio. The scholars of the Venetian conservatorios have been chiefly celebrated for taste and neatness of execution; and those of Naples have had the reputation of being the first *contrapuntists*, or composers, in Europe.

CONSERVATORY, a term sometimes used for a green-house or ice-house.

CONSERVE, in pharmacy, a form of medicine contrived to preserve the flowers, herbs, roots, or fruits of several simples, as near as possible to what they are when fresh gathered. See *PHARMACY*.

CONSIGNMENT, in law, the depositing any sum of money, bills, papers, or commodities, in good hands; either by appointment of a court of justice, in

order to be delivered to the persons to whom they are adjudged; or voluntarily, in order to their being remitted to the persons they belong to, or sent to the places they are designed for.

CONSIGNMENT of Goods, in commerce, is the delivering or making them over to another: thus, goods are said to be consigned to a factor, when they are sent to him to be sold, &c.; or when a factor sends back goods to his principal, they are said to be consigned to him.

CONSISTENCE, in physics, that state of a body wherein its component particles are so connected or entangled among themselves, as not to separate or recede from each other. It differs from continuity in this, that it implies a regard to motion or rest, which continuity does not, it being sufficient to denominate a thing continuous that its parts are contiguous to each other.

CONSISTENTES, in church-history, a kind of penitents who were allowed to assist at prayers, but who could not be admitted to receive the sacrament.

CONSISTORY (*Consistorium*), signifies as much as *pratorium*, a tribunal: it is commonly used for a council-house of ecclesiastical persons, or place of justice in the spiritual court; a session or assembly of prelates. And every archbishop and bishop of every diocese hath a consistory court held before his chancellor or commissary in his cathedral church, or other convenient place of his diocese, for ecclesiastical causes. The bishop's chancellor is the judge of this court, supposed to be skilled in the civil and canon law; and in places of the diocese far remote from the bishop's consistory, the bishop appoints a commissary to judge in all causes within a certain district, and a register to enter his decrees, &c.

CONSISTORY, at Rome, denotes the college of cardinals, or the pope's senate and council, before whom judiciary causes are pleaded. Du-Cange derives the word from *consistorium*; i. e. *locus ubi consistitur*; used chiefly for a vestibule, gallery, or anti-chamber, where the courtiers wait for admission; and called *a consistente multitudine*.

The consistory is the first court, or tribunal of Rome: it never meets but when the pope pleases to convolve it: the pope presides in it in person, mounted on a magnificent throne, and habited in his *pontificalia*; on the right are the cardinal-bishops and priests, and on the left the cardinal deacons. The place where it is held, is a large hall in the apostolical palace, where princes and ambassadors of kings are received. The other prelates, protonotaries, auditors of the rota, and other officers, are seated on the steps of the throne: the courtiers sit on the ground; ambassadors on the right, and consistorial and fiscal advocates behind the cardinals.

Besides the public consistory, there is also a private one, held in a retired chamber, called the *chamber of papagay*; the pope's throne here being only raised two steps high. Nobody is here admitted but the cardinals, whose opinions are collected, and called *sentences*. Here are first proposed and passed all bulls for bishopricks, abbeys, &c. Hence bishopricks and abbeys are said to be consistorial benefices; in regard, they must be proposed in the consistory, the annates be paid

Consign-
ment
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Consistory.

Consistory to the pope, and his bulls taken. Anciently they were elective; but by the concordat, which abolishes elections, they are appointed to be collated by the pope alone, on the nomination of the prince.

CONSISTORY was also the name of a court under Constantine, where he sat in person, and heard causes: the members of this court were called *comites*.

CONSISTORY is also used among the reformed, for a council or assembly of ministers and elders, to regulate their affairs, discipline, &c.

CONSISTORY, or court Christian in the English laws, is a council of ecclesiastical persons, or the place of justice in an ecclesiastical or spiritual court. Every archbishop and bishop has a consistory-court, held before his chancellor or commissary, either in his cathedral, in some chapel, aisle, or portico, belonging thereto; or in some other convenient place of his diocese, for ecclesiastical causes. The spiritual court was anciently, in the time of the Saxons, joined with the county or hundred court; and the original of the consistory court, as divided from those courts, is found in a law of the conqueror, quoted by lord Coke. From this court there lies an appeal to the archbishop of each province respectively.

CONSOLATION, one of the places in rhetoric wherein the orator endeavours to abate and moderate the grief or concern of another.

CONSOLE, in architecture, an ornament cut upon the key of an arch, which has a projecture, and on occasion serves to support little corniches, figures, busts, and vases.

CONSOLIDATION, in law, the combining and uniting two benefices into one. The term is borrowed from the civil law; where it properly signifies an union of the possession, or occupation, with the property. Thus, if a man have by legacy *usum fructum fundi*, and afterwards buy the property, or fee-simple, of the heir; this is called a *consolidation*.

CONSOLIDATION, in medicine, the action of uniting broken bones, or the lips of wounds, by means of *consolidating remedies*, as they are called; which cleansing with a moderate heat and force, taking corruption out of the wounds, and preserving the temperature of the parts, cause the nourishment to be fitly applied to the part affected.

Among the many instances of the consolidating power of blood and raw flesh, we have a very remarkable one in Bartholine's Medical Observations. A man being condemned to have his nose cut off by the hand of the common executioner, the friends, who were to be present, provided a new loaf of warm bread, which was cut in the middle, and the nose received in it as it fell from the face: the nose was after this nicely placed on the face again; and, being sewed on, the whole in time consolidated, and left no other marks of the ignominy than the scar round the whole nose, and the traces of the stitches.

CONSONANCE, in music. See INTERVAL.

CONSONANT, a letter that cannot be sounded without some single or double vowel before or after it; as *b, c, d, &c.*

CONSORT, *Queen Consort*. See QUEEN.

CONSPIRACY, in law, signifies an agreement between two or more, falsely to indict, or procure to be indicted, an innocent person, of felony.

CONSPIRATORS are, by statute, defined to be such as bind themselves by oath, covenant, or other alliance, to assist one another falsely and maliciously to indict persons, or falsely to maintain pleas.

Conspirators in treason, are those that plot against the king and the government.

CONSTABLE, according to some, is a Saxon word, compounded of *coning*, "king," and *staple*, which signifies the "stay or support of the king." But as we borrowed the name as well as the office of *Constable* from the French, Sir William Blackstone is rather inclined to deduce it, with Sir Henry Spelman and Dr Cowel, from that language; wherein it is plainly derived from the Latin *comes stabuli*, an officer well known in the empire; so called, because, like the great constable of France, as well as the lord high constable of England, he was to regulate all matters of chivalry, tilts, tournaments, and feats of arms, which were performed on horseback.—The

Lord High Constable of England is the seventh great officer of the crown; and he, with the earl marshal of England, were formerly judges of the court of chivalry, called in king Henry IV.'s time *Curia Militaris*, and now the court of honour. It is the fountain of the martial law, and anciently was held in the king's hall. The power of the lord high constable was formerly so great, and of which so improper a use was made, that so early as the 13th of king Richard II. a statute passed for regulating and abridging the same, together with the power of the earl marshal of England; and by this statute, no plea could be tried by them or their courts, that could be tried by the common law of the realm. The office of constable existed before the conquest. After the conquest, the office went with inheritance, and by the tenure of the manors of Harlesfield, Newman, and Whitenhurst, in Gloucestershire, by grand serjeanty in the family of the Bohuns earl of Hereford and Essex, and afterwards in line of Sefford as heirs-general to them; but in 1521, this great office became forfeited to the king in the person of Edward Stafford duke of Buckingham, who was that year attainted for high treason; and in consideration of its extensive power, dignity, and large authority, both in time of war and peace, it has never been granted to any person, otherwise than *hac vice*, and that to attend at a coronation, or trial by combat. In France, the same office was also suppressed about a century after by an edict of Louis XIII; though it has been exercised, in the command of the *MARSHALS*, by the first officer in the army.

Lord high constable of Scotland was an office of great antiquity and dignity. The first upon record is Hugo de Morvelle in the reign of David I. He had two grand prerogatives, viz. First, the keeping of the king's sword, which the king, at his promotion, when he swears fealty, delivers to him naked. Hence the badge of the constable is a naked sword.—Second, The absolute and unlimited command of the king's armies while in the field, in the absence of the king; but this command does not extend to castles and garrisons. He was likewise judge of all crimes committed within two leagues of the king's house, which precinct was called the *Chalmer of Peace*. Though his jurisdiction came at last to be exercised only as to crimes during the time of parliament, which some extended likewise

Constable. to all general conventions. This office was conferred heritably upon the noble family of Errol, by king Robert Bruce; and with them it still remains, being expressly reserved by the treaty of union.

Inferior CONSTABLES. From the great office of high constable is derived that inferior order, since called the *constables of hundreds and franchises*; these were first ordained in the 13th year of Edward I. by the statute of Winchester, which, for the conservation of the peace, and view of armour, appointed that two constables should be chosen in every hundred and franchise. These are what we now call *constabularii capitales* or *high constables*; because continuance of time, and increase of people, &c. have occasioned others of like nature, but inferior authority, in every town, called *petty constables*, or *sub-constabularii*, first instituted about the reign of Edward III.

The former, or modern *high constables*, are appointed at the court-leets of the franchise or hundred over which they preside; or, in default of that, by the justices at their quarter-sessions; and are removable by the same authority that appoints them. The *petty constables* have two offices united in them, the one ancient, and the other modern. Their ancient office is that of head-borough, tithing-man, or borsholder; who are as ancient as the time of king Alfred: their more modern office is that of constable merely; which was appointed so lately as the reign of Edward III. in order to assist the high-constable. And in general the ancient head-boroughs, tithing-men, and borsholders, were made use of to serve as petty constables; though not so generally, but that in many places they still continue distinct officers from the constables. They are all chosen by the jury at the court-leet; or if no court-leet be held, are appointed by two justices of the peace.

The general duty of all constables, both high and petty, as well as of the other officers, is to keep the king's peace in their several districts; and to that purpose they are armed with very large powers of arresting and imprisoning, of breaking open houses, and the like: of the extent of which powers, considering what manner of men are for the most part put upon these offices, it is perhaps very well that they are generally kept in ignorance. One of their principal duties arising from the statute of Winchester, which appoints them, is to keep watch and ward in their respective jurisdictions. Ward, guard, or *custodia*, is chiefly intended of the day-time, in order to apprehend rioters, and robbers on the highways; the manner of doing which is left to the discretion of the justices of the peace and the constable: the hundred being, however, liable for all the robberies committed therein by day-light, for having kept negligent guard. Watch is properly applicable to the night only, (being called among the Saxons *wach't* or *wachtu*); and it begins when ward ends, and ends when that begins: for, by the statute of Winchester, in walled towns the gates shall be closed from sun-setting to sun-rising; and watch shall be kept in every borough and town, especially in the summer season, to apprehend all rogues, vagabonds, and night-walkers, and make them give an account of themselves. The constable may appoint watchmen at his discretion, regulated by the custom of the place; and these, being his deputies, have, for the time being, the authority of their principal.

Constable. There are also constables denominated from particular places, as constable of the Tower, of Dover castle, of Windsor castle, of the castle of Caernarvon, and many other of the castles of Wales; whose office is the same with that of the castellani, or governors of castles.

CONSTABLES of London. The city of London is divided into 26 wards, and the wards into precincts, in each whereof is a constable. They are nominated by the inhabitants of each precinct on St Thomas's day, and confirmed, or otherwise, at the court of wardmote. After confirmation, they are sworn into their offices at a court of aldermen, on the next Monday after Twelfth day. Such as are chosen into the office, are obliged to place the king's arms, and the arms of the city, over their doors; and if they reside in alleys, at the ends of such alleys toward the streets, to signify that a constable lives there, and that they may be the more easily found when wanted.

CONSTABLES to Justices of the Peace, in Scotland, are the proper officers for executing their orders. They have powers to suppress tumults, and to apprehend delinquents and those who can give no good account of themselves, and carry them to the next justice.

CONSTANCE, a strong town of Germany, in the circle of Suabia, with a bishop's see, whose bishop is a prince of the empire. It has a handsome bridge, and several fine structures, as well sacred as profane. It carries on a great trade, and is well fortified; and though it pretends to be an imperial town, the Austrians keep a garrison here. It is famous for a council held here in 1514, when there were three popes; but they were all deposed, and Martin V. was elected in their room. The council caused Jerom of Prague to be burnt, though the emperor Sigismund had given him a safe conduct; in pursuance of this maxim, "that no faith is to be kept with heretics." They likewise condemned the doctrine of Wickliff, and ordered his bones to be burned 40 years after he was dead. However, the inhabitants now are Protestants. It is seated on a lake of the same name. E. Long. 9. 12. N. Lat. 47. 35.

CONSTANCE, a great lake of Germany, between Suabia and Swisserland. It is 30 miles in length, and 8 in breadth. It is crossed by the river Rhine; and there are several towns on its banks.

CONSTANCY, in a general sense, denotes immutability, or invariableness.—In ethics, or when applied to the human mind, the term implies resolution or steadiness, particularly under sufferings and the trials of adversity.

It was the saying of a heathen philosopher, That there cannot be imagined upon earth a spectacle more worthy the regard of the Creator intent on his works, than a brave man superior to his sufferings. Nothing indeed can be more noble or honourable than to have courage enough to execute the commands of reason and conscience; to maintain the dignity of our nature, and the station assigned us; and to be proof against poverty, pain, and death itself, so far as not to do any thing that is scandalous or sinful to avoid them. To be thus, is to be great above title and fortune. This argues the soul of an heavenly extraction, and is worthy the offspring of the Deity.

Of this virtue the following example, related in English.

Constable. English history, is here selected, as superior perhaps, all circumstances considered, to any other upon record.

Sir William Askew of Kellay, in Lincolnshire, had several daughters. His second, named *Anne*, had received a genteel education; which, with an agreeable figure and good understanding, rendered her a very proper person to be at the head of a family. Her father, regardless of his daughter's inclination and happiness, obliged her to marry a gentleman who had nothing to recommend him but his fortune, and who was a most bigoted Papist. No sooner was he convinced of his wife's regard for the doctrines of the reformation from popery, than, by the instigation of the priests, he violently drove her from his house, though she had born him two children, and her conduct was unexceptionable. Abandoned by her husband, she came up to London, in order to procure a divorce, and to make herself known to that part of the court who either professed or were favourers of Protestantism: but as Henry VIII. with consent of parliament, had just enacted the law of the six articles, commonly called the *bloody statute*, she was cruelly betrayed by her own husband; and, upon his information, taken into custody, and examined concerning her faith. The act above-mentioned denounced death against all those who should deny the doctrine of *transubstantiation*; or, that the bread and wine made use of in the sacrament was not converted after consecration into the *real* body and blood of Christ; or, maintain the necessity of receiving the sacrament in both kinds; or affirm, that it was lawful for priests to marry; that the vows of celibacy might be broken; that private masses were of no avail; and that auricular confession to a priest was not necessary to salvation. Upon these articles she was examined by the inquisitor, a priest, the lord-mayor of London, and the bishop's chancellor; and to all their queries gave proper and pertinent answers; but not being such as they approved, she was sent back to prison, where she remained eleven days to ruminate alone on her alarming situation, and was denied the small consolation of a friendly visit. The king's council being at Greenwich, she was once more examined by chancellor Wriothesley, Gardiner bishop of Winchester, Dr Cox, and Dr Robinson; but not being able to convince her of her supposed errors, she was sent to the Tower. Mr Strype, from an authentic paper, gives us the following short account of her examination, which may not, perhaps, be unentertaining or useless to the reader: "Sir Martin Bowes (lord mayor) sitting with the council, as most meet for his wisdom, and seeing her stand upon life and death, I pray you, quoth he, my lords, give me leave to talk to this woman? Leave was granted. *Lord Mayor*. Thou foolish woman, sayest thou that the priest cannot make the holy body of Christ? *A. Askew*. I say so, my lord: for I have read that God made man; but that man made God I never read; nor I suppose ever shall read it. *Lord Mayor*. No! Thou foolish woman, after the words of consecration, is it not the Lord's body? *A. Askew*. No: it is but consecrated bread, or sacramental bread. *Lord Mayor*. What if a mouse eat it after consecration; what shall become of this mouse? what sayest thou, thou foolish woman? *A. Askew*. What shall become of her, say you, my lord? *Lord Mayor*. I say, that the mouse is damned.

N^o 89.

A. Askew. Alack, poor mouse!" Perceiving that some could not keep in their laughing, the council proceeded to the butchery and slaughter that they intended before they came there.—It was strongly suspected that Mrs Askew was favoured by some ladies of high rank; and that she carried on a religious correspondence with the queen. So that the chancellor Wriothesley, hoping that he might discover something that would afford matter of impeachment against that princess, the Earl of Hertford, or his Countess, who all favoured reformation, ordered her to be put to the rack: but her fortitude in suffering, and her resolution not to betray her friends, was proof against that diabolical invention. Not a groan, not a word, could be extorted from her. The chancellor, provoked with what he called her obstinacy, augmented her tortures with his own hands, and with unheard of violence: but her courage and constancy were invincible; and these barbarians gained nothing by their cruelties but everlasting disgrace and infamy. As soon as she was taken from the rack, she fainted away; but being recovered, she was condemned to the flames. Her bones were dislocated in such a manner, that they were forced to carry her in a chair to the place of execution. While she was at the stake, letters were brought her from the lord chancellor, offering her the king's pardon if she would recant. But she refused to look at them; telling the messenger, that "she came not thither to deny her Lord and Master." The same letters were also tendered to three other persons condemned to the same fate; and who, animated by her example, refused to accept them. Whereupon the lord-mayor commanded the fire to be kindled; and with savage ignorance cried out, *Fiat justitia*, "Let justice take its course." The faggots being lighted, she commended her soul, with the utmost composure, into the hands of her Maker; and, like the great founder of the religion she professed, expired, *praying for her murderers*, July 16. 1546, about the 25th year of her age.

CONSTANTIA, a district at the Cape of Good Hope, consisting of two farms, which produce the well-known wine so much prized in Europe, and known by the name of *Cape* or *Constantia* wine. This place is situated at the distance of a mile and a half from Alphen, in a bending formed by and nearly under the ridge of hills, which comes from Meuisenmountain, and just where it strikes off towards Houtbay. One of these farms is called Little Constantia. Here the white Constantia wine is made. The other produces the red. According to M. De la Cail's account, not more than 60 *siggars* of red, and 90 of the white Constantia wine are made, each *siggar* being reckoned at 600 French pints, or about 150 Swedish cans; so that the whole produce amounts to 22,500 cans. As the company are used to keep one third of this for themselves, the remainder is always bespoke by the Europeans long before it is made. At the Cape this wine is seldom seen at table, partly because it is dear, and partly because it is the produce of the country. The red Constantia wine sells for about 60 rixdollars the half awin; but the white is usually to be purchased at a more reasonable rate. The genuine Constantia wine is undeniably a very racy and delicate desert wine, and has something peculiarly agreeable in the flavour of it. That its superiority,

Constable,
Constantia.

Constantia priority, however, is not owing to any thing peculiar in the manner of preparing it, seems extremely probable; for then, without doubt, a great deal more of it would be made. In fact, Dr Sparmann informs us, that the genuine wine can only be produced by certain particular soils. The districts that lie next to these yield merely the common Cape wine, notwithstanding that they have been planted with vine-stocks taken from this, as well as with some brought from the banks of the Rhine, whence it is supposed that the true *Constantia* fort originally comes; nay, even tho' all the vineyards about *Constantia* seem to have the same soil. We have instances at the Cape, as well as in Europe, that good grapes sometimes produce a bad wine; while, on the other hand, bad grapes will yield a good sort of wine: therefore, towards making wine of a certain quality, besides finer materials, there must be certain conditions and circumstances, which, by a diligent and rational investigation, might probably be explored to the great benefit of mankind.

Such as are apprized in what quantities *Constantia* wine is consumed in Europe, will perhaps think the above calculation of the produce too limited. This, however, Dr Sparmann assures us, is by no means the case; the overplus being the produce of avarice, which, goaded on by the desire of gain, will always hit upon some method of satisfying the demands of luxury and sensuality. The votaries of these, accustomed to be put off with empty sounds, do not seldom drink with the highest relish an imaginary *Constantia*, with which, however, this liquor has nothing in common besides the mere name. It is therefore advisable, even at the Cape itself, to take care, that whilst one has a genuine sample given one to taste, one is not made to pay for a made-up red *Constantia*, which otherwise is in general sold for half the price. When a wine of this kind has been (as it usually is) meliorated by a voyage, and at the same time christened with the pompous name of genuine *Constantia*, of which it has indeed in some measure the flavour, it easily sells for such in Europe.

CONSTANTINA, a strong and considerable town of Africa, in the kingdom of Algiers, and capital of a territory of the same name. It is the largest and strongest place in all the eastern parts; and it is seated on the top of a great rock. There is no way to it but by steps cut out of the rock; and the usual way of punishing criminals here is to throw them down the cliff. Here are a great many Roman antiquities, particularly a triumphal arch. E. Long. 7. 12. N. Lat. 36. 4.

CONSTANTINA, a town of Spain, in Andalusia, and capital of a small territory of the same name, with a castle seated on a mountain. W. Long. 5. 35. N. Lat. 37. 40.

CONSTANTINE, a kingdom of Barbary of that name, in Africa. It is bounded on the north by the Mediterranean, on the east by the kingdom of Tunis, on the south by Bildulgerid, and on the west by the river Sufegmar, which separates it from the kingdom of Bugia. The country is the new Numidia of the ancients, and had its own king: but it is now a province to Algiers.

CONSTANTINE the Great, the first emperor of the

Romans who embraced Christianity. His father, Constantius Chlorus, rendered himself famous by his victorious expeditions to Germany and Britain: upon the abdication of Dioclesian, he shared the Roman empire with Galerius Maximinus in 305, and was at that time at York, where he died in 306; having first caused his son Constantine the Great to be proclaimed emperor by his army, and by the English. Galerius at first refused to admit Constantine to his father's share in the imperial throne; but after having lost several battles, he consented in 308. Maxentius, who succeeded Galerius, opposed him: but was defeated, and drowned himself in the Tyber. The senate then declared Constantine *chief* or *first* Augustus, and Licinius his second associate in the empire, in 313. These princes published an edict, in their joint names, in favour of the Christians; but soon after Licinius, jealous of Constantine's renown, conceived an implacable hatred against him, and renewed the persecutions against the Christians. This brought on a rupture between the emperors; and a battle, in which Constantine was victorious. A short peace ensued: but Licinius having shamefully violated the treaty, the war was renewed; when Constantine totally defeating him, he fled to Nicomedia, where he was taken prisoner and strangled in 323. Constantine, now become sole master of the western and eastern empires, immediately formed the plan of establishing Christianity as the religion of the state; for which purpose, he convoked several ecclesiastical councils: but finding he was likely to meet with great opposition from the Pagan interest at Rome, he conceived the design of founding a new city, to be the capital of his Christian empire; see **CONSTANTINOPLE**. The glory Constantine had acquired by establishing the Christian religion, was tarnished by the part he took in the persecutions carried on by the Arians, towards the close of his reign, against their Christian brethren who differed from them: seduced by Eusebius of Nicomedia, he banished several eminent prelates; soon after which, he died in 337, the 66th year of his age, and 31st of his reign.

As to the character of Constantine, he was chaste, pious, laborious, and indefatigable; a great general, successful in war, and deserving his success by his shining valour and by the brightness of his genius; a protector of arts, and an encourager of them by his beneficence. If we compare him with Augustus, we shall find that he ruined idolatry, by the same precautions and the same address that the other used to destroy liberty. Like Augustus, he laid the foundation of a new empire; but less skilful, and less polite, he could not give it the same stability: he weakened the body of the state by adding to it, in some measure, a second head in the foundation of Constantinople; and transporting the centre of motion and strength too near the eastern extremity, he left without heat, and almost without life, the western parts, which soon became a prey to the barbarians. The Pagans were too much his enemies to do him justice. Eutropius says, that in the former part of his reign he was equal to the most accomplished princes, and in the latter to the meanest. The younger Victor, who makes him to have reigned more than 31 years, pretends, that in the first 10 years he was a hero; in the 12 succeeding

Constantine.

Constantine, Constantinople.

ones a robber; and in the 10 last a spendthrift. It is easy to perceive, with respect to these two reproaches of Victor's, that the one relates to the riches which Constantine took from idolatry, and the other to those with which he loaded the church.

CONSTANTINE emperor of the East in 1002, left the care of the empire to his wife Helena, who loaded the people with taxes, and sold all the offices in church and state to the highest bidders; while the emperor employed himself in reading, writing, and the fine arts, till he became as good an architect and painter as he was a bad prince: he wrote several biographical and geographical works, which would have done honour to his name, if he had not neglected his duty to compose them. He died in 959.

CONSTANTINE (Dracofes), the son of Emmannel Paleologus, was placed on the throne by sultan Amurath in 1448. But Mahomet II. his successor, resolving to dethrone him, laid siege to Constantinople by sea and land, and took it by assault in 1453, after it had held out 58 days. The unfortunate emperor seeing the Turks enter the breaches, threw himself into the midst of the enemy, and was cut to pieces; the children of the imperial house were massacred by the soldiers; and the women reserved to gratify the lust of the conqueror: and thus terminated the dynasty of the Constantines, 1123 years after its establishment at Constantinople.

CONSTANTINE (Robert), a learned physician born at Caen, taught polite literature in that city; and acquired great reputation by his skill in the Greek language, in history, and in medicine. He died in 1603, aged 103. He wrote a dictionary in Greek and Latin and other works, which are esteemed.

1 Removing the imperial seat to this city the cause of the decline of the western empire.

CONSTANTINOPLE, the modern name of the city of BYZANTIUM in Thrace. It was enlarged and beautified by the Roman emperor Constantine the Great, in the year 330. At the same time he transferred thither the seat of the empire; and this removal is generally thought to have been one of the principal causes of the sudden decline of the western empire after this period.

2 Constantine defeats the Goths,

In the year 332, the Sarmatians implored Constantine's assistance against the Goths, who had made an irruption into their territories, and destroyed every thing with fire and sword. The emperor readily granted their request, and gained a complete victory. Near 100,000 of the enemy perished, either in the battle, or after it with hunger and cold. In consequence of this overthrow, the Goths were obliged to sue for peace; but the ungrateful Sarmatians no sooner found themselves delivered from their enemies, than they turned their arms against their benefactor, and ravaged the provinces of Mæsia and Thrace. The emperor, receiving intelligence of this treachery, returned with incredible expedition, cut great numbers of them in pieces, and obliged the rest to submit to what terms he was pleased to impose.

3 And the Sarmatians.

4 Is highly respected,

Constantine seems to have been a prince very highly respected, even by far distant nations. In 333, according to Eusebius, ambassadors arrived at Constantinople from the Blemyes, Indians, Ethiopians, and Persians, courting his friendship. They were received in a most obliging manner; and learning from the ambassadors of Sapor king of Persia, that there were great

numbers of Christians in their master's dominions, Constantine wrote a letter in their behalf to the Persian monarch.

Constantinopolitans history.

Next year, the Sarmatians being again attacked by the Goths, found themselves obliged to set at liberty and arm their slaves against them. By this means they indeed overcame the Goths; but the victorious slaves turning their arms against their masters, drove them out of the country. This misfortune obliged them, to the number of 300,000, to apply for relief to the Roman emperor, who incorporated with his legions such as were capable of service; and gave settlements to the rest in Thrace, Scythia, Macedon, and Italy. This was the last remarkable action of Constantine the Great. He died on May 25. 337, having divided the empire among his children and nephews, in the following manner. Constantine, his eldest son, had Gaul, Spain, and Britain; Constantius, the second, had Asia, Syria, and Egypt; and Constans, the youngest, Illyricum, Italy, and Africa. To his nephew Dalmatius, he gave Thrace, Macedon, and Achaia; and to king Annibalianus, his other nephew, Armenia Minor, Pontus, Cappadocia, and the city of Cæsarea, which he desired might be the capital of his kingdom.

5 He takes a number of Sarmatians into his army.

6 His death, and division of the empire.

After the death of Constantine, the army and senate proclaimed his three sons emperors, without taking any notice of his two nephews, who were soon after murdered, with Julius Constantius the late emperor's brother, and all their friends and adherents. Thus the family of Constantine was at once reduced to his three sons, and two nephews Gallus and Julian, the sons of Julius Constantius: and of these the former owed his life to a malady, from which no one thought he could recover; and the latter to his infancy, being then at most about seven years of age. The three brothers divided among themselves the dominions of the deceased princes; but did not long agree together. In 340, Constantine having in vain solicited Constans to yield part of Italy to him, raised a considerable army; and under pretence of marching to the assistance of his brother Constantius, who was then at war with the Persians, made himself master of several places in Italy. Hereupon Constans detached part of his army against him; and Constantine, being drawn into an ambuscade near Aquileia, was cut off with his whole forces. His body was thrown into the river Ansa; but being afterwards discovered, was sent to Constantinople, and interred there near the tomb of his father.

7 All his relations murdered except his three sons and two nephews.

8 Constantine invades the dominions of Constans.

9 Is defeated and killed.

By the defeat and death of his brother, Constans remained sole master of all the western part of the empire, in the quiet possession of which he continued till the year 350. This year, Magnentius, the son of one Magnus, a native of Germany, finding Constans despised by the army on account of his indolence and inactivity, resolved to murder him, and set up for himself. Having found means to gain over the chief officers of the army to his designs, he seized on the Imperial palace at Autun, and distributed among the populace what sums he found there; which induced not only the city, but the neighbouring country, to espouse his cause. But Constans being informed of what had passed, and finding himself unable to resist the usurper, fled towards Spain. He was overtaken, however, by Gaïso, whom Magnentius had sent after him with a chosen

10 Constans sole master of the West.

11 Magnentius revolts against him.

Constantinopolitan history. chosen body of troops, who dispatched with many wounds the unhappy prince at Helena, a small village situated near the foot of the Pyrenees.

12 Constantinopolitan history. Thus Constantius acquired a right to the whole Roman empire; though one half of it was seized by Magnentius after the murder of Constans. The former had been engaged in a war with the Persians, in which little advantage was gained on either side; but the Persians now giving no more disturbance, the emperor marched against the usurpers in the west.

13 Three pretenders to the empire. Besides Magnentius, there were at this time two other pretenders to the western empire. Veteranio, general of the foot in Pannonia, had, on the first news of the death of Constans, caused himself to be proclaimed emperor by the legions under his command. He was a native of Upper Mæsia, and advanced in years when he usurped the sovereignty; but so illiterate, that he then first learned to read. The third pretender was Flavius Popilius Nepotianus, son of Eutropia the sister of Constantine the Great. Having assembled a company of gladiators and men of desperate fortunes, he assumed the purple on the 3d of June 350, and in that attire presented himself before the gates of Rome. The prefect Anicetus, who commanded there for Magnentius, sallied out against him with a body of Romans; who were soon driven back into the city. Soon after Nepotianus made himself master of the city itself, which he filled with blood and slaughter. Magnentius being informed of what had happened, sent against this new competitor his chief favourite and prime minister Marcellinus. Nepotianus received him with great resolution; a bloody battle ensued between the soldiers of Magnentius and the Romans who had espoused the cause of Nepotianus; but the latter being betrayed by a senator, named Herachitus, his men were put to flight, and he himself killed, after having enjoyed the sovereignty only 28 days. Marcellinus ordered his head to be carried on the point of a lance through the principal streets of the city; put to death all those who had declared for him; and under pretence of preventing disturbances, commanded a general massacre of all the relations of Constantine. Soon after, Magnentius himself came to Rome to make the necessary preparations for resisting Constantius, who was exerting himself to the utmost in order to revenge the death of his brother. In the city he behaved most tyrannically, putting to death many persons of distinction, in order to seize their estates; and obliged the rest to contribute half of what they were worth towards the expence of the war. Having by this means raised great sums, he assembled a mighty army composed of Romans, Germans, Gauls, Franks, Britons, Spaniards, &c. At the same time, however, dreading the uncertain issues of war, he dispatched ambassadors to Constantius with proposals of accommodation. Constantius set out from Antioch about the beginning of autumn; and, passing through Constantinople, arrived at Heraclea, where he was met by the deputies from Magnentius, and others from Veteranio, who had agreed to support each other in case the emperor would hearken to no terms. The deputies of Magnentius proposed in his name a match between him and Constantia, or rather Constantina, the sister of Constantius, and widow of Annibalianus; offering, at the same time, to Constantius the sister of Magnentius.

14 Nepotianus makes himself master of Rome.

15 He is defeated and killed.

16 Tyranny of Magnentius.

17 Sends proposals of peace to Constantius.

At first the emperor would hearken to no terms; but afterwards, that he might not have to oppose two enemies at once, concluded a separate treaty with Veteranio, by which he agreed to take him for his partner in the empire. But when Veteranio ascended the tribunal along with Constantius, the soldiers pulled him down from thence, crying out, That they would acknowledge no other emperor than Constantius alone. On this Veteranio threw himself at the emperor's feet, and implored his mercy. Constantius received him with great kindness, and sent him to Prusia in Bithynia, where he allowed him a maintenance suitable to his quality.

Constantius, now master of all Illyricum, and of the army commanded by Veteranio, resolved to march against Magnentius without delay. In the mean time, however, on advice that the Persians were preparing to invade the eastern provinces, he married his sister Constantina to his cousin-german Gallus; created him Cæsar on the 15th of March; and allotted him for his share not only all the East, but likewise Thrace and Constantinople. About the same time Magnentius gave the title of Cæsar to his brother Decentius, whom he dispatched into Gaul to defend that country against the barbarians who had invaded it; for Constantius had not only stirred up the Franks and Saxons to break into that province by promising to relinquish to them all the places they should conquer, but had sent them large supplies of men and arms for that purpose. On this encouragement the barbarians invaded Gaul with a mighty army, overthrew Decentius in a pitched battle, committed every where dreadful ravages, and reduced the country to a most deplorable situation. In the mean time Magnentius having assembled a numerous army, left Italy, and crossing the Alps, advanced into the plains of Pannonia, where Constantius, whose main strength consisted in cavalry, was waiting for him. Magnentius, hearing that his competitor was encamped at a small distance, invited him by a messenger to the extensive plains of *Sciscia* on the Save, there to decide which of them had the best title to the empire. This challenge was by Constantius received with great joy; but as his troops marched towards *Sciscia* in disorder, they fell into an ambuscade, and were put to flight with great slaughter. With this success, Magnentius was so elated, that he rejected all terms of peace which were now offered by Constantius; but after some time, a general engagement ensued at *Mursa*, in which Magnentius was entirely defeated, with the loss of 24,000 men. Constantius, though victor, is said to have lost 30,000, which seems improbable. All authors, however, agree, that the battle of *Mursa* proved fatal to the western empire, and greatly contributed to its speedy decline.

18 Gallus sent against the Persians.

19 Constantius stirs up the Franks to invade Gaul.

20 Magnentius is defeated.

21 Magnentius defeated at *Mursa*.

22 This battle fatal to the empire.

Constantinopolitan history.

follow him. Thus Constantius entering Italy without opposition, made himself master of Aquileia. From thence he advanced to Pavia, where Magnentius gained a considerable advantage over him. Notwithstanding this loss, however, Constantius reduced the whole country bordering on the Po, and Magnentius's men deserted to him in whole troops, delivering up to him the places they had garrisoned; by which the tyrant was so disheartened, that he left Italy, and retired with all his forces into Gaul. Soon after this, Africa, Sicily, and Spain, declared for Constantius; upon which Magnentius sent a senator, and after him some bishops, to treat of a peace; but the emperor treated the senator as a spy, and sent back the bishops without any answer.—Magnentius now finding his affairs desperate, and that there were no hopes of pardon, recruited his army in the best manner he could, and dispatched an assassin into the East to murder Gallus Cæsar; hoping that his death would oblige the emperor to withdraw his forces from Gaul, and march in person to the defence of the Eastern provinces, which were threatened by the Persians. The assassin gained over some of Gallus's guards; but the plot being discovered before it could be put in execution, they were all seized and executed as traitors.

23
Magnentius attempts to get Gallus murdered.

24
Magnentius defeated a second time, kills all his family and himself.

In 353, the war against Magnentius was carried on with more vigour than ever, and at last happily ended by a battle fought in the Higher Dauphny. Magnentius, being defeated, took shelter in Lyons; but the few soldiers who attended him, despairing of any further success, resolved to purchase the emperor's favour by delivering up to him his rival, the author of so calamitous a war. Accordingly they surrounded the house where he lodged; upon which the tyrant, in despair, slew with his own hand his mother, his brother Desiderius whom he had created Cæsar, and such of his friends and relations as were with him; and then, fixing his sword in a wall, threw himself upon it, in order to avoid a more shameful death which he had reason to apprehend.

25
Constantius sole master of the empire.

After the death of Magnentius, his brother Decentius Cæsar, who was marching to his assistance, and had already reached Sens, finding himself surrounded on all sides by the emperor's forces, chose rather to strangle himself than fall alive into the hands of his enemies. Thus Constantius was left sole master of the Roman empire. His panegyrist tells us, that after his victory he behaved with the greatest humanity, forgiving and receiving into favour his greatest enemies; but other historians differ considerably from them, and tell us that Constantius now became haughty, imperious, and cruel, of which many instances are given.

26
Many grievous calamities.

This year the empire was subjected to very grievous calamities. Gaul was ravaged by the barbarians beyond the Rhine, and the disbanded troops of Magnentius. At Rome, the populace rose on account of a scarcity of provisions. In Asia, the Isaurian robbers over-ran Lycaonia and Pamphylia; and even laid siege to Seleucia, a city of great strength; which, however, they were not able to make themselves masters of. At the same time, the Saracens committed dreadful ravages in Mesopotamia, the Persians also invaded the province of Anthemusia on the Euphrates. But the Eastern provinces were not so much harassed by

the barbarians as by Gallus Cæsar himself, who ought to have protected them. That prince was naturally of a cruel, haughty, and tyrannical disposition; but being elated with his successes against the Persians, he at last behaved more like a tyrant and a madman than a governor. His natural cruelty is said to have been heightened by the instigations of his wife Constantina, who is by Ammianus styled the *Megara*, or "fury of her sex;" and he adds that her ambition was equal to her cruelty. Thus all the provinces and cities in the East were filled with blood and slaughter. No man, however innocent, was sure to live or enjoy his estate a whole day; for Gallus's temper being equally suspicious and cruel, those who had any private enemies took care to accuse them of crimes against the state, and with Gallus it was the same thing to be accused and condemned. At last the emperor being informed from all quarters of the evil conduct of his brother-in-law, and being at the same time told that he aspired to the sovereignty, resolved upon his ruin. For this end he wrote letters to Gallus and Constantina, inviting them both into Italy. Though they had both sufficient reason to fear the worst, yet they durst not venture to disobey the emperor's express command. Constantina, who was well acquainted with her brother's temper, and hoped to pacify him by her artful insinuations, set out first, leaving Gallus at Antioch: but she had scarce entered the province of Bithynia, when she was seized with a fever which put an end to her life. Gallus now despairing of being able to appease his sovereign, thought of openly revolting; but most of his friends deserted him on account of his inconstant and cruel temper, so that he was at last obliged to submit to the pleasure of Constantius. He advanced therefore, according to his orders; but at Petavium was arrested, and stripped of all the ensigns of his dignity. From thence he was carried to *Planona*, now *Planone* in Dalmatia, where he was examined by two of his most inveterate enemies. He confessed most of the crimes laid to his charge; but urged as an excuse the evil counsels of his wife Constantina. The emperor, provoked at this plea which reflected on his sister, and instigated by the enemies of Gallus, signed a warrant for his execution, which was performed accordingly.

Constantinopolitan history.

27
Tyranny of Gallus.

All this time the emperor had been engaged in a war with the Germans: he had marched against them in person; and though he gained no advantage, the barbarians thought proper to make peace with him. This, however, was but short-lived. No sooner was the Roman army withdrawn, than they began to make new inroads into the empire. Against them Constantius dispatched Arbetio with the flower of the army; but he fell into an ambuscade, and was put to flight with the loss of a great number of men. This loss, however, was soon retrieved by the valour of *Arintheus*, who became famous in the reign of Valens, and of two other officers, who falling upon the Germans, without waiting the orders of their general, put them to flight, and obliged them to leave the Roman territories.

28
He is put to death.

29
War with the Germans.

The tranquillity of the empire, which ensued on this repulse of the Germans, was soon interrupted by a pretended conspiracy, by which in the end a true one was produced. Sylvanus, a leading man among the

Constantinopolitan history.

30
Sylvanus betrayed by Arbetio.

31
He is forced to revolt.

[31]
I. murder-er.

32
Gaul ravaged by the barbarians.

33
Julian created Caesar.

the Franks, commanded in Gaul, and had there performed great exploits against the barbarians. He had been raised to this post by Arbetio; but only with a design to remove him from the emperor's presence, in order to accomplish his ruin, which he did in the following manner: One *Dynames*, keeper of the emperor's mules, leaving Gaul, begged of Sylvanus letters of recommendation to his friends at court; which being granted, the traitor erased all but the subscription. He then inserted directions to the friends of Sylvanus for the carrying on a conspiracy; and delivering these forged letters to the prefect *Lamprius*, they were by him showed to the emperor. Thus Sylvanus was forced to revolt, and cause himself to be proclaimed emperor by the troops under his command. In the mean time, however, *Dynames* having thought proper to forge another letter, the fraud was discovered, and an enquiry set on foot, which brought to light the whole matter. Sylvanus was now declared innocent, and letters sent to him by the emperor confirming him in his post; but these were scarce gone, when certain news arrived at the court of Sylvanus having revolted, and caused himself be proclaimed emperor. *Constantius*, thunderstruck at this news, dispatched against him *Urficius*, an officer of great integrity, as well as valour and experience in war; who forgetting his former character, pretended to be Sylvanus's friend, and thus found means to cut him off by treachery.

The barbarians, who had been hitherto kept quiet by the brave Sylvanus, no sooner heard of his death, than they broke into Gaul with greater fury than ever. They took and pillaged above forty cities, and among the rest *Cologne*, which they levelled with the ground. At the same time the *Quadi* and *Sarmatians* entering *Pannonia*, destroyed every thing with fire and sword. The *Persians* also, taking advantage of the absence of *Urficius*, over-ran, without opposition, *Armenia* and *Mesopotamia*; *Prosper* and *Mausonianus*, who had succeeded that brave commander in the government of the East, being more intent upon pillaging than defending the provinces committed to their care. *Constantius*, not thinking it advisable to leave Italy himself, resolved at last to raise his cousin *Julian*, the brother of *Gallus*, to the dignity of *Cæsar*. *Julian* seems to have been a man of very extraordinary talents; for though before this time he had been entirely buried in obscurity, and conversed only with books, no sooner was he put at the head of an army than he behaved with the same bravery, conduct, and experience, as if he had been all his life bred up to the art of war. He was appointed governor of *Gaul*; but before he set out, *Constantius* gave him in marriage his sister *Helena*, and made him many valuable presents. At the same time, however, the jealous emperor greatly limited his authority; gave him written instructions how to behave; ordered the generals who served under him to watch all his actions no less than those of the enemy; and strictly enjoined *Julian* himself not to give any largesses to the soldiery.

Julian set out from *Milan* on the 1st of *December* 355, the emperor himself accompanying him as far as *Pavia*, from whence he pursued his journey to the Alps, attended only by 360 soldiers. On his arrival at *Turin* he was first acquainted with the loss of *Cö-*

logne, which had been kept concealed from the emperor. He arrived at *Vienne* before the end of the year, and was received by the people of that city and the neighbourhood with extraordinary joy.

In 356, the barbarians besieged *Autun*; to relieve which place, *Julian* marched with what forces he could raise. When he came there, he found the siege raised: on which he went in pursuit of the barbarians to *Auxerre*, crossing with no small danger thick woods and forests, from *Auxerre* to *Troies*. On his march he was surrounded on all sides by the barbarians, who moved about the country in great bodies; but he put them to flight with an handful of men, cut great numbers of them in pieces, and took some prisoners. From *Troies* he hastened to *Rheims*, where the main body of the army, commanded by *Marcellus*, waited his arrival. Leaving *Rheims*, he took his route towards *Decempagi*, now *Dieuze*, on the *Seille* in *Lorraine*, with a design to oppose the Germans who were busy in ravaging that province. But the enemy attacking his rear unexpectedly, would have cut off two legions, had not the rest of the army, alarmed at the sudden noise, turned back to their assistance. A few days afterwards he defeated the Germans, though with great loss to his own army; the victory, however, opened him a way to *Cologne*. This city he found abandoned by the barbarians. They had neglected to fortify it: but *Julian* commanded the ancient fortifications to be repaired with all possible expedition, and the houses to be rebuilt; after which he retired to *Sens*, and there took up his winter-quarters. This year also *Constantius* entered *Germany* on the side of *Rhætia*, laid waste the country far and wide; and obliged the barbarians to sue for peace, which was readily granted. The same year he enacted two laws; by one of which it was declared capital to sacrifice, or pay any kind of worship, to idols; the other, granting the effects of condemned persons to belong to their children and relations within the third degree, except in cases of magic and treason; but this last one he revoked two years after.

In the beginning of the year 357, the barbarians besieged *Julian* a whole month in *Sens*; *Marcellus*, the commander in chief, never once offering to assist him. *Julian*, however, so valiantly defended himself with the few forces he had, that the barbarians at last retired. After this, *Constantius* declared *Julian* commander in chief of all the forces in *Gaul*; appointing under him one *Severus*, an officer of great experience, and of a quite different disposition from *Marcellus*. On his arrival in *Gaul*, *Julian* received him with great joy, raised new troops, and supplied them with arms which he luckily found in an old arsenal. The emperor, resolving at all events to put a stop to the terrible devastations committed by the barbarous nations, chiefly by the *Alemans*, wrote to *Julian* to march directly against them. At the same time he sent *Barbatio*, who had been appointed general in place of *Sylvanus*, with a body of 25 or 30,000 men, out of *Italy*, in order to inclose the enemy between two armies. The *Leti*, however, a German nation, passing between the armies, advanced as far as *Lyons*, hoping to surprise that wealthy city; but meeting with a warmer reception than they expected, contented themselves with ravaging the country all round it. On the first

Constantinopolitan history.

34
He sets out for Gaul.

35
Defeats the barbarians.

36
Repairs the fortifications of Cologne.

37
Idolatry declared capital by Constantius.

Constantinopolitan history.

38
The Leti cut off by Julian.

notice of this expedition, Julian detached strong parties to guard the passages through which he knew the barbarians must return. Thus they were all cut off except those who marched near the camp of Barbatio; who was so far from cutting off their retreat, that he complained by a letter to Constantius of some officers for attempting it. These officers, among whom was Valentinian afterwards emperor of the West, were, by the orders of Constantius, cashiered for their disobedience. The other barbarians either fortified themselves in the countries which they had seized, stopping up all the avenues with huge trees, or took shelter in the islands formed by the Rhine. Julian resolved first to attack the latter; and with this view demanded some boats of Barbatio: but he, instead of complying with his just request, immediately burnt all his boats, as he did on another occasion the provisions which had been sent to both armies, after he had plentifully supplied his own. Julian, not in the least disheartened with this unaccountable conduct, persuaded some of the most resolute of his men to wade over to one of the islands. Here they killed all the Germans who had taken shelter in it. They then seized their boats, and pursued the slaughter in several other islands, till the enemy abandoned them all, and retired to their respective countries with their wives and what booty they could carry. On their departure, Barbatio attempted to lay a bridge of boats over the Rhine; but the enemy, apprised of his intention, threw a great number of huge trees into the river, which being carried by the stream against the boats, sunk several of them, and parted the rest. The Roman general then thought proper to retire; but the barbarians falling unexpectedly upon him in his retreat, cut great numbers of his men in pieces, took most of his baggage, laid waste the neighbouring country, and returned in triumph loaded with booty. Elated with this success, they assembled in great numbers under the command of *Chnodomarius*, a prince of great renown among them, and six other kings. They encamped in the neighbourhood of Straßbourg. Here they were encountered by Julian; who put them to flight, with the loss of 6 or 8000 of their men slain in the field, and a vastly greater number drowned in the river; while Julian himself lost only 243 private men and four tribunes. In this action *Chnodomarius* was taken, and sent to Rome, where he soon after died.

39
He forces the barbarians to abandon the islands of the Rhine.

40
Entirely defeats them at Straßbourg.

41
He enters Germany and concludes a truce with the barbarians.

42
Remarkable laws of Constantius.

After the battle, Julian advanced with all his army to Mayence, where he built a bridge over the Rhine and entered Germany, having with difficulty prevailed upon his army to follow him. Here he ravaged the country till the time of the autumnal equinox, when being prevented by snow from advancing any further, he began to repair the fort of Trajan, by some supposed to be the castle of Cromburgh, about three or four leagues from Frankfort. The barbarians were now so much alarmed, that they sent deputies to treat of a peace; but this Julian refused to grant them upon any terms. He consented, however, to a truce for seven months, upon their promising to store with provisions the fort he was building in their country. This year Constantius made some remarkable laws. By one he punished with confiscation such as renounced the Christian for the Jewish religion; and by another, ad-

ressed to Felix bishop of Rome, he exempted all merchandizing ecclesiastics, with their wives, children, and domestics, from every imposition ordinary and extraordinary; supposing the gains they made to be applied by them to the relief of the poor.

In 358, as soon as the season was fit for action, Julian took the field against the Franks, with a design to conquer them before the truce he had concluded with the Alemans was expired. The Franks were at that time divided into several tribes, the most powerful of which were the *Salii* and *Chamavi*. The first of these sent deputies, intreating that he would suffer them to remain as friends to the empire in the country they possessed. But Julian, without paying any regard to this deputation, entered their country, and obliged them to submit; after which he allotted them lands in Gaul, incorporating great numbers of them into his cavalry. He next marched against the *Chamavi*, whom he defeated and obliged to retire beyond the Rhine. Afterwards he rebuilt three forts on the river *Meuse*, which had been destroyed by the barbarians; but wanting provisions in a country so often ravaged, he ordered 6 or 800 vessels to be built in Britain for the conveying corn from thence into Gaul. Julian continued in the country of the *Chamavi* till the expiration of his truce with the Alemans; and then laying a bridge of boats over the Rhine, he entered their country, putting all to fire and sword. At last two of their kings came in person to him to sue for peace: which Julian granted, upon their promising to set at liberty the captives they had taken; to supply a certain quantity of corn when required; and to furnish wood, iron, and carriages, for repairing the cities they had ruined. The prisoners whom he at this time released, amounted to upwards of 20,000.

Constantinopolitan history.

43
Julian conquers the Franks.

44
Grants a peace to the Germans.

Soon after the vernal equinox of this year 358, Constantius marched in person against the *Quadi* and *Sarmatians*, whose country lay beyond the Danube. Having crossed that river on a bridge of boats, he laid waste the territories of the *Sarmatians*; who thereupon came in great numbers, together with the *Quadi*, pretending to sue for peace. Their true design was to surprise the Romans; but the latter suspecting it, fell upon them sword in hand, and cut them all in pieces. This obliged the rest to sue for peace in good earnest, which was granted on the delivery of hostages. The emperor then marched against the *Limigantes*, that is, the slaves who, in 334, had driven the *Sarmatians* out of their country, and seized it for themselves*. They used the same artifice as the *Sarmatians* and *Quadi* had done, coming in great numbers under pretence of submitting, but prepared to fall upon him unexpectedly if opportunity offered. The emperor, observing their surlly looks, and distrusting them, caused his troops surround them insensibly while he was speaking. The *Limigantes* then displeased with the conditions he offered them, laid their hands on their swords: on which they were attacked by the Roman soldiers. Finding it impossible to make their escape, they made with great fury towards the tribunal, but were repulsed by the guards forming themselves into a wedge, and every one of them cut in pieces. After this, the emperor ravaged their country to such a degree, that they were in the end obliged to submit to the only condition he thought proper to allow them, which was to quit their country,

45
Expedition of Constantius against some German nations.

See n^o 5.

46
He expels the *Limigantes*.

country, and retire to a more distant place. The country was then restored to the Sarmatians who were its original possessors.

This year is also remarkable for a very haughty embassy from Sapor king of Persia. The ambassador, named *Narfes*, brought a letter, in which the Persian monarch styled himself "king of kings, brother of the sun and moon," &c. He acquainted the emperor that he might lawfully insist on having all the countries beyond the river Strymon in Macedon delivered up to him; but lest his demands should seem unreasonable, he would be contented with Armenia and Mesopotamia, which had been most unjustly taken from his grandfather *Narfes*. He added, that unless justice was done him, he was resolved to assert his right by force of arms. This letter was presented to Constantius wrapped up in a piece of white silk; but he, without entering into any negotiation with the ambassador, wrote a letter to Sapor, in which he told him, that as he had maintained the Roman dominions in their full extent, when he was possessed only of the East, he could not suffer them to be curtailed now when he was master of the whole empire. In a few days, however, he sent another letter with rich presents; being very desirous at least to put off the war till he had secured the northern provinces against the incursions of the barbarians, that he might then employ all the forces of the empire against so formidable an enemy. This embassy proved unsuccessful, as did also another which was sent soon after. The last ambassadors were imprisoned as spies, but afterwards dismissed unhurt. By a law of Constantius dated in 358, all magicians, augurs, astrologers, and pretenders to the art of divination, were declared enemies to mankind; and such of them as were found in the court either of the emperor or of Julian, he commanded to be put to the torture, and specified what torments they were to undergo.

In 359, Julian continued his endeavours for relieving the province of Gaul, which had suffered so much from the incursions of the barbarians. He erected magazines in different places, visited the cities which had suffered most, and gave orders for repairing their walls and fortifications properly. He then crossed the Rhine, and pursued the war in Germany with great success, inasmuch that the barbarians submitted to such terms as he pleased to impose. In the mean time the emperor, having received intelligence that the Limigantes had quitted the country in which he had placed them, hastened to the banks of the Danube, in order to prevent their entering Pannonia. On his arrival he sent deputies, desiring to know what had induced them to abandon the country which had been allotted them. The Limigantes answered, in appearance with the greatest submission imaginable, that they were willing to live as true subjects of the empire in any other place; but that the country he had allotted them was quite uninhabitable, as they could demonstrate if they were but allowed to cross the river, and lay their complaints before him. This request was granted; but while he ascended his tribunal, the barbarians unexpectedly fell upon his guards sword in hand, killed several of them, and the emperor with difficulty saved himself by flight. The rest of the troops, however, soon took the alarm; and surrounding the Limigantes,

cut them all off to a man. This year Constantius instituted a court of inquisition against all those who consulted heathen oracles. Paulus Catena, a noted and cruel informer, was dispatched into the East to prosecute them; and Modestus, then count of the East, and equally remarkable for his cruelty, was appointed judge. His tribunal was erected at Scythopolis in Palestine, whither persons of both sexes, and of every rank and condition, were daily dragged in crowds from all parts, and either confined in dungeons, or torn in pieces in a most cruel and barbarous manner by racks, or publicly executed.

In 359, Sapor king of Persia began hostilities, being encouraged thereto by the absence of Ursicinus, whom the emperor had recalled, and appointed in his room one Sabinianus, a person very unfit for such an office. During this campaign, however, he made very little progress; having only taken two Roman forts, and destroyed the city of Amida, the siege of which is said to have cost him 30,000 men. On the first news of the Persian invasion, Constantius had thought proper to send Ursicinus into the East; but his enemies prevented him from receiving the supplies necessary for carrying on the war, so that he found it impossible to take any effectual means for stopping the progress of the Persians. On his return, he was unexpectedly charged with the loss of Amida, and all the disasters that had happened during the campaign. Two judges were appointed to inquire into his conduct; but they, being creatures of his enemies, left the matter doubtful. On this Ursicinus was so much exasperated, that he appealed to the emperor, and in the heat of passion, let fall some unguarded expressions, which being immediately carried to the emperor, the general was deprived of all his employments.

Constantius resolved to march next year in person against the Persians; but in the mean time, dreading to encounter so formidable an enemy, he applied himself wholly to the assembling of a mighty army, by which he might be able fully to cope with them. For this purpose he wrote to Julian to send him part of his forces, without considering that by so doing he left the province of Gaul exposed to the ravages of the barbarians. Julian resolved immediately to comply with the emperor's orders; but at the same time to abdicate the dignity of Cæsar, that he might not be blamed for the loss of the province. Accordingly he suffered the best soldiers to be draughted out of his army. They were, however, very unwilling to leave him, and at last proclaimed him emperor. Whether this was done absolutely against Julian's consent or not is uncertain; but he wrote to the emperor, and persuaded the whole army also to send a letter along with his, in which they acquainted Constantius with what had happened, and entreated him to acknowledge Julian as his partner in the empire. But this was positively refused by Constantius, who began to prepare for war. Julian then, desiring to be before-hand with the emperor, caused his troops take an oath of allegiance to himself, and with surprising expedition made himself master of the whole country of Illyricum, and the important pass separating that country from Thrace. Constantius was thunder-struck with this news; but hearing that the Persians had retired, he marched

Constantinopolitan history.

55
Constantius marches against him, but dies.

56
Julian restores the heathen religion.

57
Condemns some of the late emperor's ministers.

58
Reforms the court.

with all his forces against his competitor. On his arrival at Tarsus in Cilicia, he was seized with a feverish distemper, occasioned chiefly by the uneasiness and perplexity of his mind. He pursued his march, however, to Mopsucrene, a place on the borders of Cilicia, at the foot of Mount Taurus. Here he was obliged to stop by the violence of his disorder, which increased every day, and at last carried him off on the 13th of November 361, in the 45th year of his age.

By the death of Constantius Julian now became master of the whole Roman empire without a rival. He had been educated in the Christian religion; but secretly apostatized from it long before, and as soon as he saw himself master of Illyricum, openly avowed his apostasy, and caused the temples of the gods to be opened. When the messengers arrived at Naissus in Illyricum, where he then was, to acquaint him with his being sole master of the empire, they found him consulting the entrails of victims concerning the event of his journey. As the omens were uncertain, he was at that time very much embarrassed and perplexed; but the arrival of the messengers put an end to all his fears, and he immediately set out for Constantinople. At Heraclea he was met by almost all the inhabitants of this metropolis, into which he made his public entry on the 11th of December 361, being attended by the whole senate in a body, by all the magistrates, and by the nobility magnificently dressed, every one testifying the utmost joy at seeing such a promising young prince raised to the empire without bloodshed. He was again declared emperor by the senate of Constantinople; and as soon as that ceremony was over, he caused the obsequies of Constantius to be performed with great pomp.

The first care of Julian was to inquire into the conduct of the late emperor's ministers. Several of these, having been found guilty of enormous crimes, were condemned and executed; particularly the noted informer Paulus Catena, and another named *Apodanus*, were sentenced to be burnt alive. Along with these, however, was put to death one Ursula, a man of unexceptionable character, and to whom Julian himself was highly indebted. He had been supplied with money by Ursula unknown to the emperor, at the time when he was sent into Gaul with the title of Cæsar, but without the money necessary for the support of that dignity. For what reason he was now put to death, historians do not acquaint us. Julian himself tells us, that he was executed without his knowledge.

The emperor next set about reforming the court. As the vast number of offices was in his time become an intolerable burden, he discharged all those whom he thought useless. He reduced, among the rest, the officers called *agentes in rebus*, from 10,000 to 17; and discharged thousands of cooks, barbers, &c. who by their large salaries drained the exchequer. The *curiosi*, whose office it was to inform the emperor of what had passed in the different provinces, were all discharged, and that employment entirely suppressed. Thus he was enabled to ease the people of the heavy taxes with which they were loaded: and this he did by abating a fifth part of all taxes and imposts throughout the kingdom.

As to religious matters, Julian, as before observed, No 89.

was a Pagan, and immediately on his accession to the throne, restored the heathen religion. He invited to court the philosophers, magicians, &c. from all parts; nevertheless he did not raise any persecution against the Christians. On the contrary, he recalled from banishment all the orthodox bishops who had been sent into exile during the former reign; but with a design, as is observed both by the Christian and Pagan writers, to raise disturbances and sow dissensions in the church.

As the Persians were now preparing to carry on the war with vigour, Julian found himself under a necessity of marching against them in person. But before he set out, he enriched the city of Constantinople with many valuable gifts. He formed a large harbour to shelter the ships from the south wind, built a magnificent porch leading to it, and in another porch a stately library, in which he lodged all his books. In the month of May, A. D. 362, he set out for Antioch, and on the first of January renewed in that city the sacrifices to Jupiter for the safety of the empire, which had been so long omitted. During his stay in this city, he continued his preparations for the Persian war, erecting magazines, making new levies, and above all consulting the oracles, aruspices, magicians, &c. The oracles of Delphi, Delos, and Dodona, assured him of victory. The aruspices, indeed, and most of his courtiers and officers, did all that lay in their power to divert him from his intended expedition; but the deceitful answers of the oracles and magicians, and the desire of adding the Persian monarch to the many kings he had already seen humbled at his feet, prevailed over all other considerations. Many nations sent deputies to him offering their assistance; but these offers he rejected, telling them that the Romans were to assist their allies, but stood in no need of any assistance from them. He likewise rejected, and in a very disobliging manner, the offers of the Saracens; answering them, when they complained of his stopping the pension paid them by other emperors, that a warlike prince had steel, but no gold; which they resenting, joined the Persians, and continued faithful to them to the last. However, he wrote to Arfaces king of Armenia, enjoining him to keep his troops in readiness to execute the orders he should soon transmit to him.

Having made the necessary preparations for so important an enterprise, Julian sent orders to his troops to cross the Euphrates, designing to enter the enemy's country before they had the least notice of his march; for which purpose he had placed guards on all the roads. From Antioch he proceeded to Litarba, a place about 15 leagues distant, which he reached the same day. From thence he went to Beræa, where he halted a day, and exhorted the council to restore the worship of the gods; but this exhortation, it seems, was complied with but by few. From Beræa he proceeded to Batnæ; and was better pleased with the inhabitants of the latter, because they had, before his arrival, restored the worship of the gods. There he offered sacrifices; and having immolated a great number of victims, he pursued the next day his journey to Hierapolis, the capital of the province of Euphratesiana, which he reached on the 9th of march. Here he lodged in the house of one for whom he had a particular esteem, chiefly because neither Constantius nor Gallus,

Constantinopolitan history.

59
Recalls the philosophers, magicians, &c.

60
Marches against the Persians.

61
Crosses the Euphrates.

Constantinopolitan history.

Gallus, who had both lodged in his house, had been able to make him renounce the worship of his idols. As he entered this city, 50 of his soldiers were killed by the fall of a porch. He left Hierapolis on the 13th of March; and having passed the Euphrates on a bridge of boats, came to Batnæ a small city of Osrhoene, about 10 leagues from Hierapolis; and here 50 more of his soldiers were killed by the fall of a stack of straw. From Batnæ he proceeded to Carrhæ; where, in the famous temple of the moon, it is said he sacrificed a woman to that planet.

62
Invades
Persia.

While Julian continued in this city, he received advice that a party of the enemies horse had broke into the Roman territories. On this he resolved to leave an army in Mesopotamia, to guard the frontiers of the empire on that side, while he advanced on the other into the heart of the Persian dominions. This army consisted, according to some, of 20,000, according to others, of 30,000 chosen troops. It was commanded by Procopius, and Sebastian a famous manichean who had been governor of Egypt, and had persecuted there, with the utmost cruelty, the orthodox Christians. These two were to join, if possible, Arfaces king of Armenia, to lay waste the fruitful plains of Media, and meet the emperor in Assyria. To Arfaces Julian himself wrote, but in the most disobliging manner imaginable, threatening to treat him as a rebel if he did not execute, with the utmost punctuality, the orders given him; and at the conclusion told him, that the God he adored would not be able to screen him from his indignation.

There were two roads leading from Carrhæ to Persia; the one to the left by Nisibis; the other to the right through the province of Assyria, along the banks of the Euphrates. Julian chose the latter, but caused magazines to be erected on both roads; and, after having viewed his army, set out on the 25th of March. He passed the Abora, which separated the Roman and Persian dominions, near its conflux with the Euphrates; after which he broke down the bridge, that his troops might not be tempted to desert, seeing they could not return home. As he proceeded on his march, a soldier and two horses were struck dead by a flash of lightning; and a lion of an extraordinary size presenting himself to the army, was in a moment dispatched by the soldiers with a shower of darts. These omens occasioned great disputes between the philosophers and aruspices: the latter looking upon them as inauspicious, advised the emperor to return; but the former refuted their arguments with others more agreeable to Julian's temper.

63
Lays waste
Assyria.

Having passed the Abora, Julian entered Assyria, which he found very populous, and abounding with all the necessaries of life; but he laid it waste far and near, destroying the magazines and provisions which he could not carry along with him; and thus he put it out of his power to return the same way he came; a step which was judged very impolitic. As he met with no army in the field to oppose him, he advanced to the walls of Ctesiphon, the metropolis of the Persian empire; having reduced all the strong holds that lay in his way. Here, having caused the canal to be cleared, which was formerly dug by Trajan between these two rivers, he conveyed his fleet from the former to the latter. On the banks of the Tigris he was op-

64
Advances
to Ctesiphon.

posed by the enemy. But Julian passed that river in spite of their utmost efforts, and drove them into the city with the loss of a great number of their men, he himself, in the mean time, losing only 70 or 75.

Julian had now advanced so far into the enemy's country, that he found it necessary to think of a retreat, as it was impossible for him to winter in Persia. For this reason he made no attempt on Ctesiphon, but began to march back along the banks of the Tigris, soon after he had passed that river. In the mean time the king of Persia was assembling a formidable army, with a design to fall upon the Romans in their march; but being desirous of putting an end to so destructive a war, he sent very advantageous proposals of peace to Julian. These the Roman emperor very imprudently rejected; and soon after, deceived by treacherous guides, he quitted the river, and entered into an unknown country totally laid waste by the enemy, and where he was continually harassed by strong parties, who in a manner surrounded his army, and attacked him sometimes in the front, and sometimes in the rear. A still worse step he was persuaded to take by the treacherous guides already mentioned; and this was to burn his fleet, lest it should fall into the hands of the enemy. As soon as the fleet was set on fire, the whole army cried out, that the emperor was betrayed, and that the guides were traitors employed by the enemy. Julian ordered them immediately to be put to the rack, upon which they confessed the treason; but it was too late. The fleet was already in flames; they could by no means be extinguished; and no part was saved except 12 vessels, which were designed to be made use of in the building of bridges, and for this purpose were conveyed over land in waggons.

The emperor thus finding himself in a strange country, and his army greatly dispirited, called a council of his chief officers, in which it was resolved to proceed to Corduene, which lay south of Armenia, and belonged to the Romans. With this view, they had not proceeded far when they were met by the king of Persia, at the head of a very numerous army, attended by his two sons, and all the principal nobility of the kingdom. Several sharp encounters happened, in which, though the Persians were always defeated, yet the Romans reaped no advantages from their victories, but were reduced to the last extremity for want of provisions. In one of these skirmishes, when the Romans were suddenly attacked, the emperor, eager to repulse the enemy, hastened to the field of battle without his armour, when he received a mortal wound by a dart, which, through his arm and side, pierced his very liver. Of this wound he died the same night, the 26th of June 363, in the 32d year of his age, after having reigned scarce 20 months from the time he became sole master of the Roman empire.

Constantinopolitan history.

65
Begins his
retreat, but
is distressed
for want of
provisions.

As Julian had declined naming any successor, the choice of a new emperor devolved on the army. They unanimously chose Jovian, a very able commander, whose father had lately resigned the post of *comes domesticorum*, in order to lead a retired life. The valour and experience of Jovian, however, were not sufficient to extricate the Roman army from the difficulties in which they had been plunged by the imprudence of his predecessor. The famine raged in the

66
Is mortally
wounded
in a sudden
attack by
the Per-
sians.

67
Jovian
raised to
the empire.

Constantinopolitan history.

68 Concludes a peace with the Persians.

camp to such a degree, that not a single man would have been left alive, had not the Persians unexpectedly sent proposals of peace. These were now received with the utmost joy. A peace was concluded for 30 years; the terms of which were, that Jovian should restore to the Persians the five provinces which had been taken from them in the reign of Dioclesian, with several castles, and the cities of Nisibis and Singara. After the conclusion of the treaty, Jovian pursued his march without molestation. When he arrived at Antioch, he revoked all the laws that had been made in the former reign against Christianity and in favour of paganism. He espoused also the cause of the orthodox Christians against the Arians; and recalled all those who had been formerly banished, particularly Athanasius, to whom he wrote a very obliging letter with his own hand. It is generally believed also that Athanasius, at the desire of Jovian, now composed the creed which still goes by his name, and is subscribed by all the bishops in Europe. But this emperor did not live to make any great alterations, or even to visit his capital as emperor; for in his way to Constantinople he was found dead in his bed, on the 16th or 17th of February 364, after he had lived 33 years, and reigned seven months and 40 days.

69 His death.

70 Valentinian chosen emperor, chooses Valens for his partner.

After the death of Jovian, Valentinian was chosen emperor. Immediately on his accession, the soldiers mutinied, and with great clamour required him to choose a partner in the sovereignty. Though he did not instantly comply with their demand, yet in a few days he chose his brother Valens for his partner; and, as the empire was threatened on all sides with an invasion of the barbarous nations, he thought proper to divide it. This famous partition was made at Mediana in Dacia; when Valens had for his share the whole of Asia, Egypt, and Thrace; and Valentinian all the West; that is, Illyricum, Italy, Gaul, Spain, Britain, and Africa.

71 Procopius revolts.

After this partition, Valens returned to Constantinople, where the beginning of his reign was disturbed by the revolt of Procopius, a relation of Julian. On the death of that emperor, he had fled into Taurica Cheronesus for fear of Jovian; but not trusting the barbarians who inhabited that country, he returned in disguise into the Roman territories, where having gained over an eunuch of great wealth, by name *Eugenius*, lately disgraced by Valens, and some officers who commanded the troops sent against the Goths, he got himself proclaimed emperor. At first he was joined only by the lowest of the people, but at length he was acknowledged by the whole city of Constantinople. On the news of this revolt, Valens would have abdicated the sovereignty, had he not been prevented by the importunities of his friends. He therefore dispatched some troops against the usurper; but these were gained over, and Procopius continued for some time to gain ground. It is probable he would finally have succeeded, had he not become so much elated with his good fortune, that he grew tyrannical and insupportable to his own party. In consequence of this alteration in his disposition, he was first abandoned by some of his principal officers; and soon after defeated in battle, taken prisoner, and put to death.

72 Is defeated and put to death.

73 War with the Goths.

This revolt produced a war betwixt Valens and the Goths. The latter, having been solicited by Proco-

pius, had sent 3000 men to his assistance. On hearing the news of the usurper's death, they marched back; but Valens detached against them a body of troops, who took them all prisoners notwithstanding the vigorous resistance they made. Athanaric, king of the Goths, expostulated on this proceeding with Valens; but that emperor proving obdurate, both parties prepared for war. In 367 and 369, Valens gained great advantages over his enemies; and obliged them to sue for peace, which was concluded upon terms very advantageous to the Romans. The rest of this reign contains nothing remarkable, except the cruelty with which Valens persecuted the orthodox clergy. The latter sent 80 of their number to him, in order to lay their complaints before him; but he, instead of giving them any relief, determined to put them all to death. But the person who was ordered to execute this sentence, fearing lest the public execution of so many ecclesiastics might raise disturbances, ordered them all to be put on board a ship, pretending that the emperor had ordered them only to be sent into banishment; but when the vessel was at some distance from land, the mariners set fire to it, and made their own escape in the boat. The ship was driven by a strong wind into an harbour, where it was consumed and all that were in it. A persecution was also commenced against magicians, or those who had books of magic in their custody. This occasioned the destruction of many innocent persons; for books of this kind were often conveyed into libraries unknown to the owners of them, and this was certainly followed by death and confiscation of goods. Hereupon persons of all ranks were seized with such terror that they burnt their libraries, lest books of magic should have been secretly conveyed in amongst the others. In 378, the Goths, whom Valens had admitted into Thrace, advanced from that province to Macedonia and Thessaly, where they committed dreadful ravages. They afterwards blocked up the city of Constantinople, plundered the suburbs, and at last totally defeated and killed the emperor himself. The day after the battle, hearing that an immense treasure was lodged in Adrianople, the barbarians laid siege to that place: but being quite strangers to the art of besieging towns, they were repulsed with great slaughter; upon which they dropped that enterprise, and returned before Constantinople. But here great numbers of them were cut in pieces by the Saracens, whom Maria their queen had sent to the assistance of the Romans; so that they were obliged to abandon this design likewise, and retire from the neighbourhood of that city.

Constantinopolitan history.

74 Eighty or thodex clergy ecclesiastics put to death.

75 Magicians' persecuted.

76 Valens defeated and killed by the Goths.

77 Gratian takes Theodosius for his partner.

By the death of Valens, the empire once more fell into the hands of a single person. This was Gratian, who had held the empire of the West after the death of Valentinian. He repulsed many barbarous nations who threatened the empire at that time with dissolution; but finding himself pressed on all sides, he soon resolved to take a colleague, in order to ease him of some part of the burden. Accordingly, on the 19th of January 379, he declared Theodosius his partner in the empire, and committed to his care all the provinces which had been governed by Valens.

Theodosius is greatly extolled by the historians of those ages on account of his extraordinary valour and piety; and for these qualifications has been honoured with

Constantinopolitan history.

78
Miserable state of the empire on his accession.

79
The Goths defeated by Theodosius.

80
Gratian murdered by Maximus.

with the surname of *the Great*. From the many persecuting laws, however, made in his time, it would seem that his piety was at least very much misguided; and that if he was naturally of a humane and compassionate disposition, superstition and passion had often totally obscured it. He certainly was a man of great conduct and experience in war, and indeed the present state of the empire called for an exertion of all his abilities. The provinces of Dacia, Thrace, and Illyricum, were already lost; the Goths, Taifali, Alans, and Huns, were masters of the greatest part of these provinces, and had ravaged and laid waste the rest. The Iberians, Armenians, and Persians, were likewise up in arms, and ready to take advantage of the distracted state of the empire. The few soldiers, who had survived the late defeat, kept within the strong holds of Thrace, without daring so much as to look abroad, much less face the victorious enemy, who moved about the country in great bodies. But notwithstanding this critical situation, the historians of those times give us no account of the transactions of the year 379. Many great battles indeed are said to have been fought, and as many victories obtained by Theodosius; but the accounts of these are so confused and contradictory, that no stress can be laid upon them.

In the month of February 380, Theodosius was seized with a dangerous malady, so that Gratian found himself obliged to carry on the war alone. This emperor, apprehending that the neighbouring barbarians might break into some of the provinces, concluded a peace with the Goths, which was confirmed by Theodosius on his recovery. The treaty was very advantageous to the barbarians; but they, disregarding all their engagements, no sooner heard that Gratian had left Illyricum, than they passed the Danube, and breaking into Thrace and Pannonia, advanced as far as Macedonia, destroying all with fire and sword. Theodosius, however, drawing together his forces, marched against them; and, according to the most respectable authorities, gained a complete victory; though Zosimus relates, that he was utterly defeated.

The following year, Athanaric, the most powerful of all the Gothic princes, being driven out by a faction at home, recurred to Theodosius, by whom he was received with great tokens of friendship. The emperor himself went out to meet him, and attended him with his numerous retinue into the city. The Gothic prince died the same year; and Theodosius caused him to be buried after the Roman manner with such pomp and solemnity, that the Goths, who attended him in his flight, returned home with a resolution never to molest the Romans any more. Nay, out of gratitude to the emperor, they took upon them to guard the banks of the Danube, and prevent the empire from being invaded on that side.

In 383, one Maximus revolted against Gratian in Britain; and in the end, having got the unhappy emperor into his power, caused him to be put to death, and assumed the empire of the West himself. Gratian had divided his dominions with his brother Valentinian, whom he allowed to reign in Italy and West Illyricum, reserving the rest to himself. Maximus therefore, immediately after his usurpation, sent deputies to Theodosius, assuring him that he had no de-

signs on the dominions of Valentinian. As Theodosius at that time found himself in danger from the barbarians, he not only forbore to attack Maximus after this declaration, but even acknowledged him for his partner in the empire. It was not long, however, before the ambition of the usurper prompted him to break his promise. In 387, he passed the Alps on a sudden; and meeting with no opposition, marched to Milan where Valentinian usually resided. The young prince fled first to Aquileia; and from thence to Thessalonica, to implore the protection of Theodosius. The latter, in answer to Valentinian's letter, informed him, that he was not at all surpris'd at the progress Maximus had made, because the usurper had protected, and Valentinian had persecuted, the orthodox Christians. At last he prevailed on the young prince to renounce the Arian heresy which he had hitherto maintained; after which Theodosius promised to assist him with all the forces of the East. At first, however, he sent messengers to Maximus, earnestly exhorting him to restore the provinces he had taken from Valentinian, and content himself with Gaul, Spain, and Britain. But the usurper would hearken to no terms. This very year he besieged and took Aquileia, Quaderna, Bononia, Mutina, Rhegium, Placentia, and many other cities in Italy. The following year he was acknowledged in Rome, and in all the provinces of Africa. Theodosius, therefore, finding a war inevitable, spent the remaining months of this and the beginning of the following year in making the necessary preparations. His army consisted chiefly of Goths, Huns, Alans, and other barbarians, whom he was glad to take into the service in order to prevent their raising disturbances on the frontiers. He defeated Maximus in two battles, took him prisoner, and put him to death. The usurper had left his son Victor, whom he created Augustus, in Gaul, to awe the inhabitants in his absence. Against him the emperor dispatched Arbogastes, who took him prisoner after having dispersed the troops that attended him, and put him to death. The victory was used afterwards by Theodosius with great clemency and moderation.

In 389, Theodosius took a journey to Rome; and, according to Prudentius, at this time converted the senate and people from idolatry to Christianity. The next year was remarkable for the destruction of the celebrated temple of Serapis in Alexandria; which, according to the description of Ammianus Marcellinus, surpassed all others in the world, that of Jupiter Capitolinus alone excepted. The reason of its being now destroyed was as follows. Theophilus, bishop of Alexandria, having begged and obtained of the emperor an old temple, formerly consecrated to Bacchus, but then ruined and forsaken, with a design to convert it into a church, the workmen found among the rubbish several obscene figures, which the bishop, to ridicule the superstition of the Heathens, caused to be exposed to public view. This provoked the Pagans to such a degree, that they flew to arms; and falling unexpectedly upon the Christians, cut great numbers of them in pieces. The latter, however, soon took arms in their own defence; and being supported by the few soldiers who were quartered in the city, began to repel force by force. Thus a civil war was kindled, and no day passed without some encounter. The Pa-

Constantinopolitan history.

81
Who invades the dominions of Valentinian.

82
His success.

83
Defeated and put to death by Theodosius.

84
The temples in Alexandria, and throughout all Egypt, destroyed.

Constantinopolitan history.

gans used to retire to the temple of Serapis; and thence sallying out unexpectedly seized on such Christians as they met, and, dragging them into the temple, either forced them by the most exquisite torments to sacrifice to their idol, or, if they refused, racked them to death. As they soon expected to be attacked by the emperor's troops, they chose a philosopher named *Olympus* for their leader, with a design to defend themselves to the last extremity. The emperor, however, would not suffer any punishment to be inflicted upon them for the lives of those they had taken away, but readily forgave them: however, he ordered all the temples of Alexandria to be immediately pulled down, and commanded the bishop to see his orders put in execution. The Pagans no sooner heard that the emperor was acquainted with their proceedings than they abandoned the temple, which was in a short time destroyed by Theophilus; nothing being left except the foundations, which could not be removed on account of the extraordinary weight and size of the stones. Not satisfied with the destruction of the Alexandrian temples, the zealous bishop encouraged the people to pull down all the other temples, oratories, chapels, and places set apart for the worship of the Heathen gods throughout Egypt, and the statues of the gods themselves to be either burnt or melted down. Of the innumerable statues which at that time were to be found in Egypt, he is said to have spared but one, *viz.* that of an ape, in order to expose the Pagan religion to ridicule. On his return to Constantinople, Theodosius ordered such temples as were yet standing to be thrown down, and the Arians to be every where driven out of the cities.

85
Valentinian murdered by Arbogastes, who raises Eugenius to the empire.

In 392, Valentinian, emperor of the West, was treacherously murdered by Arbogastes his general; who, though he might afterwards have easily seized on the sovereignty himself, chose to confer it upon one Eugenius, and to reign in his name. This new usurper, though a Christian, was greatly favoured by the Pagans, who were well apprized that he only bore the title of emperor, while the whole power lodged in Arbogastes, who pretended to be greatly attached to their religion. The auspices began to appear anew, and informed him that he was destined to the empire of the whole world; that he would soon gain a complete victory over Theodosius, who was as much hated as Eugenius was beloved by the gods, &c. But though Eugenius seemed to favour the Pagans, yet in the very beginning of his reign he wrote to St Ambrose. The holy man did not answer his letter till he was pressed by some friends to recommend them to the new prince; and then he wrote to this infamous usurper with all the respect due to an emperor. Soon after his accession to the empire, Eugenius sent deputies to Theodosius; and they are said to have been received by him in a very obliging manner. He did not, however, intend to enter into any alliance with this usurper, but immediately began his military preparations. In 394, he set out from Constantinople, and was at Adrianople on the 15th of June that year. He bent his march through Dacia, and the other provinces between Thrace and the Julian Alps, with a design to force the passes of these mountains, and break into Italy before the army of Eugenius was in a condition to oppose him. On his arrival at the Alps, he

found these passes guarded by Flavianus prefect of Italy, at the head of a considerable body of Roman troops. These were utterly defeated by Theodosius, who thereupon crossed the Alps and advanced into Italy. He was soon met by Eugenius; and a bloody battle ensued, without any decisive advantage on either side. The next day the emperor led his troops in person against the enemy, utterly defeated them, and took their camp. Eugenius was taken prisoner by his own men, and brought to Theodosius, who reproached him with the murder of Valentinian, with the calamities he had brought on the empire by his unjust usurpation, and with putting his confidence in Hercules, and not in the true God; for on his chief standard he had displayed the image of that fabulous hero. Eugenius begged earnestly for his life; but while he lay prostrate at the emperor's feet, his own soldiers cut off his head, and carrying it about on the point of a spear, showed it to those in the camp, who had not yet submitted to Theodosius. At this they were all thunderstruck; but being informed that Theodosius was ready to receive them into favour, they threw down their arms and submitted. After this, Arbogastes, despairing of pardon, fled to the mountains; but being informed that diligent search was made for him, he laid violent hands on himself. His children, and those of Eugenius, took sanctuary in churches: but the emperor not only pardoned, but took the opportunity of converting them to Christianity, restored to them their paternal estates, and raised them to considerable employments in the state. Soon after this, Theodosius appointed his son Honorius emperor of the West, assigning him for his share Italy, Gaul, Spain, Africa, and West Illyricum. The next year, as he prepared for his return to Constantinople, he was seized with a dropsy, owing to the great fatigues he had undergone during the war. As soon as he perceived himself to be in danger, he made his will; by which he bequeathed the empire of the East to Arcadius, and confirmed Honorius in the possession of the West. He likewise confirmed the pardon which he had granted to all those who had borne arms against him, and remitted a tribute which had proved very burdensome to the people; and charged his two sons to see these points of his will executed. He died at Milan on the 17th of January 395, in the 16th of his reign and 50th of his age.

86
Eugenius defeated, taken prisoner, and put to death.

87
Arbogastes lays violent hands on himself.

88
Theodosius dies.

89
Empire usurped by Basiliscus.

From the time of Theodosius to the time when the Roman empire in the West was totally destroyed by the Goths, we find but very little remarkable in the history of Constantinople. At this time the eastern empire was usurped by Basiliscus, who had driven out Zeno the lawful emperor; being assisted in his conspiracy by the empress Verina his sister. Zeno fled into Isauria, whither he was pursued by Illus and Trecondes, two of the usurper's generals; who having easily defeated the few troops he had with him, forced the unhappy prince to shut himself up in a castle, which they immediately invested. But in a short time Basiliscus having disobliterated the people by his cruelty, avarice, and other bad qualities, for which he was no less remarkable than his predecessor had been, his generals joined with Zeno, whom they restored to the throne. After his restoration, Zeno having got Basiliscus into his power, confined him in a castle of Cappadocia together with his wife Zenonides, where they both perished.

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90
Is starved to death.

91
Great fire at Constantinople.

perished with hunger and cold. This happened in the year 467, after Basiliscus had reigned about 20 months. During the time of this usurpation a dreadful fire happened at Constantinople, which consumed great part of the city, with the library containing 120,000 volumes; among which were the works of Homer, written, as is said, on the great gut of a dragon 120 feet long.

The misfortunes which Zeno had undergone did not work any reformation upon him. He still continued the same vicious courses which had given occasion to the usurpation of Basiliscus. Other conspiracies were formed against him, but he had the good fortune to escape them. He engaged in a war with the Ostrogoths, in which he proved unsuccessful, and was obliged to yield the provinces of Lower Dacia and Mœtia to them. In a short time, however, Theodoric their king made an irruption into Thrace, and advanced within 15 miles of Constantinople, with a design to besiege that capital: but the following year, 485, they retired in order to attack Odoacer king of Italy; of which country Theodoric was proclaimed king in 493. The emperor Zeno died in the year 491, in the 65th year of his age, and 17th of his reign.

92
Decline of the Roman empire, to what owing.

The Roman empire had now for a long time been on the decline: the ancient valour and military discipline which had for such a long time rendered the Romans superior to other nations, had greatly degenerated; so that they were now by no means so powerful as formerly. The tumults and disorders which had happened in the empire from time to time by the many usurpations, had contributed also to weaken it very much. But what proved of the greatest detriment was the allowing vast swarms of barbarians to settle in the different provinces, and to serve in the Roman empire in separate and independent bodies. This had proved the immediate cause of the dissolution of the western empire; but as it affected the eastern parts less, the Constantinopolitan empire continued for upwards of 900 years after the western one was totally dissolved. The weak and imprudent administration of Zeno, and Anastasius who succeeded him, had reduced the eastern empire still more; and it might possibly have expired in a short time after the western one, had not the wife and vigorous conduct of Justin, and his partner Justinian, revived in some measure the ancient martial spirit which had originally raised the Roman empire to its highest pitch of grandeur.

93
It revives under Justin and Justinian.

Justin ascended the throne in 518. In 521 he engaged in a war with the Persians, who had all along been very formidable enemies to the Roman name. Against them he employed the famous Belisarius; but of him we hear nothing remarkable till after the accession of Justinian. This prince was the nephew of Justin, and was by him taken as his partner in the empire in 527; and the same year Justin died, in the 77th year of his age and 9th of his reign. Justinian being now sole master of the empire, bent his whole force against the Persians. The latter proved successful in the first engagement; but were soon after utterly defeated by Belisarius on the frontiers of Persia, and likewise by another general named *Dorotheus* in Armenia. The war continued with various success during the first five years of Justinian's reign. In the sixth year a peace was concluded upon the following

94
Justinian's war with the Persians.

terms: 1. That the Roman emperor should pay to Cosroes, the king of Persia, 1000 pounds weight of gold. 2. That both princes should restore the places they had taken during the wars. 3. That the commander of the Roman forces should no longer reside at Daras on the Persian frontiers, but at a place called *Constantina* in Mesopotamia, as he had formerly done. 4. That the Iberians, who had sided with the Romans, should be at liberty to return to their own country or stay at Constantinople. This peace, concluded in 532, was styled *eternal*; but in the event proved of very short duration.

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About this time happened at Constantinople the greatest tumult mentioned in history. It began among the different factions in the circus, but ended in an open rebellion. The multitude, highly dissatisfied with the conduct of John the *prefectus praetorio*, and of Trebonianus then questor, forced Hypatius, nephew to the emperor Anastasius, to accept the empire, and proclaimed him with great solemnity in the forum. As the two above-mentioned ministers were greatly abhorred by the populace on account of their avarice, Justinian immediately discharged them, hoping by that means to appease the tumult: but this was too far from answering the purpose, that the multitude only grew the more outrageous upon it; and most of the senators joining them, the emperor was too much alarmed, that he had thoughts of abandoning the city and making his escape by sea. In this dilemma the empress Theodora encouraged and persuaded him rather to part with his life than the kingdom; and he at last resolved to defend himself to the utmost, with the few senators who had not yet abandoned him. In the mean time, the rebels having attempted in vain to force the gates of the palace, carried Hypatius in triumph to the circus; where, while he was beholding the sports from the imperial throne, amidst the shouts and acclamations of the people, Belisarius, who had been recalled from Persia, entered the city with a considerable body of troops. Being then apprised of the usurpation of Hypatius, he marched straight to the circus; fell sword in hand upon the disarmed multitude; and with the assistance of a band of Heruli, headed by Mundus governor of Illyricum, cut about 30,000 of them in pieces. Hypatius the usurper, and Pompeius another of the nephews of Anastasius, were taken prisoners and carried to the emperor, by whose orders they were both beheaded, and their bodies cast into the sea. Their estates were confiscated, and likewise the estates of such senators as had joined with them; but the emperor caused great part of their lands and effects to be afterwards restored, together with their honours and dignities, to their children.

95
Great tumult in Constantinople.

Justinian having now no other enemy to contend with, turned his arms against the Vandals in Africa, and the Goths in Italy; both which provinces he recovered out of the hands of the barbarians*. But before his general Belisarius had time to establish fully the Roman power in Italy, he was recalled in order to carry on the war against Cosroes king of Persia, who, in defiance of the treaty formerly concluded in 532, entered the Roman dominions at the head of a powerful army. The same year, however, a peace was concluded between the two nations upon the following conditions: 1. That the Romans should, with-

* See *Bury's* history and *Goths*.

96
Another war with the Persians.

Constantinopolitan history.

in two months, pay to the Persian king 5000 pounds weight of gold, and an annual pension of 500. 2. That the Persians should relinquish all claim to the fortrefs of Daras, and maintain a body of troops to guard the Caspian gates, and prevent the barbarians from breaking into the empire. 3. That upon payment of the above-mentioned sum, Cosroes should immediately withdraw his troops from the Roman dominions. The treaty being signed, and the stipulated sum paid, Cosroes began to march back again; but by the way plundered several cities as if the war had still continued. Hereupon Justinian resolved to pursue the war with the utmost vigour; and for that purpose dispatched Belisarius into the east. But soon after he was obliged to recal him in order to oppose the Goths who had gained great advantages in Italy after his departure. The Persian war was then carried on with indifferent success till the year 558, when a peace was concluded upon the emperor again paying an immense sum to the enemy. The same year the Huns, passing the Danube in the depth of winter, marched in two bodies directly for Constantinople; and laying waste the countries through which they passed, came, without meeting the least opposition, within 150 furlongs of the city. But Belisarius marching out against them with an handful of men, put them to flight; the emperor, however, to prevent them from invading the empire anew, agreed to pay them an annual tribute, upon their promising to defend the empire against all other barbarians, and to serve in the Roman armies when required. This was the last exploit performed by Belisarius, who on his return to Constantinople was disgraced, stripped of all his employments, and confined to his house, on pretence of a conspiracy against the emperor*. In the year 565 a real conspiracy was formed against Justinian, which he happily escaped, and the conspirators were executed; but the emperor did not long survive it, being carried off by a natural death in 566, in the 39th year of his reign.

* See Belisarius.

During the reign of Justinian, the majesty of the Roman empire seemed to revive. He recovered the provinces of Italy and Africa out of the hands of the barbarians, by whom they had been held for a number of years; but after his death they were soon lost, and the empire tended fast to dissolution. In 569 Italy was conquered by the Lombards, who held it for the space of 200 years. Some amends, however, was made for the loss by the acquisition of *Perfermenia*; the inhabitants of which, being persecuted by the Persians on account of the Christian religion which they professed, revolted to the Romans. This produced a war between the two nations, who continued to weaken each other, till at last the Persian monarchy was utterly overthrown, and that of the Romans greatly reduced by the Saracens †. These new enemies attacked the Romans in the year 632, and pursued their conquests with incredible rapidity. In the space of four years they reduced the provinces of Egypt, Syria, and Palestine. In 648 they were also masters of Mesopotamia, Phœnicia, Africa, Cyprus, Aradus, and Rhodes; and having defeated the Roman fleet, commanded by the emperor Constant in person, they concluded a peace on condition of keeping the vast extent of territory they had seized, and paying for it 1000 nummi a-year.

93
Decline of the empire after Justinian.

† See Arabia.

An expedition against the Lombards was about this time undertaken, but with very little success, a body of 20,000 Romans being almost entirely cut off by one of the Lombard generals. In 671 the Saracens ravaged several provinces, made a descent in Sicily, took and plundered the city of Syracuse, and over-ran the whole island, destroying every thing with fire and sword. In like manner they laid waste Cilicia; and having passed the winter at Smyrna, they entered Thrace in the winter of the year 672, and laid siege to Constantinople itself. Here, however, they were repulsed with great loss: but next spring they renewed their attempt, in which they met with the same bad success; many of their ships being burnt by the *sea-fire*, as it was called, because it burnt under water; and in their return home their fleet was wrecked off the Scyllæan promontory. At last a peace was concluded for 30 years, on condition that the Saracens should retain all the provinces they had seized; and that they should pay to the emperor and his successors 3000 pounds weight of gold, 50 slaves, and as many choice horses.

This peace was scarce concluded, when the empire was invaded by a new enemy, who proved very troublesome for a long time. These were the Bulgarians; who breaking into Thrace, defeated the Roman army sent against them, and ravaged the country far and wide. The emperor consented to pay them an annual pension, rather than continue a doubtful war; and allowed them to settle in Lower Mœsia, which from them was afterwards called *Bulgaria*. In 687, they were attacked by Justinian II. who entered their country without provocation, or regarding the treaties formerly concluded with them. But they falling suddenly upon him, drove him out of their country, and obliged him to restore the towns and captives he had taken. In 697, this emperor was deposed; and in his exile fled to Trebelis king of the Bulgarians, by whom he was kindly entertained, and by whose means he was restored to his throne; but soon forgetting this favour, he invaded the country of the Bulgarians, with a design to wrest from them those provinces which he had yielded to them. He was attended in this expedition by no better success than his ingratitude deserved, his army being utterly defeated, and he himself obliged to make his escape in a light vessel to Constantinople. The Bulgarians continued their inroads and ravages at different times, generally defeated the Romans who ventured to oppose them, till the year 800, the seventh of the reign of Nicephorus, when they surprised the city of Sardica in Mœsia, and put the whole garrison, consisting of 6000 men, to the sword. The emperor marched against them with a considerable army: but the enemy retired at his approach; and he, instead of pursuing them, returned to Constantinople. Two years after, he entered Bulgaria at the head of a powerful army, destroying every thing with fire and sword. The king offered to conclude a peace with him upon honourable terms; but Nicephorus, rejecting his proposals, continued to waste the country, destroying the cities, and putting all the inhabitants, without distinction of sex or age, to the sword. The king was so much affected with these cruelties which were exercised on his subjects, that he sent a second embassy to Nicephorus, offering to conclude

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99
U. success. full expedition against the Lombards. 100
Constantinople besieged by the Saracens.

101
Empire invaded by the Bulgarians.

102
They defeated Justinian II.

103
Their country cruelly ravaged by Nicephorus.

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 104 Who is cut off with his whole army.
 105 Their country invaded by Basilus II.
 106 His monstrous cruelty.
 107 The country subdued.

a peace with him upon any terms, provided he would quit his country. But Nicephorus dismissing the ambassadors with scorn, the Bulgarian monarch attacked unexpectedly the Roman camp, forced it, and cut off almost the whole army, with the emperor himself, and a great number of patricians. His successor Michael likewise engaged in a war with the Bulgarians; but being utterly defeated, he was so grieved that he resigned the empire. After this the Bulgarians continued to be very formidable enemies to the empire, till the year 979, when they were attacked by Basilus II. The Bulgarians were at that time governed by a king named *Samuel*; who having ravaged the Roman territories, as was the common practice of his nation, Basilus sent against him one Nicephorus Uranus at the head of a powerful army. Uranus, leaving his baggage at Larissa, reached by long marches the Sperchius, and encamped with his whole army over against the enemy, who lay on the opposite bank. As the river was greatly swelled with the heavy rains that had lately fallen, Samuel, not imagining the Romans would attempt to pass it, suffered his troops to roam in large parties about the country in quest of booty. But Uranus having at length found out a place where the river was fordable, passed it in the dead of the night without being perceived. He then fell upon the Bulgarians who were left in the camp, and lay for the most part asleep; cut great numbers of them in pieces; took a great number of prisoners, with all their baggage; and made himself master of their camp. Samuel and his son were dangerously wounded; and would have been taken, had they not all that day concealed themselves among the dead. The next night they stole away to the mountains of *Ætola*, and from thence made their escape into Bulgaria. The following year the emperor entered Bulgaria at the head of a numerous and well-disciplined army; defeated Samuel in a pitched battle, and took several strong cities. The emperor himself, however, at last, narrowly escaped being cut off with his whole army; being unexpectedly attacked by the Bulgarians in a narrow pass. From this danger he was relieved by the arrival of Nicephorus Xiphias, governor of Philopolis, with a considerable body of troops; who falling upon the enemies rear, put them to flight. Basilus pursued them close; and having taken an incredible number of captives, caused their eyes to be pulled out, leaving to every hundred a guide with one eye, that he might conduct them to Samuel. This shocking spectacle so affected the unhappy king, that he fell into a deep swoon, and died two days after. The Roman emperor pursued his conquests, and in the space of two years made himself master of most of the enemies strong holds. He defeated also the successor of Samuel in several engagements; and having at last killed him in battle, the Bulgarians submitted themselves without reserve. The vast treasures of their princes were by Basilus distributed among his soldiers by way of donative. Soon after, the widow of the late king, with her six daughters and three of her sons, surrendered themselves to the Roman emperor, by whom they were received with the utmost civility and respect. This obliging behaviour encouraged the three other sons of the late king; and most of the

princes of the blood, who had taken shelter in the mountains, to submit, and throw themselves on the emperor's mercy.

Ibatzes, however, a person nearly allied to the royal family, who had distinguished himself in a very eminent manner during the whole course of the war, refused to submit, and fled to a steep and craggy mountain, with a design to defend himself there to the last extremity. Basilus endeavoured to cause him submit by fair means, but he equally despised both threats and promises. At last Eustathius Daphnomelus, whom Basilus had lately appointed governor of Achridus, the chief city of Bulgaria, undertook to secure him by a most desperate and improbable scheme. Without communicating his design to any, he repaired, with two persons in whom he could confide, to the mountain on which Ibatzes had fortified himself. He hoped to pass undiscovered among the many strangers who flocked thither to celebrate the approaching feast of the Virgin Mary, for whom Ibatzes had a particular veneration. In this he found himself mistaken; for he was known by the guards, and carried before the prince. To him he pretended to have something of importance to communicate; but as soon as Ibatzes had retired with him into a remote place, Daphnomelus threw himself suddenly upon him, and with the assistance of the two men whom he had brought with him, pulled out both his eyes, and got safe to an abandoned castle on the top of the hill. Here they were immediately surrounded by the troops of Ibatzes; but Daphnomelus exhorting them now to submit to the emperor, by whom he assured them they would be well received, they congratulated Daphnomelus on his success, and suffered him to conduct the unhappy Ibatzes a prisoner to Basilus. The emperor was no less surprised than pleased at the success of this bold attempt; and rewarded Daphnomelus with the government of Dyrhachium, and all the rich moveables of his prisoner. After this, having accomplished the entire reduction of Bulgaria, he returned to Constantinople with an incredible number of captives; where he was received by the senate and people with all possible demonstrations of joy.

All this time the Saracens had at intervals invaded the Roman dominions, and even attempted to make themselves masters of Constantinople. Their internal divisions, however, rendered them now much less formidable enemies than they had formerly been; so that some provinces were even recovered for a time out of their hands; though the weak and distracted state of the empire rendered it impossible to preserve such conquests. But in 1041, the empire was invaded by an enemy, not very powerful at that time indeed, but whose degrees gathered strength sufficient to overthrow by the both the Roman and Saracen empires. These were the Turks; who having quitted their ancient habitations in the neighbourhood of mount Caucasus, and passed the Caspian straits, settled in Armenia Major, about the year 844. There they continued an unknown and despicable people, till the intestine wars of the Saracens gave them an opportunity of aggrandizing themselves. About the year 1030, Mohammed the son of Sambrael sultan of Persia, not finding himself a match for Pizaris sultan of Babylon, with whom he was at war, had

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108 Ibatzes alone holds out.

109 He is taken by a stratagem.

110 The empire invaded by the Turks.

111 Account of them.

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recourse to the Turks, who sent him 3000 men under the command of one Tangrolipix, a leading man among them. By their assistance Mohammed defeated his adversary; but when the Turks desired leave to return home, he refused to part with them. Upon this they withdrew without his consent to a neighbouring desert; and being there joined by several discontented Persians, began to make frequent inroads into the sultan's territories. Against them Mohammed immediately dispatched an army of 20,000 men; who, being surpris'd in the night, were utterly defeated by Tangrolipix. The fame of this victory drew multitudes to him from all parts; so that in a short time Tangrolipix saw himself at the head of 50,000 men. Upon this Mohammed marched against them in person, but was thrown from his horse in the beginning of the engagement, and killed by the fall; upon which his men threw down their arms, and submitted to Tangrolipix.

112 They defeat the Romans.

After this victory the Turkish general made war upon the sultan of Babylon: whom he at length slew, and annexed his dominions to his own. He then sent his nephew, named *Cutlu-Moses*, against the Arabians; but by them he was defeated, and forced to fly towards Media. Through this province he was denied a passage by Stephen the Roman governor; upon which Cutlu-Moses was obliged to force a passage by encountering the Roman army. These he put to flight, took the governor himself prisoner, and without any further opposition reached the confines of Persia, where he sold Stephen for a slave. Returning from thence to Tangrolipix, he excused, in the best manner he could, his defeat by the Arabians; but at the same time acquainted him with his victory over the Romans in Media, encouraging him to invade that fertile country, which he said might be easily conquered, as it was inhabited by none but *women*, meaning the Romans. At that time Tangrolipix did not hearken to his advice, but marched against the Arabians at the head of a numerous army. He was, however, attended with no better success than his nephew had been; and therefore began to reflect on what he had told him. Soon after he sent Asan his brother's son with an army of 20,000 men to reduce Media. Pursuant to his orders, the young prince entered that country, and committed every where dreadful ravages: but being in the end drawn into an ambush by the Roman generals, he was cut off with his whole army. Tangrolipix, no way discouraged by this misfortune, sent a new army into Media near 100,000 strong; who after having ravaged the country without opposition, laid siege to Artza a place of great trade, and therefore reckoned the most wealthy in those parts. Not being able to reduce it by any other means, they set it on fire; and thus in a short time it was utterly destroyed: the buildings being reduced to ashes, and 150,000 of the inhabitants perishing either by the flames or the sword. After this Abraham Halim, half brother to Tangrolipix, hearing that the Romans, reinforced with a body of troops under the command of Liparites governor of Iberia, had taken the field, marched against them, and offered them battle; which they not declining, the two armies engaged with incredible fury. The victory continued long doubtful; but at length inclined to the Romans; who nevertheless did not think pro-

113 A Turkish army entirely cut off.

114 They again invade the empire.

115 An oblique engagement.

Nº 90.

per to pursue the fugitives, as their general Liparites was taken prisoner. The emperor, greatly concerned for the captivity of Liparites, dispatched ambassadors with rich presents, and a large sum of money to redeem him, and at the same time to conclude an alliance with Tangrolipix. The sultan received the presents; but generously returned them together with the money to Liparites, whom he set at liberty without any ransom; only requiring him, at his departure, never more to bear arms against the Turks. Not long after, Tangrolipix sent a person of great authority among the Turks, with the character of ambassador, to Constantinople; who having arrogantly exhorted the emperor to submit to his master, and acknowledge himself his tributary, was ignominiously driven out of the city.

Tangrolipix, highly affronted at the reception his ambassador had met with, entered Iberia while the emperor Constantine Monomachus was engaged in a war with the Patzinacæ, a Scythian nation. Having ravaged that country, he returned from thence to Media, and laid siege to Mantzichiarta, a place defended by a numerous garrison, and fortified with a triple wall and deep ditches. However, as it was situated in an open plain country, he hoped to be master of it in a short time. But finding the besieged determined to defend themselves to the last extremity, he resolved to raise the siege, after he had continued it 30 days. One of his officers, however, named *Alcan*, prevailed on him to continue it but one day longer, and to commit the management of the attacks to him. This being granted, Alcan disposed his men with such skill, and so encouraged them by his example, that, notwithstanding the vigorous opposition they met with, the place would have probably been taken, had not Alcan been slain as he was mounting the wall. The besieged, knowing him by the richness of his armour, drew him by the hair into the city, and cutting off his head threw it over the wall among the enemy; which so disheartened them, that they gave over the assault and retired. The next spring Tangrolipix returned, and ravaged Iberia with the utmost cruelty, sparing neither sex nor age. But on the approach of the Roman army he retired to Tauris, leaving 30,000 men behind him to infest the frontiers of the empire. This they did with great success, the borders being through the avarice of Monomachus unguarded. Till the time of this emperor, the provinces bordering on the countries of the barbarians had maintained, at their own charge, forces to defend them; and were on that account exempted from paying tribute: but as Monomachus exacted from them the same sums that were paid by others, they were no longer in a condition to defend themselves.

In 1063 died the emperor Constantine Ducas, having left the empire to his three sons, Michael, Andronicus, and Constantine: but as they were all very young, he appointed the empress Eudocia regent during their minority, after having required of her an oath never to marry; which oath was with great solemnity lodged in the hands of the patriarch. He likewise obliged the senators solemnly to swear that they would acknowledge none for their sovereign but his three sons. No sooner, however, was he dead, than the Turks, hearing that the empire was governed by

Constantinopolitan history.

116 The Turk besiege Mantzichiarta.

117 The siege raised.

118 The empress Eudocia forced to swear that she will never marry.

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a woman, broke into Mesopotamia, Cilicia, and Cappadocia, destroying all with fire and sword. The empress was no way in a condition to oppose them, the greater part of the army having been disbanded in her husband's life-time, and the troops that were still on foot being undisciplined, and altogether unfit for service. The concern which this gave the empress was aggravated by the seditious speeches of a discontented party at home, who repeated on all occasions that the present state of affairs required a man of courage and address at the helm, instead of a weak and helpless woman; and as they imagined the empress would never think of marrying, in consequence of the oath she had taken, they hoped by these speeches to induce the people to revolt, and choose a new emperor. This Eudocia was aware of; and therefore determined to prevent the evils that threatened herself and her family, by marrying some person of merit who was capable of defeating her enemies both at home and abroad. At this time one Romanus Diogenes, a person of a most beautiful aspect, extraordinary parts, and illustrious birth, being accused of aspiring to the empire, tried and convicted, was brought forth to receive sentence of death. But the empress, touched with compassion at his appearance, gently upbraided him with his ambition, set him at liberty, and soon after appointed him commander in chief of all her forces. In this station he acquitted himself so well, that the empress resolved to marry him if she could but recover the writing in which her oath was contained out of the hands of the patriarch. In order to this, she applied to a favourite eunuch; who going to the patriarch, told him, that the empress was so taken with his nephew named *Bardas*, that she was determined to marry and raise him to the empire, provided the patriarch absolved her from the oath she had taken, and convinced the senate of the lawfulness of her marriage. The patriarch, dazzled with the prospect of his nephew's promotion, readily undertook to perform both. He first obtained the consent of the senate by representing to them the dangerous state of the empire, and exclaiming against the rash oath which the jealousy of the late emperor had extorted from the empress. He then publicly discharged her from it; restored the writing to her; and exhorted her to marry some deserving object, who being entrusted with an absolute authority, might be capable of defending the empire. The empress, thus discharged from her oath, married a few days after Romanus Diogenes; who was thereupon proclaimed emperor, to the great disappointment of the patriarch.

As the new emperor was a man of great activity and experience in war, he no sooner saw himself vested with the sovereign power, than he took upon him the command of the army, and passed over into Asia with the few forces he could assemble, recruiting and inuring them on his march to military discipline, which had been utterly neglected in the preceding reigns. On his arrival in this continent, he was informed that the Turks had surpris'd and plundered the city of Neocesarea, and were retiring with their booty. On this news he hasten'd after them at the head of a chosen body of light armed troops, and came up with them on the third day. As the Turks were marching in disorder, without the least apprehension of an enemy,

Romanus cut great numbers of them in pieces, and easily recovered the booty; after which he pursued his march to Aleppo, which he retook from them, together with Hierapolis, where he built a strong castle.

As he was returning to join the forces he had left behind him, he was met by a numerous body of Turks, who attempted to cut off his retreat. At first he pretended to decline an engagement through fear; but attacked them afterwards with such vigour when they least expected it, that he put them to flight at the first onset, and might have gained a complete victory had he thought proper to pursue them. After this, several towns submitted to him; but the season being now far spent, the emperor returned to Constantinople. The following year he passed over into Asia early in the spring; and being informed that the Turks had sacked the rich city of Iconium, besides gaining other considerable advantages, he marched in person against them. But the Turks, not thinking it advisable to wait his coming, retired in great haste. The Armenians, however, encouraged by the approach of the emperor's army, fell upon the enemy in the plains of Tarsus, put them to flight, and stripped them both of their baggage and the booty they had taken. The spring following the emperor once more entered Asia at the head of a considerable army which he had raised, and with incredible pains disciplined during the winter. When the two armies drew near to each other, Axan, the Turkish Sultan, and son of the famous Tangrolipix, sent proposals to Romanus for a lasting and honourable peace. These were imprudently rejected, and a desperate engagement ensued, when, in despite of the utmost efforts of the emperor, his army was routed, and he himself wounded and taken prisoner. When this news was brought to Axan, he could scarcely believe it; but being convinced by the appearance of the royal captive in his presence, he tenderly embraced him, and addressed him in an affectionate manner: "Grieve not (said he), most noble emperor, at your misfortune; for such is the chance of war, sometimes overwhelming one, and sometimes another: you shall have no occasion to complain of your captivity; for I will not use you as my prisoner, but as an emperor." The Turk was as good as his word. He lodged the emperor in a royal pavilion; assigned him attendants, with an equipage suitable to his quality; and discharged such prisoners as he desired. After he had for some days entertained his royal captive with extraordinary magnificence, a perpetual peace was concluded betwixt them, and the emperor dismissed with the greatest marks of honour imaginable. He then set out with the Turkish ambassador for Constantinople, where the peace was to be ratified; but by the way he was informed that Eudocia had been driven from the throne by John the brother of Constantine Ducas, and Pselus a leading man in the senate, who had confined her to a monastery, and proclaimed her eldest son, Michael Ducas, emperor. On this intelligence, Romanus retired to a strong castle near Theodosiopolis, where he hoped in a short time to be joined by great numbers of his friends and adherents. But in the mean time John, who had taken upon him to act as guardian to the young prince, dispatched Andronicus with a considerable army against him. Andronicus having easily de-

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124
Gains a second victory.

125
They are again defeated.

126
The Romans defeated and the emperor taken.

127
Eudocia deposed and confined in a monastery.

119
The empress determines to break her oath.

120
She recovers the writing in which it was contained.

121
And marries Romanus Diogenes.

122
He passes over into Asia.

123
He defeats the Turks.

Constantinopolitan history.

1128
Romanus put to death.

120
The Turks again invade the empire.

130
They defeat the Romans.

131
They gain a second victory.

132
They conquer several provinces.

feated the small army which Romannus had with him, obliged him to fly to Adana a city in Cilicia, where he was closely besieged, and at last obliged to surrender. Andronicus carried his prisoner into Phrygia, where he fell dangerously ill, being, as was suspected, secretly poisoned. But the poison being too slow in its operation, John ordered his eyes to be put out; which was done with such cruelty that he died soon after, in the year 1067, having reigned three years and eight months.

Axan was no sooner informed of the tragical end of his friend and ally, than he resolved to invade the empire anew; and that not with a design only to plunder as formerly, but to conquer, and keep what he had once conquered. The emperor dispatched against him Isaac Comnenus, with a considerable army; but he was utterly defeated and taken prisoner by Axan. Another army was quickly sent off under the command of John Ducas the emperor's uncle. He gained at first some advantages, and would probably have put a stop to their conquests, had not one Rufelius, or Urselius, revolted with the troops he had under his command, caused himself to be proclaimed emperor, and reduced several cities in Phrygia, and Cappadocia. Against him John marched with all his forces, suffering the Turks in the mean time to pursue their conquests; but coming to an engagement with the rebels, his army was entirely defeated, and himself taken prisoner. Notwithstanding this victory, Rufelius was so much alarmed at the progress of the Turks, that he not only released his prisoner, but joined with him against the common enemy, by whom they were both defeated and taken prisoners. Axan, however, was for some time prevented from pursuing his conquests by Cutlu-Moses, nephew to the late Tangrolipix. He had revolted against his uncle; but being defeated by him in a pitched battle, had taken refuge in Arabia, whence he now returned at the head of a considerable army, in order to dispute the sovereignty with Axan. But while the two armies were preparing to engage, the kalif of Babylon, who was still looked upon as the successor of the great prophet, interposed his authority. He represented the dangers of their intestine dissensions; and by his mediation, an agreement was at last concluded, on condition that Axan should enjoy undisturbed the monarchy lately left him by his father, and Cutlu-Moses should possess such provinces of the Roman empire as he or his sons should in process of time conquer.

After this agreement, both the Turkish princes turned their forces against the empire; and before the year 1077, made themselves masters of all Media, Lycaonia, Cappadocia, and Bithynia, fixing the capital city of their empire at Nice in the latter province. During all this time, the emperors of Constantinople, as well as their subjects, seemed to be in a manner infatuated. No notice was taken of the great progress made by these barbarians. The generals were ambitious only of seizing the tottering empire, which seemed ready to fall a prey to the Turks; and, after it was obtained, spent their time in oppressing their subjects, rather than in making any attempts to repulse the enemy.

At last Alexius Comnenus, having wrested the empire from Nicephoru Botoniates, in 1077, began to

prepare for opposing so formidable an enemy. But before he set out, as his soldiers had committed great outrages on his accession to the empire, he resolved to make confession of his sins, and do open penance for those he had suffered his army to commit. Accordingly he appeared in the attire of a penitent before the patriarch and several other ecclesiastics, acknowledged himself guilty of the many disorders that had been committed by his soldiers, and begged of the patriarch to impose upon him a penance suitable to the greatness of his crimes. The penance enjoined him and his adherents by the patriarch was to fast, lie upon the ground, and practise several other austerities for the space of 40 days. This command was religiously obeyed, and the emperor then began to prepare for war with so much vigour, that Solymán, the Turkish sultan, son and successor to Cultu-Moses, dispatched ambassadors to Alexius with proposals of peace. These were at first rejected; but the emperor was at last glad to accept them on certain advice, that Robert Guiscard, duke of Puglia and Calabria, was making great preparations against him in the West.

To this expedition, Robert was incited by Michael Robert Ducas. That prince had been deposed by Nicephoru Botoniates, and towards the end of the usurper's reign fled into the West, where he was received by Robert, who was prevailed upon to favour his cause.

For this purpose, Robert made great preparations; and these were continued even after the deposition of Botoniates. He sailed with all his forces from Brundisium; and landing at Buthrotum in Epirus, made himself master of that place, while his son Bohemond with part of the army reduced Aulon, a celebrated port and city in the country now called *Albania*. From thence they advanced to Dyrrhachium, which they invested both by sea and land; but met with a most vigorous opposition from George Paleologus, whom the emperor had entrusted with the defence of that important place. In spite of the utmost efforts of the enemy, this commander held out till the arrival of the Venetian fleet, by whom Robert's navy commanded by Bohemond was utterly defeated, the admiral himself having narrowly escaped being taken prisoner. After this victory, the Venetians landed without loss of time, and being joined by Paleologus's men, fell upon Robert's troops with such fury, that they destroyed their works, burnt their engines, and forced them back to their camp in great disorder. As the Venetians were now masters at sea, the besieged were supplied with plenty of provisions, while a famine began to rage in the camp of the enemy; and this calamity was soon followed by a plague, which in the space of three months is said to have destroyed ten thousand men. Notwithstanding all these disasters, however, Robert did not abandon the siege: having found means to supply his famished troops with provisions, he continued it with such vigour, that the courage of the besieged began at last to fail them; and Paleologus sent repeated messages to the emperor, acquainting him that he would be obliged to surrender unless very speedily assisted. On this Alexius marched in person to the relief of the city, but was defeated with great loss by Robert. The whole right wing of Alexius's army, finding themselves hard pressed by the enemy, fled to a church dedicated to St Michael, imagining they

Constantinopolitan history.

133
Alexius Comnenus stops their progress.

134
Robert Guiscard's expedition against the emperor.

135
He passes over into Epirus and besieges Dyrrhachium.

Constantinopolitan history.

they would there find themselves in a place of safety; but the victorious army pursuing them, set fire to the church, which was burnt to ashes with all who were in it. The emperor himself with great difficulty made his escape, leaving the enemy masters of his camp and all his baggage. Soon after this defeat, the city surrendered; and Alexis being destitute of resources for carrying on the war, seized on the wealth of churches and monasteries, which gave much offence to the clergy, and had like to have occasioned great disturbances in the Imperial city. At the same time, Alexis entering into an alliance with Henry emperor of Germany, persuaded him to invade the dominions of Robert in Italy. At first Henry met with great success; but was soon overcome, and driven out of that country by Robert. Bohemond, in the mean time, reduced several places in Illyricum; and, having defeated Alexius in two pitched battles, entered Thessaly, and sat down before Larissa. This place, being defended by an officer of great courage and experience in war, held out till the emperor came to its relief. Soon after his arrival, he found means to draw a strong party of Bohemond's men into an ambuscade, and cut them off almost entirely. However, in the battle which was fought a few days after, Bohemond had the advantage; but his troops mutinying and refusing to carry on the war, he was obliged to return to Italy. Alexius taking advantage of his absence, recovered several cities; and being informed that Robert was making great preparations against him, he had recourse once more to the Venetians. By them he was assisted with a powerful fleet, which defeated that of Robert in two engagements; but being soon after surprised by him, they were defeated with the loss of almost their whole navy. Robert is said to have used his victory with great barbarity, putting many of his prisoners to death with unheard-of torments. The Venetians equipped a second fleet; and joining that of the emperor, fell unexpectedly upon Robert's navy, who were riding without the least apprehension in Buthrotum, sunk most of his ships, and took a great number of prisoners, his wife and younger sons having narrowly escaped falling into their hands. Robert made great preparations to revenge this defeat; but was prevented by death from executing his designs: and, after his decease, his son Roger did not think proper to pursue so dangerous and expensive a war. He therefore recalled his troops, and the places which had been conquered by Robert and Bohemond submitted anew to the emperor.

This war was scarce ended, when the Scythians passing the Danube laid waste great part of Thrace, committing every where the greatest barbarities. Against them the emperor dispatched an army under the command of Pacurianus and Branas. The latter insisted upon engaging the enemy contrary to the opinion of his colleague; and his rashness caused the loss of the greater part of the army, who were cut off by the Scythians, together with the two generals. *Talicius*, an officer who had signalized himself on many occasions, was appointed to command the army in their room. He fell upon the enemy as they lay securely in the neighbourhood of Philippopolis, cut great numbers of them in pieces, and obliged the rest to retire in great confusion. The following spring, how-

ever, they returned in such numbers, that the emperor resolved to march against them in person. Accordingly he set out for Adrianople, and from thence to a place called *Lardea*. Here, contrary to the advice of his best officers, he ventured a battle; in which he was utterly defeated with the loss of vast numbers of his men, he himself escaping with the utmost difficulty. The next year he was attended with no better success, his army being entirely defeated with the loss of his camp and baggage. In the year following, 1084, the emperor retrieved his credit; and gave the Scythians such an overthrow, that very few escaped the general slaughter. Notwithstanding this disaster, however, they again invaded the empire in 1093. To this they were encouraged by an impostor called *Leo*, who pretended to be the eldest son of Romanus Diogenes. The young Prince had been slain in a battle with the Turks; but as the Scythians only wanted a pretence to renew the war, they received the impostor with joy. By a stratagem, however, *Leo* was murdered; and the Scythians being afterwards overthrown in two great battles, were obliged to submit on the emperor's own terms.

Since the year 1083, the war had been carried on with the Turks with various success; but now an association was formed in the West against these infidels, which threatened the utter ruin of the Turkish nation. This was occasioned by the superstition of the Christians, who thought it a meritorious action to venture their lives for the recovery of the Holy Land, possessed at that time by the Turks and Saracens. Had the western princes been properly assisted by the emperors of the East in this undertaking, the Turks had undoubtedly been unable to resist them; but so far from this, the Latins were looked upon by them as no less enemies than the Turks; and indeed whatever places they took from the infidels, they never thought of restoring to the emperors of Constantinople, to whom they originally belonged, but erected a number of small independent principalities; which neither having sufficient strength to defend themselves, nor being properly supported by one another, soon became a prey to the Turks. In the year 1203, happened a dreadful fire at Constantinople, occasioned by some Latin soldiers. These had plundered a mosque, which the Turks residing in Constantinople had been suffered to build there. For this reason they were attacked by the infidels; who being much superior to them in number, the Latins found themselves obliged to set fire to some houses, in order to make their escape with safety. The flame spreading in an instant from street to street, reduced in a short time great part of the city to ashes, with the capacious store-houses which had been built at a vast expence on the quay. The late emperor *Isaac Angelus*, who had been restored to his throne by the Latins, died soon after their departure from Constantinople, leaving his son *Alexius* sole master of the empire. The young prince, to discharge the large sums he had promised to the French and Venetians for their assistance, was obliged to lay heavy taxes on his subjects; and this, with the great esteem and friendship showed to his deliverers, raised a general discontent among the people of Constantinople, who were sworn enemies to the Latins. This encouraged *John Ducas*, surnamed *Murtzuphlus*, from his joined

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139
The Romans defeated.

140
They at last defeat the Scythians.

141
The Holy War.

142
Dreadful fire at Constantinople.

136
The city surrenders.

137
The war ended by the death of Robert.

138
The Scythian war.

Constantinopolitan history.

¹⁴³ Murtzuphlus strangles the emperor.

¹⁴⁴ The city taken and plundered by the Latins.

and thick eye-brows, to attempt the sovereignty. Unhappily he found means to put his treacherous designs in execution; and strangled the young prince with his own hands. After this he presented himself to the people; told them what he had done, which he pretended was in order to secure their liberties; and earnestly intreated them to choose an emperor who had courage enough to defend them against the Latins that were ready to oppress and enslave them. On this he was instantly saluted emperor by the inconstant multitude; but this usurpation proved the ruin of the city. The Latins immediately resolved to revenge the death of the young prince; and, as they had been so often betrayed and retarded in their expeditions to the Holy Land by the emperors of Constantinople, to make themselves masters of that city, and seize the empire for themselves. In consequence of this resolution they mustered all their forces in Asia, and having crossed the straits, laid siege to Constantinople by sea and land. The tyrant, who was a man of great courage and experience in war, made a vigorous defence. The Latins, however, after having battered the walls for several days together with an incredible number of engines, gave a general assault on the 8th of April 1204. The attack lasted from break of day till three in the afternoon, when they were forced to retire, after having lost some of their engines, and a great number of men. The assault was nevertheless renewed four days after; when, after a warm dispute, the French planted their standard on one of the towers; which the Venetians observing, they quickly made themselves masters of four other towers, where they likewise displayed their ensigns. In the mean time three of the gates being broke down by the battering rams, and those who had scaled the walls having killed the guards, and opened the gates between the towers they had taken, the whole army entered, and drew up in battle array between the walls. The Greeks fled up and down in the greatest confusion; and several parties were by the Latins dispatched to scour the streets, who put all they met to the sword, without distinction of age or condition. Night put a stop to the dreadful slaughter, when the princes founding the retreat, placed their men in different quarters of the city, with orders to be upon their guard, not doubting but they should be attacked early next morning. They were surpris'd, however, at that time by the entire submission of the Greeks; to whom they promised their lives, but at the same time, ordering them to retire to their houses, they gave up the city to be plundered by the soldiers for that day. They strictly enjoined their men to abstain from slaughter, to preserve the honour of the women, and to bring the whole booty into one place, that a just distribution might be made according to the rank and merit of each individual. The Greeks had undoubtedly concealed their most valuable effects during the night; many persons of the first rank had escaped, and carried along with them immense treasures; the soldiers had probably, as is usual in all such cases, reserved things of great value for themselves, notwithstanding all prohibitions to the contrary; and yet the booty, without the statues, pictures, and jewels, amounted to a sum almost incredible. As for Murtzuphlus, he made his escape in the night; embarking on a small vessel

with *Euphrosyne*, the wife of *Alexius Angelus* a late usurper, and her daughter *Eudoxia*, for whose sake he had abandoned his lawful wife.

Constantinople continued subject to the Latins till the year 1261, when they were expelled by one *Alexius Strategopulus*. He was a person of an illustrious family; and, for his eminent services, distinguished with the title of *Cesar*. He had been sent against *Alexius Angelus* despot of Epirus, who now attempted to recover some places in Thessaly and Greece from *Michael Paleologus*, one of the Greek emperors, that, since the capture of Constantinople, had kept their court at Nice; and to try whether he could on his march surprize the imperial city itself. *Alexius*, having passed the straits, encamped at a place called *Rbegium*, where he was informed by the natives that a strong body of the Latins had been sent to the siege of *Daphnusa*, that the garrison was in great want of provisions, and that it would be no difficult matter to surprize the city. Hereupon the Greek general resolved at all events to attempt it; in which he was encouraged by some of the inhabitants, who, coming privately to his camp, offered themselves to be his guides. He approached the walls in the dead of the night, which some of his men scaled without being observed; and, killing the centries whom they found asleep, opened one of the gates to the rest of the army. The Greeks rushing in, put all they met to the sword; and at the same time, to create more terror, set fire to the city in four different places. The Latins, concluding from thence that the enemy's forces were far more numerous than they really were, did not so much as attempt either to drive them out, or to extinguish the flames. In this general confusion, the emperor *Baldwin*, quitting the ensigns of majesty, fled with *Justinian* the Latin patriarch, and some of his intimate friends, to the sea-side; and there, embarking on a small vessel, sailed first to *Euboea*, and afterwards to *Venice*, leaving the Greeks in full possession of Constantinople. When news of this surprizing and altogether unexpected success of *Alexius* were first brought to *Paleologus*, he could scarce give credit to it; but receiving soon after letters from *Alexius* himself, with a particular account of so memorable an event, he ordered public thanks to be returned in all the churches, appeared in public in his imperial robes, attended by the nobility in their best apparel, and ordered couriers to be dispatched with the agreeable news into all parts of the empire.

Soon after, having settled his affairs at Nice, he set out for Constantinople with the empress, his son *Andronicus*, the senate, and nobility, to take possession of the imperial city, and fix his residence in that place that had originally been designed for the seat of the eastern empire. Having passed the straits, he advanced to the *golden gate*, and continued some days without the walls, while the citizens were busied in making the necessary preparations to receive him with a magnificence suitable to the occasion. On the day appointed, the golden gate, which had been long shut up, was opened, and the emperor entering it amidst the repeated acclamations of the multitude, marched on foot to the great palace. He was preceded by the bishop of *Cyzicus*, who carried an image of the Virgin *Mary*, supposed to have been done by *St. Luke*, and

Constantinopolitan history.

¹⁴⁵ The Latins expelled.

¹⁴⁶ Entry of *Michael Paleologus* into the city.

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followed by all the great officers, nobility, and chief citizens, pompously dressed. Public thanks were again returned in the church of St Sophia, at which the emperor assisted in person, with the clergy, the senate, and nobility. These exercises were succeeded by all sorts of rejoicings; after which the emperor carefully surveyed the imperial city. This survey greatly allayed his joy. He saw the stately palaces and other magnificent buildings of the Roman emperors lying in ruins; the many capacious buildings that had been erected by his predecessors, at an immense charge, destroyed by fire, and other unavoidable accidents of war; several streets abandoned by the inhabitants, and choked up with rubbish, &c. These objects gave the emperor no small concern, and kindled in him a desire of restoring the city to its former lustre. In the meantime, looking upon Alexius as the restorer of his country, he caused him to be clad in magnificent robes; placed with his own hand a crown on his head; ordered him to be conducted through the city, as it were in triumph; decreed that for a whole year the name of Alexius should be joined in the public prayers with his own; and, to perpetuate the memory of so great and glorious an action, he commanded his statue to be erected on a stately pillar of marble before the church of the Apostles. His next care was to re-people the city, many Greek families having withdrawn from it while it was held by the Latins, and the Latins now preparing to return to their respective countries. The former were recalled home; and the latter, in regard of the great trade they carried on, were allowed many valuable privileges, which induced them not to remove. The Greeks were allowed to live in one of the most beautiful quarters of the city, to be governed by their own laws and magistrates, and to trade without paying customs or taxes of any kind. Great privileges were likewise granted to the natives of Venice and Pisa, which encouraged them to lay aside all thoughts of removing, and the trade they carried on proved afterwards highly advantageous to the state.

It was not long, however, before these regulations were altered. The emperor being soon after informed that Baldwin, lately expelled from Constantinople, had married his daughter to Charles king of Sicily, and given him, by way of dowry, the imperial city itself, he ordered the Genoese, who were become very numerous, to remove first to Heraclea, and afterwards to Galata, where they continued. As for the Pisans and Venetians, who were not so numerous and wealthy, they were allowed to continue in the city. Paleologus, though he had caused himself to be proclaimed emperor, and was possessed of absolute sovereignty, was as yet only guardian to the young emperor John Lascaris, then about 12 years of age. But having now settled the state, and having gained the affections both of natives and foreigners, he began to think of securing himself and his posterity in the full enjoyment of the empire; and for this reason cruelly ordered the eyes of the young prince to be put out, pretending that none but himself had any right to the city or empire of Constantinople, which he alone had recovered out of the hand of the Latins.

This piece of treachery and inhumanity involved him in great troubles. The patriarch immediately excom-

municated him; and he would in all probability have been driven from the throne by a combination of the western princes, had he not engaged pope Urban IV. to espouse his cause, by promising to submit himself and his dominions to the Latin church. Thus, indeed, he diverted the present storm; but this proceeding caused the greatest disturbances, not only in Constantinople, but throughout the whole empire, nor was Paleologus able to reconcile his subjects to this union.

In 1283 Michael died, and was succeeded by his son Andronicus. His first step was to restore the ancient Greek ceremonies, thinking he could not begin his reign with a more popular act. But thus he involved himself in difficulties still greater than before. Though Michael had not been able fully to reconcile his Greek subjects to the Latin ceremonies, yet he had in some degree accomplished his purpose. The Latins had got a considerable footing in the city, and defended their ceremonies with great obstinacy; so that the empire was again thrown into a ferment by this imprudent step.

All this time the Turks had been continuing their encroachments on the empire, which had it not been for the crusades published against them by the Pope, they would in all probability have made themselves masters of before this time. They were now, however, very successfully opposed by Constantine the emperor's brother: but his valour rendered him suspected by the emperor; in consequence of which he was thrown into prison, along with several persons of great distinction. On the removal of this brave commander, the Turks, under the famous Othoman, made themselves masters of several places in Phrygia, Caria, and Bithynia; and, among the rest, of the city of Nice. To put a stop to their conquests, the emperor dispatched against them Philanthropenus and Libadarius, two officers of great experience in war. The former gained some advantages over the enemy; but being elated with his success, caused himself to be proclaimed emperor. This rebellion, however, was soon suppressed, Philanthropenus being betrayed by his own men: but the Turks taking advantage of these intestine commotions, not only extended their dominions in Asia, but conquered most of the islands in the Mediterranean; and, being masters at sea, infested the coasts of the empire, to the utter ruin of trade and commerce.

From this time the Roman empire tended fast to dissolution. After the revolt of Philanthropenus, the emperor could no longer trust his subjects, and therefore hired the Massagetes to assist him: but they, behaving in a careless manner, were first defeated by their enemies, and afterwards turned their arms against those they came to assist. He next applied to the Catalans, who behaved in the same manner; and having ravaged the few places left the emperor in Asia, returned into Europe, and called the Turks to their assistance.

This happened in the year 1292, and was the first appearance of the Turks in Europe. This enterprize, however, was unsuccessful. Having loaded themselves with booty, they offered to depart quietly if they were allowed a safe passage, and ships to transport them to Asia. To this the emperor, willing to get rid of such troublesome guests, readily consented, and ordered the vessels,

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149 Union of the Greek and Latin churches.

150 Dissolved.

151 War with the Turks.

152 Their first appearance in Europe.

147 He resolves to restore it to its former grandeur.

148 Great disturbances occasioned by the treachery of Paleologus.

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vessels to be got ready with all possible expedition. But the Greek officers observing the immense booty with which they were loaded, resolved to fall upon them in the night, and cut them all off at once. This scheme, however, was not managed with such secrecy but that the Turks had notice of it, and therefore prepared for their defence. They first surpris'd a strong castle in the neighbourhood, and then found means to acquaint their countrymen in Asia with their dangerous situation. Their brethren, enticed with the hopes of booty, were not long of coming to their assistance; and having cross'd the Hellespont in great numbers, ravaged the adjacent country, making excursions to the very gates of Constantinople. At last the emperor determin'd to root them out; and accordingly march'd against them with all his forces, the country people flocking to him from all quarters. The Turks at first gave themselves over for lost; but finding the Greeks negligent of discipline, they attack'd their army unexpectedly, utterly defeated it, and made themselves masters of the camp. After this unexpected victory, they continued for two years to ravage Thrace in the most terrible manner. At last, however, they were defeated; and being afterwards shut up in the Chersonesus, they were all cut in pieces or taken.

153
They are all cut in pieces, or taken.

Soon after new commotions took place in this unhappy empire, of which the Turks did not fail to take the advantage. In 1327 they made themselves masters of most of the cities on the Mæander; and, among the rest, of the strong and important city of Prusa in Bithynia. The next year, however, Othoman, who may justly be styled the founder of the Turkish monarchy, being dead, the emperor laid hold of that opportunity to recover Nice, and some other important places, from the infidels. But these were lost the year following, together with Abydus and Nicomedia: and in 1330 a peace was concluded upon condition that they should keep all their conquests. This peace they observ'd no longer than serv'd their own purposes; for new commotions breaking out in the empire, they pursued their conquests, and by the year 1357 had reduced all Asia. They next pass'd the Hellespont under the conduct of Solyman the son, or as others will have it, the brother of Orchanes, the successor of Othoman, and seiz'd on a strong castle on the European side. Soon after the Turkish sultan died, and was succeeded by Amurath. He extended the conquests of his predecessors, and in a short time reduced all Thrace, making Adrianople the seat of his empire. Amurath was slain by treachery in a little time after, and was succeeded by his son Bajazet. This prince greatly enlarg'd his dominions by new conquests. In a short time he reduced the countries of Thessaly, Macedon, Phocis, Peloponnesus, Mysia, and Bulgaria, driving out the despots or petty princes who ruled there. Elevated with his frequent victories, he began to look upon the Greek emperor, to whom nothing was now left but the city of Constantinople and the neighbouring country, as his vassal. Accordingly he sent him an arrogant and haughty message, commanding him to pay a yearly tribute, and send his son Manuel to attend him in his military expeditions. This demand the emperor was oblig'd to comply with, but died soon after in the year 1392.

154
Adrianople taken by the Turks.

Manuel no sooner heard of his father's death than

he hasten'd to Constantinople, without taking leave of the sultan, or acquainting him with the reasons of his sudden departure. At this Bajazet was so highly offended, that he pass'd with great expedition out of Bithynia into Thrace, ravaged the country adjoining to Constantinople, and at last invest'd the city itself both by sea and land. In this extremity Manuel had recourse to the western princes, who sent him an army of 130,000 men, under the command of Sigismund king of Hungary, and John count of Nevers. But though the western troops prov'd at first successful, they were in the end defeated with great slaughter by Bajazet, who then return'd to the siege with greater vigour than ever. As he found, however, that the citizens were determin'd to hold out to the last, he apply'd to John, the son of Manuel's elder brother, who had a better title to the crown than Manuel himself. With him he enter'd into a private agreement, by virtue of which Bajazet was to place John upon the throne of Constantinople; on the other hand, John was to deliver up the city to the Turks, and remove the imperial seat to Peloponnesus, which the sultan promis'd to relinquish to him and his posterity. At the same time he sent deputies to the inhabitants of Constantinople, offering to withdraw his army, and cease from further hostilities, provided they expell'd Manuel and plac'd John upon the throne. This proposal rent the city into two factions; but Manuel prevent'd the mischiefs which were ready to ensue, by a voluntary resignation, upon condition that he should be allow'd to retire to whatever place he thought proper with his wife and children.

Constantinopolitan history.
155
Bajazet besieges Constantinople.

With this condition John readily comply'd; and Manuel having receiv'd him into the city, and conducted him to the palace, set sail for Venice. From thence he went to the courts of all the western princes to solicit their assistance against the Turks, whose power was grown formidable to all Europe. He was every where receiv'd with the greatest demonstrations of esteem, and promis'd large supplies; all Christendom being now alarm'd at the progress of the infidels.

In the mean time Bajazet did not fail to put John in mind of his promise; but the citizens refusing to comply with such a scandalous treaty, the siege was renew'd, and the city assault'd with more fury than ever. When it was already reduced to the last extremity, news were brought the sultan that Tamerlane, the victorious Tartar, having over-run all the East with incredible celerity, had now turn'd his arms against the Turks, and was preparing to break into Syria. Bajazet, alarm'd at the danger that threaten'd him, rais'd the siege in great haste, and advanced against Tamerlane with a very numerous and well-disciplin'd army; but the Tartar totally defeated and took him prisoner, after having cut most of his men in pieces; and thus Constantinople was preserv'd for the present.

156
He is defeated and taken prisoner by Tamerlane.

But this relief was of short duration. In 1424 the city was again besieg'd by Amurath II. The inhabitants defend'd themselves with great bravery; but in the end have submitted, had not the emperor prevail'd upon the prince of Caramania to countenance an impostor and pretender to the Turkish throne. This oblig'd Amurath to raise the siege, and march with all his forces against the usurper, whom he soon reduced.

157
Amurath besieges Constantinople.

158
The siege raised.

reduced. Having then no other enemies to contend with, he entered Macedon at the head of a powerful army; and having ravaged the country far and near, he took and plundered Thessalonica, as he did also most of the cities of Ætolia, Phocis, and Bœotia. From Greece he marched into Servia; which country he soon reduced. He next broke into the dominions of the king of Hungary, and besieged the strong city of Belgrade; but here he met with a vigorous repulse, no fewer than 15,000 Turks being slain by the Christians in one fally, which obliged the sultan to drop the enterprize and retire.

In his retreat he was attacked by the celebrated John Hunniades, who cut great numbers of his men in pieces, and obliged the rest to fly with precipitation. Not long after he gained a still more complete victory over the enemy in the plains of Transylvania, with the loss of only 3000 of his own men, whereas 20,000 of the Turks were killed on the field of battle, and almost an equal number in the pursuit. Amurath, who was then at Adrianople, sent an army into Transylvania far more numerous than the former; but they were attended with no better success, being cut off almost to a man by the brave Hungarian. He gained several other victories no less remarkable; but was at last entirely defeated in 1448; and with this defeat ended all hopes of preserving the Roman empire. The unhappy emperor was now obliged to pay an annual tribute of 300,000 aspers to the sultan; and to yield up to him some strong holds which he still held on the Euxine Sea. However, as he doubted not but Amurath would soon attempt to become master of the city itself, he renewed the union between the Greek and Latin churches, hoping that this would induce the western princes to assist him in the defence of the city against the Turks. This union produced great disturbances, which the emperor did not long survive, but died in 1448, leaving the empire, now confined within the walls of Constantinople, to his brother Constantine.

Amurath the Turkish sultan died in 1450, and was succeeded by his son Mohammed. In the beginning of his reign he entered into an alliance with Constantine, and pretended a great desire to live in friendship with him and the other Christian princes; but no sooner had he put an end to a war in which he was engaged with Ibrahim king of Caramania, than he built a strong fort on the European side of the Bosphorus, opposite to another in Asia; in both of which he placed strong garrisons. These two castles commanded the Straits; and the former being but five miles from the city, kept it in a manner blocked up. This soon produced a misunderstanding between him and the emperor, which ended in the siege of the city. The siege commenced on the sixth of April 1453. Mohammed's numerous forces covering the plains before it on the land-side, and a fleet of 300 sail blocking it up by sea. The emperor, however, had taken care to secure the haven, in which were three large ships, 20 small ones, and a great number of galleys, by means of a chain drawn cross the entrance. Mohammed began the siege by planting batteries as near the city as he could, and raising mounts in several places as high as the walls themselves, whence the besieged were incessantly galled with showers of arrows.

He had in his camp a piece of ordnance of prodigious size, which is said to have carried a ball of 100 pounds weight made of hard black stone brought from the Euxine Sea. With this vast piece the enemy made several breaches in the walls; which, however, were repaired with incredible expedition by the besieged. But Mohammed, the better to carry on the siege, caused new levies to be made throughout his extensive dominions, by which his army was soon increased to near 400,000 men; while the garrison consisted only of 9000 regular troops, viz. 6000 Greeks and 3000 Genoese and Venetians. As the enemy continued to batter the walls day and night without intermission, a great part of them was at last beaten down; but while the Turks were busy in filling up the ditch, in order to give the assault, a new wall was built. This threw the tyrant into a prodigious rage, which was greatly heightened when he saw his whole fleet worsted by five ships, four of which were laden with corn from Peloponnesus, and the others with all manner of provisions from the isle of Chios. These opened themselves a way through the whole Turkish fleet; and, to the inexpressible joy of the Christians, at last got safe into the harbour.

The Turks attempted several times to force the haven; but all their efforts proving ineffectual, Mohammed formed a design of conveying 80 galleys over land for the space of eight miles into it. This he accomplished by means of certain engines, the contrivance of a renegado; and having then either taken or sunk all the ships contained in it, he caused a bridge to be built over it with surprising expedition. By this means the city was laid open to an assault from that side likewise. The place was now assaulted on all sides; and Constantine being well apprised that he could not long hold out against such a mighty fleet and so numerous an army, sent deputies to Mohammed, offering to acknowledge himself his vassal, by paying him yearly what tribute he should think proper to impose, provided he raised the siege and withdrew. The tyrant answered that he was determined at all events to become master of the city: but if the emperor delivered it up forthwith, he would yield up to him Peloponnesus, and other provinces to his brothers, which they should enjoy peaceably as his friends and allies: but if he held out to the last extremity, and suffered it to be taken by assault, he would put him and the whole nobility to the sword, abandon the city to be plundered by his soldiers, and carry the inhabitants into captivity.

This condition was rashly rejected by the emperor; who thereby involved himself and all his subjects in the most terrible calamity. The siege was renewed with more vigour than ever, and continued till the 25th of May; when a report being spread in the Turkish camp that a mighty army was advancing in full march to the relief of the city under the conduct of the celebrated John Hunniades, the common soldiers, seized with a panic, began to mutiny, and press Mohammed in a tumultuous manner to break up the siege. Nay, they openly threatened him with death, if he did not immediately abandon the enterprize and retire from before the city, which they despaired of being able to reduce before the arrival of the supposed succours. Mohammed was upon the point of complying with their demand,

Constantinopolitan history.

162
He conveys 80 galleys over land into the haven.

163
A mutiny in the Turkish camp.

Constantinopolitan history.

159
Success of Hunniades against the Turks.

160
is at last ended.

161
Constantinople besieged by Mohammed.

Constantinopolitan history.

mand, when he was advised by Zagan, a Turkish officer of great intrepidity, and an irreconcilable enemy to the Christian name, to give without loss of time a general assault. To this he said the soldiery, however mutinous, would not be averse, provided the sultan solemnly promised to abandon the city to be plundered by them. As such an advice best suited the humour of Mohammed, he readily embraced it; and caused a proclamation to be published throughout the camp, declaring, that he gave up to his soldiers all the wealth of that opulent city, requiring to himself only the empty houses.

The desire of plunder soon got the better of that fear which had seized the Turkish army; and they unanimously desired to be led on to the attack. Hereupon Constantine was summoned for the last time to deliver up the city, with a promise of his life and liberty; but to this he answered, that he was unalterably determined either to defend the city or to perish with it. The attack began at three in the morning on Tuesday the 29th of May; such troops were first employed as the sultan valued least, and designed them for no other purpose than to tire the Christians, who made a prodigious havock of that disorderly multitude. After the carnage had lasted some hours, the Janizaries and other fresh troops advanced in good order, and renewed the attack with incredible vigour. The Christians, summoning all their courage and resolution, twice repulsed the enemy: but being in the end quite spent, they were no longer able to stand their ground; so that the enemy in several places broke into the city. In the mean time Justiniani, the commander of the Genoese and a select body of Greeks, having received two wounds, one in the thigh and the other in the hand, was so disheartened, that he caused himself to be conveyed to Galata, where he soon after died of grief. His men, dismayed at the sudden flight of their general, immediately quitted their posts and fled in the utmost confusion. However, the emperor, attended with a few of the most resolute among the nobility, still kept his post, striving with unparalleled resolution to oppose the multitude of barbarians that now broke in from every quarter. But being in the end overpowered with numbers, and seeing all his friends lie dead on the ground, "What! (cried he aloud), is there no Christian left alive to strike off my head?" He had scarce uttered these words, when one of the enemy, not knowing him, gave him a deep cut across the face with his sabre; and at the same time, another coming behind him, with a blow on the back part of his head laid him dead on the ground. After the death of the emperor, the few Christians that were left alive betook themselves to flight; and the Turks, meeting with no further opposition, entered the city, which they filled with blood and slaughter. They gave no quarter, but put all they met to the sword, without distinction. Many thousands took refuge in the church of St Sophia, but they were all massacred in their asylum by the enraged barbarians; who, prompted by their natural cruelty, the desire of revenge, and love of booty, spared no place nor person. Most of the nobility were, by the sultan's orders, cut off, and the rest kept for purposes more grievous than death itself. Many of the inhabitants, among whom were some men of great learning, found

N^o 90.

means to make their escape while the Turks were busied in plundering the city. These embarking on five ships then in the harbour, arrived safe in Italy; where, with the study of the Greek tongue, they revived the liberal sciences, which had long been neglected in the West. After the expiration of three days, Mohammed commanded his soldiers to forbear all further hostilities on pain of death; and then put an end to as cruel a pillage and massacre as any mentioned in history. The next day he made his public and triumphal entry into Constantinople, and chose it for the seat of the Turkish empire, which it has continued to be ever since.

This city is now called by the Turks *Istambol*, and by the Greeks *Istamboli* or *Stamboli*. It is seated at the eastern extremity of Romania, on a small neck of land which advances towards Natolia, from which it is separated by a channel of a mile in breadth. The sea of Marmora washes its walls on the south, and a gulph of the channel of Constantinople does the same on the north. It is delightfully situated between the Black Sea and the Archipelago, from whence it is supplied with all necessaries. The grand seignior's palace, called the *Seraglio*, is seated on the sea-side, and is surrounded with walls flanked with towers, and separated from the city by canals. It is said the harbour will easily hold 1200 ships. The number of houses must needs be prodigious, since one fire has burnt down 30,000 in a day, without greatly changing the aspect of the city. However, in general, they are but mean, especially on the outside, where there are few or no windows; and the streets being narrow, gives them a melancholy look. They reckon that there are 3770 streets, small and great; but they are seldom or never clean; and the people are infested with the plague almost every year. The inhabitants are half Turks, two-thirds of the other half Christians, and the rest Jews. Here are a great number of ancient monuments still remaining, and particularly the superb temple of Sophia, which is turned into a mosque, and far surpasses all the rest. The street called *Adriano* is the longest and broadest in the city; and the bazars, or *bezelteins*, are the markets for selling all sorts of merchandize. The old and the new are pretty near each other; and are large square buildings, covered with domes, and supported by arches and pilasters. The new is the best, and contains all sorts of goods which are there exposed to sale. The market for slaves, of both sexes, is not far off; and the Jews are the principal merchants, who bring them here to be sold. There are a great number of young girls brought from Hungary, Greece, Candia, Russia, Mingrelia, and Georgia, for the service of the Turks, who generally buy them for their seraglios. The great square, near the mosque of sultan Bajazet, is the place for public diversions, where the jugglers and mountebanks play a great variety of tricks. The circumference of this city is by some said to be 15 miles, and by M^r Tournefort 23 miles; to which if we add the suburbs, it may be 34 miles in compass. The suburb called *Pera* is charmingly situated; and is the place where the ambassadors of England, France, Venice, and Holland, reside. This city is built in the form of a triangle; and as the ground rises gradually, there is a view of the whole town from the sea. The public buildings,

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168 Present state of the city.

164
A general assault given.

165
Bravery of the emperor.

166
He is killed.

167
The town plundered and the inhabitants massacred.

Constat
||
Constitu-
tion.

buildings, such as the palaces, the mosques, bagnios, and caravanaries for the entertainment of strangers, are many of them very magnificent. E. Long. 29. 20.

N. Lat. 41. 4.

CONSTAT, in law, the name of a certificate which the clerk of the pipe and auditors of the exchequer make at the request of any person who intends to plead or move in that court for the discharge of any thing; and the effect of it is, the certifying what does *constare* upon record touching the matter in question.—A constat is held to be superior to a certificate; because this may err or fail in its contents; that cannot, as certifying nothing but what is evident upon record.

Also the exemplification under the great seal of the inrolment of any letters patent is called a *constat*.

CONSTELLATION, in astronomy, a system of several stars that are seen in the heavens near to one another. Astronomers not only mark out the stars, but, that they may better bring them into order, they distinguish them by their situation and position in respect to each other; and therefore they distribute them into asterisms or constellations, allowing several stars to make up one constellation: and for the better distinguishing and observing them, they reduce the constellations to the forms of animals, as men, bulls, bears, &c.; or to the images of some things known, as of a crown, a harp, a balance, &c.; or give them the names of those whose memories, in consideration of some notable exploit, they had a mind to transmit to future ages.

The division of the stars by images and figures is of great antiquity, and seems to be as old as astronomy itself: for in the most ancient book of Job, Orion, Arcturus, and the Pleiades, are mentioned; and we meet with the names of many of the constellations in the writings of the first poets, Homer and Hesiod.

The ancients, in their division of the firmament, took in only so much as came under their notice, distributing it into 48 constellations; but the modern astronomers comprehend the wholly starry firmament, dividing it into three regions. See **ASTRONOMY-Index**.

CONSTERNATION is defined by ethical writers to be an excess of horror, owing to the ill government of our admiration and fear: or such an immoderate degree of fear as confounds the faculties, and incapacitates a person for consultation and execution.

CONSTIPATION, in medicine, a hardness of the belly, with great costiveness. See **COSTIVENESS**.

CONSTITUENT PART, in physiology, an essential part in the composition of any thing, differing little from what is otherwise called *element* or *principle*.

CONSTITUTION, in matters of policy, signifies the form of government established in any country or kingdom.

CONSTITUTION also denotes an ordinance, decision, regulation, or law, made by authority of any superior, ecclesiastical or civil.

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Constitu-
tion.

Apostolical CONSTITUTIONS, a collection of regulations attributed to the apostles, and supposed to have been collected by St Clement, whose name they likewise bear.

It is the general opinion, however, that they are spurious, and that St Clement had no hand in them: They appeared first in the 4th age, but have been much changed and corrupted since that time. They are divided into eight books, consisting of a great number of rules and precepts, relating to the duties of Christians, and particularly the ceremonies and discipline of the church. Mr Whiston, in opposition to the general opinion, asserts them to be a part of the sacred writings, dictated by the apostles in their meetings, and written down from their own mouth by St Clement; and intended as a supplement to the New Testament, or rather as a system of Christian faith and polity. The reason why the Constitutions are suspected by the orthodox, and perhaps the reason also why their genuineness is defended by Mr Whiston, is, that they seem to favour Arianism.

CONSTITUTION, in a physical sense, signifies the particular temperature of the body.

It is curious to observe, says Dr Percival, the revolution which hath taken place, within this century, in the constitutions of the inhabitants of Europe. Inflammatory diseases more rarely occur, and, in general, are much less rapid and violent in their progress than formerly (A); nor do they admit of the same antiphlogistic method of cure that was practised with success 100 years ago. The experienced Sydenham makes 40 ounces of blood the mean quantity to be drawn in the acute rheumatism; whereas this disease, as it now appears in the London hospitals, will not bear above half that evacuation. Vernal intermittents are frequently cured by a vomit and the bark, without venesection; which is a proof that at present they are accompanied with fewer symptoms of inflammation than they were wont to be. This advantageous change, however, is more than counterbalanced by the introduction of a numerous class of nervous ailments, in a great measure unknown to our ancestors; but which now prevail universally, and are complicated with almost every other distemper. The bodies of men are enfeebled and enervated; and it is not uncommon to observe very high degrees of irritability, under the external appearance of great strength and robustness. The hypochondria, palsies, cachexies, dropsies, and all those diseases which arise from laxity and debility, are in our days endemic every where; and the hysterics, which used to be peculiar to the women, as the name itself indicates, now attack both sexes indiscriminately. It is evident that so great a revolution could not be effected without a concurrence of many causes; but amongst these (according to Dr Percival), the present general use of tea* holds the first and principal rank. The second place may perhaps be allowed to excess in spirituous liquors. This pernicious custom, in many instances at least, owes its rise to the former, which,

* See Tea.

3 B

(A) The decrease in the violence of inflammatory diseases may perhaps in part be ascribed to the present improved method of treating them. Moderate evacuations, cool air, ascetic diet, and the liberal use of saline and antimonial medicines, are better adapted to check the progress of fevers, than copious bleedings, stimulating purgatives, and profuse sweats excited by theriaca and mithridate.

Constrictor which, by the lowness and depression of spirits it occasions, renders it almost necessary to have recourse to something cordial and exhilarating. And hence proceed those odious and disgraceful habits of intemperance, with which many of the softer sex are now, alas! chargeable.

||
Consubstantia.

CONSTRUCTOR, an appellation given to several muscles, on account of their constringing or closing some of the orifices of the body.

CONSTRUCTION, in geometry, is the drawing such lines, such a figure, &c. as are previously necessary for making any demonstration appear more plain and undeniable.

CONSTRUCTION of Equations. See EQUATIONS.

CONSTRUCTION, in grammar; syntax, or the arranging and connecting the words of a sentence according to the rules of the language. See GRAMMAR, and LANGUAGE.

The construction is generally more simple, easy, and direct, in the modern tongues than in the ancient: we have very few of those inversions which occasion so much embarrassment and obscurity in the Latin; our thoughts are usually delivered in the same order wherein the imagination conceives them: the nominative case, for instance, always precedes the verb, and the verb goes before the oblique cases it governs.

The Greeks and Latins, M. St. Evremont observes, usually end their periods, where, in good sense and reason, they should have begun; and the elegance of their language consists, in some measure, in this capricious arrangement, or rather in this transposal and disorder of the words. See LANGUAGE.

CONSTRUCTION of Statutes, among lawyers. See LAW, Part II. n^o 49.

CONSUALIA, in antiquity, feasts which were held among the ancients, in honour of the god *Confusus*; i. e. Neptune; different from those other feasts of the same deity called *Neptunalia*. They were introduced with a magnificent cavalcade, or procession on horseback; because Neptune was reputed to have first taught men the use of horses; whence his surname of *ἑπταίος*, *Equestris*.

Evander is said to have first instituted this feast: it was re-established by Romulus, under the name of *Confusus*; because it was some god under the denomination of *Confusus*, that suggested to him the rape of the Sabines. It is said, that it was with a view to this rape that he made that establishment. This, however, is certain, that it was to this feast all his neighbours were invited; when, taking advantage of the solemnities and sacrifices, he seized the women. To draw the greater concourse of people, he gave out, that he had found an altar hid under ground, which he intended to consecrate, with sacrifices to the god to whom it had been originally erected. Those who take upon them to explain the mysteries of the heathen theology, say, that the altar hid under ground, is a symbol of the secret design of Romulus to seize his neighbours wives.

The consualia were of the number of feasts called sacred; as being consecrated to a divinity.—Originally they were not distinguished from those of the *Circus*: whence it is, that *Valerius Maximus* says, that the rape of the Sabines was effected at the games of the *Circus*.

Plutarch observes, that during the days of this solemnity, horses and asses were left at rest, and were dressed up with crowns, &c. on account of its being the feast of *Neptunus Equestris*.—*Festus* says, the cavalcade was performed with mules; it being an opinion, that this was the first animal used to draw the car.

Consubstantia ||
Consul.

Servius gives us to understand, that the consualia fell on the 13th of August; *Plutarch*, in the life of *Romulus*, places them on the 18th, and the old Roman calendar on the 21st of that month.

CONSUBSTANTIAL, in theology, a term of like import with co-essential; denoting something of the same substance with another. The orthodox believe the Son of God to be consubstantial with the Father.

The term *ὁμοουσιος*, *consubstantial*, was first adopted by the fathers of the councils of Antioch and Nice, to express the orthodox doctrine the more precisely, and to serve as a barrier and precaution against the errors and subtleties of the Arians; who owned every thing excepting the consubstantiality.

The Arians allowed, that the word was God, as having been made God; but they denied that he was the same God, and of the same substance with the Father: accordingly they exerted themselves to the utmost to abolish the use of the word. The emperor *Constantine* used all his authority with the bishops to have it expunged out of the symbols; but it still maintained itself, and is at this day, as it was then, the distinguishing criterion between an *Athanasian* and an *Arian*.

Sandius will have it, that the word consubstantial was unknown till the time of the council of Nice; but it is certain it had been before proposed to the council of Antioch, wherein *Paulus Samosatenus* had been condemned; though it had there the fortune to be rejected. *Curcellæus*, on the other hand, maintains, that it was an innovation in doctrine in the council of Nice, to admit an expression, the use whereof had been abolished by the council of Antioch.

According to *St Athanasius*, the word consubstantial was only condemned in the council of Antioch, inasmuch as it implied the idea of a pre-existent matter, prior to the things formed thereof: now, in this sense, it is certain, the Father and the Son are not consubstantial, there having been no pre-existent matter.

CONSUBSTANTIATION, a tenet of the Lutheran church with regard to the manner of the change made in the bread and wine in the eucharist. The divines of that profession maintain, that after consecration, the body and blood of our Saviour are substantially present, together with the substance of the bread and wine, which is called consubstantiation, or impanation.

CONSUL, the chief magistrate of the Roman commonwealth, invested with regal authority for the space of one year. They were two in number, called *consules a consulendo*, and annually chosen in the *Campus Martius*. The two first consuls were *L. Jun. Brutus*, and *L. Tarquinius Collatinus*, chosen in the year of Rome 244, after the expulsion of the *Tarquins*. In the first times of the republic the two consuls were always chosen from *Patrician families* or noblemen, but the people

Consul. ple obtained the privilege in the year of Rome 388, of electing one of the consuls from their own body, and sometimes both were plebeians. The first consul among the plebeians was L. Sextius. It was required that every candidate for the consulship should be 43 years of age, called *legitimum tempus*. He was always to appear at the election as a private man without a retinue, and it was requisite before he canvassed for the office to have discharged the functions of quæstor, edile, and prætor. Sometimes these qualifications were disregarded. Val. Corvinus was made a consul in his 23d year, and Scipio in his 24th. Young Marius, Pompey, and Augustus, were also under the proper age when they were invested with the office, and Pompey had never been quæstor or prætor. The power of the consuls was unbounded, and they knew no superior but the gods and the laws; but after the expiration of their office their conduct was minutely scrutinized by the people, and misbehaviour was often punished by the laws. The badges of their office was the *prætecta*, a robe fringed with purple, afterwards exchanged for the *toga picta* or *palmata*. They were preceded by 12 lictors carrying the *fascæ* or bundles of sticks, in the middle of which appeared an axe. The axe, as being the characteristic rather of tyranny than of freedom, was taken away from the *fascæ* by Valerius Poplicola, but it was restored by his successor. They took it by turns monthly to be preceded by the lictors while at Rome, lest the appearance of two persons with the badges of royal authority should raise apprehensions in the multitude. While one appeared publicly in state, only a crier walked before the other, and the lictors followed behind without the *fascæ*. Their authority was equal; yet the Valerian law gave the right of priority to the older, and the Julian law to him who had most children; and he was generally called *consul major* or *prior*. As their power was absolute, they presided over the senate, and could convene and dismiss it at pleasure. The senators were their counsellors; and among the Romans the manner of reckoning their years was by the name of the consuls, and by *M. Tull. Cicerone et L. Antonio Consulibus*, for instance, the year of Rome 689 was always understood. This custom lasted from the year of Rome 244 till the 1294, or 541st year of the Christian era. In public assemblies the consuls sat in ivory chairs, and held in their hand an ivory wand called *scipio eburneus*, which had an eagle on its top as a sign of dignity and power. When they had drawn by lot the provinces over which they were to preside during their consulship, they went to the capitol to offer their prayers to the gods, and intreat them to protect the republic; after this they departed from the city arrayed in their military dress and preceded by the lictors. Sometimes the provinces were assigned them without drawing by lot, by the will and appointment of the senators. At their departure they were provided by the state with whatever was requisite during their expedition. In their provinces they were both attended by the 12 lictors, and equally invested with regal authority. They were not permitted to return to Rome without the special command of the senate; and they always remained in the province till the arrival of their successor. At their return they harangued the people, and

solemnly protested that they had done nothing against the laws or interest of their country, but had faithfully and diligently endeavoured to promote the greatness and welfare of the state. No man could be consul two following years; yet this institution was sometimes broken, and we find Marius re-elected consul after the expiration of his office during the Cimbrian war. The office of consul, so dignified during the times of the commonwealth, became a mere title under the emperors, and retained nothing of its authority but the useless ensigns of original dignity. Even the duration of the office, which was originally annual, was reduced to two or three months by J. Cæsar; but they who were admitted on the first of January denominated the year, and were called *ordinarii*. Their successors during the year were distinguished by the name of *suffræti*. Tiberius and Claudius abridged the time of the consulship; and the emperor Commodus made no less than 25 consuls in one year. Constantine the Great renewed the original institution, and permitted them to be a whole year in office.

CONSUL, at present, is an officer established by virtue of a commission from the king and other princes, in all foreign countries of any considerable trade, to facilitate and dispatch business, and protect the merchants of the nation. The consuls are to keep up a correspondence with the ministers of England residing in the courts whereon their consulate depends. They are to support the commerce and the interest of the nation; to dispose of the sums given and the presents made to the lords and principals of places, to obtain their protection, and prevent the insults of the natives on the merchants of the nation.

CONSUMMATION, the end, period, or completion of any work. Thus, we say, the *consummation* of all things, meaning the end of the world. By the incarnation, all the prophecies are said to be *consummated*. See PROPHECY, and ACCOMPLISHMENT.

CONSUMMATION of Marriage, denotes the last act of marriage, which makes its accomplishment; or the most intimate union between the married pair, &c.

CONSUMPTION, in medicine, a word of very extensive signification, implies all disorders that bring any decay or waste upon the constitution; but is most commonly used for the *phthisis pulmonalis*. See MEDICINE-Index.

CONSUMPTION, in fairyry. See FARRIERY, § viii.

CONSUS, the pagan god of counsel. He had an altar under ground in the great circus at Rome, to show that counsel ought to be kept secret. See CONSUALIA.

CONTACT, is when one line, plane, or body, is made to touch another; and the parts that do thus touch are called the *points* or *places of contact*.

CONTAGION, in phycic, the communicating a disease from one body to another. In some diseases it is only effected by an immediate contact or touch, as the venom of the pox; in others it is conveyed by infected clothes, as the itch; and in others it is supposed to be transmitted through the air at a considerable distance, by means of steams or effluvia expiring from the sick, as in the plague and other pestilential disorders, in which case the air is said to be contagious, though this has been disputed.

Contem-
plation
||
Continence.

CONTEMPLATION, an act of the mind, whereby it applies itself to consider and reflect upon the works of God, nature, &c.

CONTEMPORARY, or **COTEMPORARY**, a person or thing that existed in the same age with another. Thus, Socrates, Plato, and Aristophanes, were contemporaries.

CONTEMPT, in a general sense, the act of despising, or the state of being despised.

CONTEMPT, in law, is a disobedience to the rules and orders of a court, which hath power to punish such offence; and as this is sometimes a greater, and sometimes a lesser offence, so it is punished with greater or less punishment, by fine, and sometimes by imprisonment.

CONTENT, in geometry, the area or quantity of matter or space included in certain bounds.

CONTESSA, a port-town of Turkey in Europe, in the province of Macedonia, situated on a bay of the Archipelago, about 200 miles west of Constantinople. E. Long. 25. 0. N. Lat. 41. 0.

CONTEXT, among divines and critics, that part of scripture or other writing which lies about the text, before or after it, or both. To take the full and genuine sense of the text, the context should be regarded.

CONTEXTURE, a word frequently used in speaking both of the works of nature and art; and denoting the disposition and union of the constituent parts with respect to one another.

CONTI, a town of Picardy in France, with the title of a principality. It is seated on the river Seille, in E. Long. 2. 17. N. Lat. 49. 54.

CONTIGUITY, in geometry, is when the surface of one body touches that of another.

CONTIGUOUS, a relative term understood of things disposed so near each other, that they join their surfaces or touch. The houses in ancient Rome were not contiguous as ours are, but all insulated.

CONTINENCE, in ethics, a moral virtue, by which we resist concupiscence. It should seem that there is this distinction between chastity and continence, in that it requires no effort to be chaste, which results from constitution; whereas continence appears to be the consequence of a victory gained over ourselves. The verb *continere*, in the Latin, signifies "to restrain." The term, however, is most usually applied to men; as *chastity* is to women. See **CHASTITY**.

Continence is a virtue that makes but an inconsiderable figure in our days. However, we ought not to lose our ideas of things, though we have debauched our true relish in our practice: for, after all, solid virtue will keep its place in the opinion of the wise and sensible part of mankind. And though custom has not made it so scandalous as it ought to be to infamous innocent women, and triumph in the falsehood; such actions as we shall relate must be accounted true gallantry, and rise higher in our esteem the farther they are removed from our imitation.

1. Scipio the Younger, when only 24 years of age, was appointed by the Roman republic to the command of the army against the Spaniards. His wisdom and valour would have done honour to the most experienced general. Determined to strike an important blow, he forms a design of besieging Carthage, then the ca-

pital of the Carthaginian empire in Spain. His measures were so judiciously concerted, and with so much courage and intrepidity pursued, both by sea and land, that notwithstanding a bold and vigorous defence, the capital was taken by storm. The plunder was immense. Ten thousand free-men were made prisoners; and above 300 more, of both sexes, were received as hostages. One of the latter, a very ancient lady, the wife of Mandonius, brother of Indibilis king of the Illyretes, watching her opportunity, came out of the crowd, and, throwing herself at the conqueror's feet, conjured him, with tears in her eyes, to recommend to those who had the ladies in their keeping to have regard to their sex and birth. Scipio, who did not understand her meaning at first, assured her that he had given orders that they should not want for any thing. But the lady replied, "Those conveniences are not what affect us. In the condition to which fortune hath reduced us, with what ought we not to be contented? I have many other apprehensions, when I consider, on one side, the licentiousness of war; and, on the other, the youth and beauty of the princesses which you see here before us; for as to me, my age protects me from all fear in this respect." She had with her the daughters of Indibilis, and several other ladies of high rank, all in the flower of youth, who considered her as their mother. Scipio then comprehending what the subject of her fear was, "My own glory (says he), and that of the Roman people, are concerned in not suffering that virtue, which ought always to be respected wherever we find it, should be exposed in my camp to a treatment unworthy of it. But you give me a new motive for being more strict in my care of it, in the virtuous solicitude you show in thinking only of the preservation of your honour, in the midst of so many other objects of fear." After this conversation, he committed the care of the ladies to some officers of experienced prudence, strictly commanding that they should treat them with all the respect they could pay to the mothers, wives, and daughters, of their allies and particular friends. It was not long before Scipio's integrity and virtue were put to the trial. Being retired in his camp, some of his officers brought him a young virgin of such exquisite beauty, that she drew upon her the eyes and admiration of every body. The young conqueror started from his seat with confusion and surprize; and, like one thunder-struck, seemed to be robbed of that presence of mind and self-possession so necessary in a general, and for which Scipio was remarkably famous. In a few moments, having rallied his straggling spirits, he inquired of the beautiful captive, in the most civil and polite manner, concerning her country, birth, and connections; and finding that she was betrothed to a Celtiberian prince named Allucius, he ordered both him and the captive's parents to be sent for. The Spanish prince no sooner appeared in his presence, than, even before he spoke to the father and mother, he took him aside; and, to remove the anxiety he might be in on account of the young lady, he addressed him in these words: "You and I are young, which admits of my speaking to you with more liberty. Those who brought me your future spouse, assured me, at the same time, that you loved her with extreme tenderness; and her beauty left me no room to doubt it. Upon which

Livy, Val.
Maximus,
&c.

Continnence. reflecting, that if, like you, I had thought on making an engagement, and were not wholly engrossed with the affairs of my country, I should desire that so honourable and legitimate a passion should find favour, I think myself happy in the present conjuncture to do you this service. Though the fortune of war has made me your master, I desire to be your friend. Here is your wife: take her, and may the gods bless you with her. One thing, however, I would have you be fully assured of, that she has been amongst us as she would have been in the house of her father and mother. Far be it from Scipio to purchase a loose and momentary pleasure at the expence of virtue, honour, and the happiness of an honest man. No: I have kept her for you, in order to make you a present worthy of you and of me. The only gratitude I require of you for this inestimable gift is, that you would be a friend to the Roman people." Allucius's heart was too full to make him any answer: but throwing himself at the general's feet, he wept aloud. The captive lady fell into the same posture; and remained so, till the father burst out into the following words: "Oh! divine Scipio! the gods have given you more than human virtue! Oh! glorious leader! Oh! wondrous youth! does not that obliged virgin give you, while she prays to the gods for your prosperity, raptures above all the transports you could have reaped from the possession of her injured person?"

The relations of the young lady had brought with them a very considerable sum for her ransom: but when they saw that she was restored to them in so generous and godlike a manner, they intreated the conqueror, with great earnestness, to accept that sum as a present; and declared, by his complying, that new favour would complete their joy and gratitude. Scipio, not being able to resist such warm and earnest solicitations, told them that he accepted the gift, and ordered it to be laid at his feet: then addressing himself to Allucius, "I add (says he) to the portion which you are to receive from your father-in-law this sum; which I desire you to accept as a marriage-present."

If we consider that Scipio was at this time in the prime of life, unmarried, and under no restraint, we cannot but acknowledge, that the conquest he made of himself was far more glorious than that of the Carthaginian empire: and though his treatment of this captive prince was not more delicate and generous than what might justly be expected from a person endowed with reason and reflection; yet considering how few there are in his circumstances who would have acted as he did, we cannot but applaud his conduct, and propose him as a suitable example to future ages. Nor was his virtue unrewarded. The young prince, charmed with the liberality and politeness of Scipio, went into his country to publish the praises of so generous a victor. He cried out, in the transports of his gratitude, "That there was come into Spain a young hero like the gods; who conquered all things less by the force of his arms than the charms of his virtue and the greatness of his beneficence." Upon this report all Celtiberia submitted to the Romans; and Allucius returned in a shout to Scipio, at the head of 1400 chosen horse, to facilitate his future conquests. To render the marks of his gratitude still more durable, Allucius caused the action we have just related to be

engraven on a silver shield, which he presented to Scipio; a present infinitely more estimable and glorious than all his treasures and triumphs. This buckler, which Scipio carried with him when he returned to Rome, was lost, in passing the Rhone, with part of the baggage. It continued in that river till the year 1665, when some fishermen found it. It is now in the king of France's cabinet.

2. The circumstance which raises Alexander the Great above many conquerors, and, as it were, above himself, is the use he made of his victory after the battle of Issus. This is the most beautiful incident in his life. It is the point of view in which it is his interest to be considered; and it is impossible for him not to appear truly great in that view. By the victory of Issus he became possessed of the whole Persian empire; not only Syfigambis, Darius's mother, was his captive, but also his wife and daughters, princesses whose beauty was not to be equalled in all Asia. Alexander, like Scipio, was in the bloom of life, a conqueror, free, and not yet engaged in matrimony: nevertheless, his camp was to those princesses a sacred asylum, or rather a temple, in which their chastity was secured as under the guard of virtue itself; and so highly revered, that Darius, in his expiring moments, hearing the kind treatment they had met with, could not help lifting up his dying hands towards heaven, and wishing success to so wise and generous a conqueror, who could govern his passions at so critical a time. Plutarch informs us more particularly, that the princesses lived so retired in the camp, according to their own desire, that they were not seen by any person except their own attendants; nor did any other person dare to approach their apartments. After the first visit, which was a respectful and ceremonious one, Alexander, to avoid exposing himself to the dangers of human frailty, made a solemn resolution never to visit Darius's queen any more. He himself informs us of this memorable circumstance, in a letter written by him to Parmenio, in which he commanded him to put to death certain Macedonians who had forced the wives of some foreign soldiers. In this letter was the following paragraph: "For as to myself, it will be found that I neither saw nor would see the wife of Darius; and did not suffer any one to speak of her beauty before me."

3. Isocrates informs us, that Nicocles, king of Salamin, gloried in never having known any woman besides his wife; and was amazed that all other contracts of civil society should be treated with due regard, whilst that of marriage, the most sacred and inviolable of obligations, was broken through with impunity; and that men should not blush to commit an infidelity with respect to their wives, of which, should their wives be guilty, it would throw them into the utmost anguish and fury.

4. Henry VI. king of England, though unhappy in his family and government, was nevertheless possessed of many virtues. He was so remarkable for his chastity, that before his marriage he would not allow any lady of a suspicious character and unguarded conduct to frequent the court: and having observed one day some ladies with their bosoms uncovered, he turned away his eyes from the indecent object, and reprimanded them smartly in the simple dialect of the times; "Fy,

Plutarch's

Rapins

Contingent. Continnence "Fy, fy (said he), for shame; forsooth ye be to blame."

5. In the reign of king Charles II. when licentiousness was at its height in Britain, a yeoman of the guards refused the mistress of a king. The lady, who was dissatisfied with her noble lover, had fixed her eyes upon this man, and thought she had no more to do than speak her pleasure. He got out of her way. He refused to understand her; and when she pressed him further, he said, "I am married." The story reached the king, with all its circumstances: but they who expected an extravagant laugh upon the occasion were disappointed. He sent for the person: he found him a gentleman, though reduced to that mean station; and "Odds fish, man (says he), though I am not honest enough to be virtuous myself, I value them that are." He gave him an appointment, and respected him for life.

6. The extreme parts of Scotland, whose people we despise for their poverty, are honest in this respect to a wonder; and in the Swede's dominion, towards the pole, there is no name for adultery. They thought it an offence man could not commit against man; and have no word to express it in their language. The unpolished Lapland peasant, with these thoughts, is, as a human creature, much more respectable than the gay Briton, whose heart is stained with vices, and estranged from natural affection; and he is happier. The perfect confidence mutually reposed between him and the honest partner of his breast, entails a satisfaction even in the lowest poverty. It gilds the humble heart, and lights the cabin; their homely meal is a sacrifice of thanks, and every breath of smoke arises in incense. If hand be laid upon hand, it is sure affection; and if some infant plays about their knees, they look upon him and upon each other with a delight that greatness seldom knows, because it feels distrust.

CONTINENT, in general, an appellation given to things continued without interruption; in which sense we say, *continent fever*, &c.

CONTINENT, in geography, a great extent of land not interrupted by seas, in contradistinction to island and peninsula, &c. See GEOGRAPHY.—Sicily is said to have been anciently torn from the continent of Italy; and it is an old tradition, which some of our antiquaries still have a regard to, that Britain was formerly a part of the continent of France.

The world is usually divided into two great continents, the old and the new. Whether there exists in the *southern hemisphere* another continent, or the whole be only an immense watery region, is a question that for near three centuries has engaged the attention of the learned as well as the commercial world, and given rise to many interesting voyages and discoveries; concerning which, see the article *SOUTH SEA*.

CONTINGENT, something casual or unusual. Hence future contingent, denotes a conditional event which may or may not happen, according as circumstances fall out.

CONTINGENT, is also a term of relation for the quota that falls to any person upon a division. Thus each prince of Germany in time of war is to furnish so

many men, so much money, and munition, for his contingent.

CONTINUED, or CONTINUAL, in a general sense, means incessant, or proceeding without interruption.

CONTINUED Fever, is such a one as sometimes remits, but never intermits or goes entirely off till its period.

CONTINUED Bass, in music, thus called, says Rousseau, because it is continued through the whole piece. Its principal use, besides that of regulating the harmony, is to support the voice and preserve the tone. They pretend that it was one *Ludovico Viana*, of whom a treatise still remains, who towards the end of the last century first put the continued bass in practice.

CONTINUED Proportion, in arithmetic, is that where the consequent of the first ratio is the same with the antecedent of the second; as 4:8::8:16; in contradistinction to discrete proportion.

CONTINUITY, is defined by some schoolmen the immediate cohesion of parts in the same quantum; by others, a mode of body, whereby its extremities become one; and by others, a state of body resulting from the mutual implication of its parts. There are two kinds of continuity, mathematical and physical. The first is merely imaginary, since it supposes real or physical parts where there are none. The other, or physical continuity, is that state of two or more particles, in which their parts are so mutually implicated as to constitute one uninterrupted quantity or continuum.

CONTINUO, in music, signifies the thorough bass, as *basso continuo* is the continual or thorough bass, which is sometimes marked in music-books by the letters B. C.

CONTOBABBITES, a sect in the sixth century. Their first leader was Severus of Antioch; who was succeeded by John the grammarian surnamed Philoponus, and one Theodosius whose followers were also called *Theodosians*. Part of them, who were willing to receive a book composed by Theodosius on the Trinity, made a separate body, and were called *Contobabbites*, from some place, which Nicephorus does not mention, but which must apparently have been the place where they held their assemblies. The Contobabbites allowed of no bishops; which is the only circumstance given us concerning them.

CONTOR, CONDOR, or CUNDUR, the American name of a species of VULTUR.

CONTORSION, in general, signifies the action of twisting or wresting a member of the body out of its natural situation. Rope-dancers accustom themselves to contorsions of their limbs from their youth, to render the fibres of their articulations lax, and supple to all kinds of postures.

CONTORSION, in medicine, has many significations. 1. It denotes the iliac passion. 2. An incomplete dislocation, when a bone is in part, but not entirely, forced from its articulation. 3. A dislocation of the vertebræ of the back side-ways, or a crookedness of these vertebræ. And, 4. A disorder of the head, in which it is drawn towards one side, either by a spasmodic contraction of the muscles on the same side, or a palsy of the antagonist muscles on the other.

CONTORTÆ, the name of the 30th order in Linnaeus's

Continued

Contortæ.

Contour
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Contract.

Contractile
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Contract.

næus's Fragments of a natural method, consisting of plants which have a single petal that is twisted or bent to one side. This order contains the following genera, viz. echites, cerbera, gardenia, genipa, microcnemum, nerium, periploca, rawolfia, tabernæmontana, vinca, apocynum, asclepias, comeraria, ceropegia, cynanchum, plumeria, stapelia.

CONTOUR, in painting, the outline, or that which defines a figure.

A great part of the skill of the painter lies in managing the contours well. Contour, with the Italian painters, signifies the lineaments of the face.

CONTOURNE, in heraldry, is used when a beast is represented standing or running with its face to the sinister side of the escutcheon, they being always supposed to look to the right, if not otherwise expressed.

CONTOURNIATED, a term among antiquaries applied to medals, the edges of which appear as if turned in a lath. This sort of work seems to have had its origin in Greece; and to have been designed to perpetuate the memories of great men, particularly those who had bore away the prize at the solemn games. Such are those remaining of Homer, Solon, Euclid, Pythagoras, Socrates, and several athletæ.

CONTRABAND, in commerce, a prohibited commodity, or merchandize bought or sold, imported or exported, in prejudice to the laws and ordinances of a state, or the public prohibitions of the sovereign. Contraband goods are not only liable to confiscation themselves, but also subject all other allowed merchandize found with them in the same box, bale, or parcel, together with the horses, waggons, &c. which conduct them. There are contrabands likewise, which, besides the forfeiture of the goods, are attended with several penalties and disabilities.

CONTRACT, in a general sense, a mutual consent of two or more parties, who voluntarily promise and oblige themselves to do something; pay a certain sum, or the like. All donations, exchanges, leases, &c. are fo many different contracts.

CONTRACT is particularly used in common law, for an agreement or covenant between two, with a lawful consideration or cause. As, if I sell my horse for money; or covenant, in consideration of L. 20, to make you a lease of a farm; these are good contracts, because there is *quid pro quo*.

Usurious CONTRACT, is a contract to pay more interest for money than the laws allow. See **USURY**.

Those contracts are said to be *null* which the law prohibits the making of; such are all contracts between persons incapable of contracting, as minors, religious, lunatics, wives without consent of their husbands, &c.

CONTRACT is also used for the instrument in writing, which serves as a proof of the consent granted, and the obligation passed between the parties.

Among the ancient Romans, contracts, and all voluntary acts, were written, either by the parties themselves, or by one of the witnesses, or by a domestic secretary of one of the parties, whom they called a *notary*, but who was no public person as among us.

The contract, when finished, was carried to the magistrate, who gave it a public authority by receiving it *inter acta*, into the number of acts under his ju-

risdiction; giving each of the parties a copy thereof, transcribed by his clerks or domestic registers, and sealed with his seal. Which practice passed into France, where it obtained a long time.

CONTRACTILE FORCE, that property or power inherent in certain bodies, whereby, when extended, they are enabled to draw themselves up again to their former dimensions.

CONTRACTION, in physics, the diminishing the extent or dimensions of a body, or the causing its parts to approach nearer to each other; in which sense it stands opposed to dilatation or expansion.

CONTRACTION is frequently used, by anatomical writers, to express the shrinking up of a fibre, or an assemblage of fibres, when extended.

Convulsions and spasms proceed from a preternatural contraction of the fibres of the muscles of the part convulsed. On the contrary, paralytic disorders generally proceed from a too great laxness of the fibres of the parts affected; or from the want of that degree of contraction necessary to perform the natural motion or action of the part. In the first, therefore, the animal spirits are supposed to flow, either in too great a quantity, or irregularly; and, in the last, the animal spirits are either denied a free passage into the part affected, or the tension of the fibrillæ is supposed insufficient to promote the circulation.

CONTRACTION, in grammar, is the reducing of two syllables into one, as *can't* for *cannot*, *should'st* for *shouldst*, &c.

CONTRADICTION, a species of direct opposition, wherein one thing is found diametrically opposite to another.

CONTRADICTORY PROPOSITIONS, are opposites, one of which imports a mere and naked denial of the other.

Seeming contradictories is when the members of a period quite disagree in appearance and sound, but perfectly agree and are consistent in sense; thus,

"Cowards die many times before their death;

"The valiant never taste of death but once."

SHAKESPEARE.

CONTRAFISSURE, in surgery, a kind of fracture, or fissure, in the cranium, which sometimes happens on the side opposite to that which received the blow, or, at least, at some distance from it.

CONTRAINDICATION, in medicine, is an indication which forbids that to be done which the main scope of a disease points out.

Suppose, *e. gr.* in the cure of a disease a vomit were judged proper; if the patient be subject to a vomiting of blood, it is a sufficient contraindication as to its exhibition.

CONTRARIETY, an opposition between two things, which imports their being contrary to one another; and consists in this, that one of the terms implies a negation of the other, either mediately or immediately; so that contrariety may be said to be the contrast, or opposition of two things, one of which imports the absence of the other, as love and hatred.

CONTRAST; opposition or dissimilitude of figures, by which one contributes to the visibility or effect of the others. See **RESEMBLANCE**.

Contrast
||
Controller.

CONTRAST, in painting and sculpture, expresses an opposition or difference of position, attitude, &c. of two or more figures, contrived to make variety in a painting, &c. as where, in a groupe of three figures, one is shown before, another behind, and another sideways, they are said to be in contrast.

The contrast is not only to be observed in the position of several figures, but also in that of the several members of the same figure: thus, if the right arm advance farthest, the right leg is to be hindermost; if the eye be directed one way, the arm to go the contrary way, &c. The contrast must be pursued even in the drapery.

CONTRAST, in architecture, is to avoid the repetition of the same thing, in order to please by variety.

CONTRATE-WHEEL, in watch-work, that next to the crown, the teeth and hoop whereof lie contrary to those of the other wheels, from whence it takes its name. See *WATCH-Making*.

CONTRAVALLATION, or the *Line CONTRAVALLATION*, in fortification, a trench guarded with a parapet, and usually cut round about a place by the besiegers, to secure themselves on that side, and to stop the sallies of the garrison. See *FORTIFICATION*.

CONTRAVENTION, in law, a man's failing to discharge his word, obligation, duty, or the laws or customs of the place.

CONTRAYERVA, in botany. See *DORSTENIA*.

CONTRE, in heraldry, an appellation given to several bearings, on account of their cutting the shield contrary and opposite ways: thus we meet with contre-bend, contre-chevron, contre-pale, &c. when there are two ordinaries of the same nature opposite to each other, so as colour may be opposed to metal, and metal to colour.

CONTRIBUTION, the payment of each person's quota of the part he is to bear in some imposition, or common expence. See *CONTINGENT*, &c.—Contributions are either involuntary, as those of taxes and imposts; or voluntary, as those of expences for carrying on some undertaking for the interest of the community.

CONTRIBUTIONS, in a military sense, are impositions paid by frontier countries to secure themselves from being plundered, and ruined by the enemy's army. The peasants till their ground under the faith of contributions, as securely as in time of profound peace.

CONTRITION, in theology, a sorrow for our sins, resulting from the reflection of having offended God, from the sole consideration of his goodness, without any regard to the punishment due to the trespass, and attended with a sincere resolution of reforming them. The word is derived from the Latin *conterere*, to break or bruise.

CONTROL is properly a double register kept of acts, issues, &c. of the officers or commissioners in the revenue, army, &c. in order to perceive the true state thereof, and to certify the truth, and the due keeping of the acts subject to the enregistrement.

CONTROLLER, an officer appointed to control or oversee the accounts of other officers; and, on oc-

N^o 90.

casion, to certify whether or no things have been controlled or examined.

In Britain we have several officers of this name; as controller of the king's house, controller of the navy, controller of the customs, controller of the mint, &c.

CONTROLLER of the Hanaper, an officer that attends the lord chancellor daily, in term and in seal-time, to take all things sealed in leathern bags from the clerks of the hanaper, and to make the number and effect thereof, and enter them in a book, with all the duties belonging to the king and other officers for the same, and so charge the clerk of the hanaper with them.

CONTROLLER of the Household, the second officer under the lord steward. The name of his office comes from the French word *contrerouler*. His office is to control the accounts and reckonings of the Green Cloth, of which board he is always a member. He carries a white staff, and is always one of the privy-council. He has L. 107: 17: 6 a-year wages, and L. 1092: 2: 6 board-wages.

CONTROLLER of the Pipe, an officer of the exchequer, that makes out a summons twice every year, to levy the farms and debts of the pipe. See *PIPE* and *EXCHEQUER*.

CONTROLLERS of the Pells, two officers of the exchequer, who are the chamberlain's clerks, and keep a control of the pell of receipts, and goings out.

CONTUMACY, in law, a refusal to appear in court when legally summoned, or the disobedience to the rules and orders of a court having power to punish such offence.

CONTUSION, in medicine and surgery, any hurt of the body that is inflicted by a blunt instrument. See *SURGERY*.

CONVALESCENCE, in medicine, the insensible recovery of health; or that state in which, after the cure of a disorder, the body which has been reduced, has not yet regained its vigour, but begins to resume its powers. Proper aliments conduce to the re-establishment of the languid faculties; but as the tone of the bowels is weakened, the digestive faculty is not equal to its office, which is shown by light sweats over the whole body; and the smallest excess in this respect is oftentimes the occasion of dangerous relapses. A person in this state is like a taper relumined, which the least degree of wind is sufficient to extinguish.

CONVALLARIA, or *LILY of the VALLEY*, in botany, a genus of the monogynia order, belonging to the hexandria class of plants; and in the natural method ranking under *Sarmentacea*, or 11th order. The corolla is sexfid; the berry spotted and trilocular. The species are eight, three of which are natives of Britain, viz. the maialis, or may-lily; the multiflora, or solomon's-seal; and the polygonatum, or sweet-smelling solomon's-seal. They are plants of considerable beauty, and may easily be propagated by their creeping roots.

CONVENARUM URBS, or *Lugdunum*, (anc. geog.) a town of the Convenae, a people of Gallia Narbonensis, at the foot of the Pyrenees. Its origin was owing to the Sertorian war, Pompey compelling the robbers of the Pyrenees and fugitive slaves to set-

Controller
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Convenerum.

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Conventicle
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Conventual.

Conventys
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Conversatio

tle there, (Pliny). It stood near the head of the Garonne. Now St Bertrand, in Gascony. E. Long. 30°, Lat. 43° 15'.

CONVENTICLE, a diminutive of convent; denoting, properly, a cabal, or secret assembly, of a part of the monks of a convent, to make a brigue or party in the election of an abbot. From the ill use of these assemblies, the word is come into disrepute; and now stands for any mischievous, seditious, or irregular assembly. F. Doucine observes, the occidentals always esteemed the fifth general council an unlawful conventicle.

The term conventicle is said, by some, to have been first applied in England to the schools of Wickliff, and has been since used to signify the religious assemblies of all in that country who do not conform to the established doctrines and worship of the church of England.

By 22 Car. II. cap. 1. it is enacted, That if any persons of the age of 16 years, subjects of this kingdom, shall be present at any conventicle, where there are five or more assembled, they shall be fined 5 s. for the first offence, and 10 s. for the second; and persons preaching incur a penalty of L. 20. Also suffering a meeting to be held in a house, &c. is liable to L. 20 penalty. Justices of peace have power to enter such houses, and seize persons assembled, &c. And if they neglect their duty, they shall forfeit L. 100. And if any constable, &c. know of such meetings, and do not inform a justice of peace, or chief magistrate, &c. he shall forfeit L. 5. But the 1st W. and M. cap. 18. ordains, that protestant dissenters shall be exempt from penalties: though, if they meet in a house with the doors locked, barred, or bolted, such dissenters shall have no benefit from 1 W. and M. Officers of the government, &c. present at any conventicle, at which there shall be ten persons, if the royal family be not prayed for in express words, shall forfeit L. 40 and be disabled; (Stat. 10 Anne, cap. 2.)

CONVENTION, a treaty, contract, or agreement between two or more parties.

CONVENTION is also a name given to an extraordinary assembly of parliament, or the estates of the realm, held without the king's writ. Of this kind was the convention parliament which restored Charles II. This parliament met above a month before his return, and sat full seven months after his restoration, and enacted several laws still in force, which were confirmed by stat. 13 Car. II. c. 7. and c. 14. Such also was the convention of estates in 1688, who, upon the retreat of king James II. came to a conclusion that he had abdicated the throne, and that the right of succession devolved to king William and queen Mary; whereupon their assembly expired as a convention, and was converted into a parliament.

CONVENTION of Estates, in Scotland, was partly of the nature of a parliament; but differing in this, that the former could only lay on taxes, while parliament could both impose taxes and make laws.

CONVENTUAL, something belonging to a convent or monastery. See **MONASTERY**, and **COENOBITE**.

CONVENTUAL is particularly used for a religious who actually resides in a convent; in contradistinction to those who are only guests, or are entertained there,

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or in possession of benefices depending on the house. See **MONK**.

CONVENTUS JURIDICI, were courts of justice established in the Roman provinces; with a resort or extent of jurisdiction, circumscribed and confined within certain limits of district, whither all who were of the resort were to repair for justice. The unreasonable affectation of changing forms of war into forms of civil courts, proved the ruin of Varus and of three legions in Germany, (Florus). *Conventum agere*, is to hold a court of justice.

CONVERGING or **CONVERGENT Lines**, in geometry, are such as continually approach nearer one another, or whose distances become still less and less. These are opposed to divergent lines, the distances of which become continually greater: those lines which converge one way, diverge the other.

CONVERGING Rays, in optics, those rays that, issuing from divers points of an object, incline towards another, till at last they meet and cross, and then become diverging rays.

CONVERSATION, or **DISCOURSE**, signifies an interlocution between two, or among more persons; with this distinction, that conversation is used for any general intercourse of sentiments whatever, whereas a discourse means a conversation limited to some particular subject.

There is no part, perhaps, of social life which affords more real satisfaction than those hours which one passes in rational and unreserved conversation. That conversation, however, may answer the ends for which it was designed, the parties who are to join in it must come together with a determined resolution to please, and to be pleased.

In the conduct of it, be not eager to interrupt others, or uneasy at being yourself interrupted; since you speak either to amuse or instruct the company, or to receive those benefits from it. Give all, therefore, leave to speak in turn. Hear with patience, and answer with precision. Inattention is ill manners; it shows contempt; and contempt is never forgiven.

Trouble not the company with your own private concerns, as you do not love to be troubled with those of others. Yours are as little to them as theirs are to you. You will need no other rule whereby to judge of this matter.

Contrive, but with dexterity and propriety, that each person may have an opportunity of discoursing on the subject with which he is best acquainted. He will be pleased, and you will be informed. By observing this rule, every one has it in his power to assist in rendering conversation agreeable; since, though he may not choose, or be qualified, to say much himself, he can propose questions to those who are able to answer them.

Avoid stories, unless short, pointed, and quite *a-propos*. He who deals in them, says Swift, must either have a very large stock, or a good memory, or must often change his company. Some have a set of them strung together like onions; they take possession of the conversation by an early introduction of one, and then you must have the whole rope; and there is an end of every thing else, perhaps, for that meeting, though you may have heard all twenty times before.

Talk often, but not long. The talent of haranguing

Conversa-
tion
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Convert.

ing private company is insupportable. Senators and barristers are apt to be guilty of this fault; and members who never harangue in the house, will often do it out of the house. If the majority of the company be naturally silent, or cautious, the conversation will flag, unless it be often renewed by one among them who can start new subjects. Forbear, however, if possible, to broach a second before the first is out, lest your stock should not last, and you should be obliged to come back to the old barrel. There are those who will repeatedly cross upon and break into the conversation with a fresh topic, till they have touched upon all, and exhausted none. Economy here is necessary for most people.

Laugh not at your own wit and humour; leave that to the company.

When the conversation is flowing in a serious and useful channel, never interrupt it by an ill-timed jest. The stream is scattered, and cannot be again collected.

Discourse not in a whisper, or half-voice, to your next neighbour. It is ill-breeding, and, in some degree, a fraud; conversation-stock being, as one has well observed, a joint and common property.

In reflections on absent people, go no farther than you would go if they were present. "I resolve (says bishop Beveridge) never to speak of a man's virtues to his face, nor of his faults behind his back."—A golden rule! the observation of which would, at one stroke, banish flattery and defamation from the earth.

CONVERSE, in mathematics. One proposition is called the *converse* of another, when, after a conclusion is drawn from something supposed in the converse proposition, that conclusion is supposed; and then, that which in the other was supposed, is now drawn as a conclusion from it: thus, when two sides of a triangle are equal, the angles under these sides are equal; and, on the converse, if these angles are equal, the two sides are equal.

CONVERSION, in a moral sense, implies a repentance for a temper and conduct unworthy our nature, and unbecoming our obligations to its Author, and a resolution to act a wiser and a better part for the future.

CONVERSION, in war, a military motion, whereby the front of a battalion is turned where the flank was, in case the battalion is attacked in the flank.

CONVERSION of Equations, the same with reduction of equations by multiplication. See ALGEBRA.

CONVERT, a person who has undergone a conversion.

CONVERT is chiefly used in respect of changes from one religion, or religious sect, to another. Converts with relation to the religion turned to, are denominated *apostates* with regard to that they have relinquished.

The Jews formerly converted to Christianity in England, were called *convertos*. Henry III. built them a house in London, and allowed them a competent subsistence for their lives; which house was called *domus conversorum*. But the number afterwards increasing, they grew a burden to the crown; upon which they were distributed among the monasteries: and after the expulsion of the Jews under Edward III. the *domus conversorum* was given for keeping of the rolls.

CONVERTS, in a monastic sense, are lay-friars, or brothers, admitted for the service of the house; without orders, and not allowed to sing in the choir. Till the eleventh century, the word was used for persons who embraced the monkish life at the age of discretion; by which they were distinguished from those devoted in their childhood by their parents, called *oblati*. But in the eleventh century, when they began to receive into monasteries illiterate persons, incapable of being clerks, and only destined for bodily labour, the signification of the word was necessarily changed. F. Mabillon observes, that it was John first abbot of Vallombrosa who first introduced these brother-converts, distinguished by their state from the monks of the choir, who were then either clerks or capable of becoming so.

CONVEX, an appellation given to the exterior surface of gibbous or globular bodies; in opposition to the hollow inner surface of such bodies, which is called *concave*: thus we say, a convex frieze, lens, mirror, superficies, &c.

CONVEXITY, the exterior surface of a convex, *i. e.* gibbous and globular thing; in opposition to concavity, or the inner surface, which is hollow or depressed. See CONCAVE.

The word is of particular import in catoptrics and dioptrics; where it is applied to mirrors and lenses.

A convex mirror represents its images smaller than the objects; as a concave one represents them larger: a convex mirror reflects the rays from it, diverging; and therefore disperses and weakens their effect: as a concave one reflects them converging, so as they concur in a point, and have their effect increased: and by how much the mirror is a portion of a smaller sphere, by so much does it diminish the objects, and disperse the rays the more. See MIRROR.

A convex lens is either convex on both sides, called a *convexo-convex*; or it is plain on one side and convex on the other, called a *plano-convex*; or concave on one side and convex on the other, called a *convexo-concave*, or *concavo-convex*, as the one or the other surface prevails, *i. e.* as this or that is a portion of a smaller sphere. All convex lenses infect the rays of light in their passage, *i. e.* send them out from their convex surface converging, so as that they concur in a point or focus. Hence all convex lenses magnify, *i. e.* represent their images larger than their objects; and this the more as they are portions of smaller spheres.

CONVEYANCE, in law, a deed or instrument that passes land, &c. from one person to another.

CONVICT, in common law, a person that is found guilty of an offence by the verdict of a jury. See the following article.

CONVICTION, in law. When a jury has given a verdict upon trial, finding the prisoner guilty, he is said to be *convicted* of the crime whereof he stands indicted. See TRIAL.

When the offender is thus convicted, there are two collateral circumstances that immediately arise. 1. On a conviction in general for any felony, the reasonable expences of prosecution are by statute 25 Geo. II. c. 36. to be allowed the prosecutor out of the county-stock, if he petitions the judge for that purpose; and by statute 27 Geo. II. c. 3. poor persons, bound over

Converts
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Conviction.

Conviction to give evidence, are likewise intitled to be paid their charges, as well without conviction as with it. 2. On a conviction of larciny in particular, the prosecutor shall have restitution of his goods by virtue of the statute 21 Hen. VIII. c. 11. For by the common law there was no restitution of goods upon an indictment; because it is at the suit of the king only; and therefore the party was enforced to bring an appeal of robbery, in order to have his goods again. But, it being considered that the party prosecuting the offender by indictment, deserves to the full as much encouragement as he who prosecutes by appeal, this statute was made, which enacts, that if any person be convicted of larciny by the evidence of the party robbed, he shall have full restitution of his money, goods, and chattels, or the value of them out of the offender's goods, if he has any, by a writ to be granted by the justices. And the construction of this act having been in great measure conformable to the law of appeals, it has therefore in practice superseded the use of appeals of larciny. For instance, as formerly upon appeals, so now upon indictments of larciny, this writ of restitution shall reach the goods so stolen, notwithstanding the property of them is endeavoured to be altered by sale in market overt. And though this may seem somewhat hard upon the buyer, yet the rule of law is, that *spoliatus debet ante omnia restitui*, especially when he has used all the diligence in his power to convict the felon. And, since the case is reduced to this hard necessity, that either the owner or the buyer must suffer; the law prefers the right of the owner, who has done a meritorious act by pursuing a felon to condign punishment, to the right of the buyer, whose merit is only negative, that he has been guilty of no unfair transaction. And it is now usual for the court, upon the conviction of a felon, to order, without any writ, immediate restitution of such goods as are brought into court, to be made to the several prosecutors. Or else, secondly, without such writ of restitution, the party may peaceably retake his goods wherever he happens to find them, unless a new property be fairly acquired therein. Or, lastly, if the felon be convicted and pardoned, or be allowed his clergy, the party robbed may bring his action of trover against him for his goods, and recover a satisfaction in damages. But such action lies not before prosecution; for so felonies would be made up and healed: and also recaption is unlawful, if it be done with intention to smother and compound the larciny; it then becoming the heinous offence of *theft-bote*.

It is not uncommon, when a person is convicted of a misdemeanour, which principally and more immediately affects some individual, as a battery, imprisonment, or the like, for the court to permit the defendant to *speak with the prosecutor*, before any judgement is pronounced; and if the prosecutor declares himself satisfied, to inflict but a trivial punishment. This is done to reimburse the prosecutor his expences, and make him some private amends, without the trouble and circuitry of a civil action. But it is surely a dangerous practice: and, though it may be entrusted to the prudence and discretion of the judges in the superior courts of record, it ought never to be allowed in local or inferior jurisdictions, such as the quarter-sessions: where prosecutions for assaults are by

this means too frequently commenced, rather for private lucre than for the great ends of public justice. Above all, it should never be suffered, where the testimony of the prosecutor himself is necessary to convict the defendant: for by this means the rules of evidence are entirely subverted; the prosecutor becomes in effect a plaintiff, and yet is suffered to bear witness for himself. Nay, even a voluntary forgiveness by the party injured, ought not, in true policy, to intercept the stroke of justice. "This (says an elegant writer who pleads with equal strength for the *certainty*, as for the lenity of punishment), may be an act of good nature and humanity, but it is contrary to the good of the public. For although a private citizen may dispense with satisfaction for his private injury, he cannot remove the necessity of public example. The right of punishing belongs not to any one individual in particular, but to the society in general, or to the sovereign who represents that society; and a man may renounce his own portion of this right, but he cannot give up that of others."

CONVICTION, in theology, expresses the first degree of repentance, wherein the sinner becomes sensible of his guilt, of the evil nature of sin, and of the danger of his own ways.

CONVOCATION, an assembly of the clergy of England, by their representatives, to consult of ecclesiastical matters. It is held during the session of parliament, and consists of an upper and a lower house. In the upper sit the bishops, and in the lower the inferior clergy, who are represented by their proctors; consisting of all the deans and archdeacons, of one proctor for every chapter, and two for the clergy of every diocese, in all 143 divines; *viz.* 22 deans, 53 archdeacons, 24 prebendaries, and 44 proctors of the diocesan clergy. The lower house chooses its prolocutor; whose business it is to take care that the members attend, to collect their debates and votes, and to carry their resolutions to the upper house. The convocation is summoned by the king's writ, directed to the archbishop of each province, requiring him to summon all bishops, deans, archdeacons, &c.

The power of the convocation is limited by a statute of Henry VIII. They are not to make any canons or ecclesiastical laws without the king's licence; nor, when permitted to make any, can they put them in execution, but under several restrictions. They have the examining and censuring all heretical and schismatical books and persons, &c. but there lies an appeal to the king in chancery, or to his delegates. The clergy in convocation, and their servants, have the same privileges as members of parliament.

Since the year 1665, when the convocation of the clergy gave up the privilege of taxing themselves to the house of commons, they seldom have been allowed to do any business; and are generally prorogued from time to time till dissolved, a new one being generally called along with a new parliament. The only equivalent for giving up the privilege of taxing themselves, was their being allowed to vote at elections for members to the house of commons, which they had not before.

CONVOLUTION, a winding motion, proper to the trunks of some plants, as the convolvulus, or bindweed; the clasps of vines, bryony, &c.

Conviction
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Convolution
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Convolvulus

CONVOLVULUS, BIND-WEED: A genus of the pentandria order, belonging to the monogynia class of plants; and in the natural method ranking under the 29th order, *Campanaceae*. The corolla is campanulated and plaited; there are two stigmata; the capsule is bilocular, and the cells are dispermous. Of this genus there is a great number of species, the most remarkable of which are the following.

1. The sepium, or large white bind-weed, is often a troublesome weed in gardens, when its roots are interwoven with those of trees and shrubs, or under hedges, as every small piece of root is apt to grow. It flourishes under moist hedges, and hath white or purplish blossoms. 2. The scammonia, or Syrian bind-weed, grows naturally in Syria. The roots are thick, run deep into the ground, and are covered with a dark bark. The branches extend on every side to the distance of 10 or 12 feet; they are slender, and trail on the ground, and are garnished with narrow, arrow-pointed leaves. The flowers are of a pale yellow, and come out from the side of the branches, two sitting upon each long footstalk: these are succeeded by roundish seed-vessels, having three cells filled with seeds. 3. The purpureus, or convolvulus major, is an annual plant growing naturally in Asia and America, but has been long cultivated in the British gardens. If these plants are properly supported, they will rise 10 or 12 feet high in warm summers. There are three or four lasting varieties: the most common hath a purple flower; the others have a white, a red, or a whitish-blue flower, which last hath white seeds. They flower in June, July, and August, and their seeds ripen in autumn. 4. The nil, or blue bind-weed, rises with a twining stalk 8 or 10 feet high, garnished with heart-shaped leaves, divided into three lobes, which end in sharp points. These are woolly, and stand upon long footstalks. The flowers also come out on long footstalks, each sustaining two flowers of a very deep blue colour, whence their name of anil or indigo. This is one of the most beautiful plants of the genus: it flowers all the latter part of the summer: and in good seasons the seeds ripen very well in the open air. 5. The battatas, or Spanish potatoes, hath esculent roots, which are annually imported from Spain and Portugal, where they are greatly cultivated for the table; but they are too tender to thrive in the open air in Britain. Their roots are like the common potato, but require much more room: for they send out many trailing stalks, which extend six or eight feet every way; and at their joints send out roots which in warm countries grow to be very large bulbs; so that from a single root planted 40 or 50 large potatoes are produced. 6. The canariensis, with soft woolly leaves, is a native of the Canaries; but hath long been preserved in the British gardens. It hath a strong fibrous root, from whence arise several twining woody stalks, which, where they have support, will grow more than 20 feet high, garnished with oblong heart-shaped leaves, which are soft and hairy. The flowers are produced from the wings of the leaves, several standing upon one footstalk. They are for the most part of a pale blue; but there is a variety with white flowers. They appear in June, July, and August, and sometimes ripen seeds here. 7. The tricolor, or convolvulus minor, is a native of Portugal; but hath long been

cultivated in the gardens of this country. It is an annual plant, which hath several thick herbaceous stalks growing about two feet long, which do not twine like the other sorts, but decline toward the ground, upon which many of the lower branches lie prostrate; they are garnished with spear-shaped leaves, which sit close to the branches: the footstalks of the flowers come out just above the leaves of the same joint, and at the same side of the stalks. They are about two inches long, each sustaining one large open bell-shaped flower, which in some is of a fine blue colour with a white bottom; in others they are pure white, and some are beautifully variegated with both colours. The white flowers are succeeded by white seeds, and the blue by dark-coloured seeds; which difference is pretty constant. 8. The foldanella, or sea-bindweed, styled also *brassica marina*, grows naturally on the sea-beaches in many parts of England, but cannot be long preserved in gardens. It hath many small white stringy roots, which spread wide, and send out several weak trailing branches. These twine about the neighbouring plants like those of the common bindweed, garnished with kidney-shaped leaves like those of the lesser celandine. The flowers are produced on the side of the branches at each joint. They are of a reddish purple colour, and appear in July. They are succeeded by round capsules, having three cells, each containing one black seed. 9. The turpethum is a native of the island of Ceylon. This hath fleshy thick roots which spread far in the ground, and abound with a milky juice that flows out when the roots are broken or wounded, and soon hardens into a resinous substance when exposed to the sun and air. From the root shoot forth many twining branches, which twist about each other, or the neighbouring plants, like the common bindweed. They are garnished with heart-shaped leaves that are soft to the touch, like those of the marshmallow. The flowers are produced at the joints on the side of the stalks, several standing together on the same footstalk: they are white, and shaped like those of the common great bindweed, and are succeeded by round capsules, having three cells containing two seeds each. 10. The jalappa, or jalap, used in medicine, is a native of Aleppo in Spanish America, situated between La Vera Cruz and Mexico. It hath a large root of an oval form, which is full of a milky juice; from which come out many herbaceous twining stalks rising eight or ten feet high, garnished with variable leaves; some of them being heart-shaped, others angular, and some oblong and pointed. They are smooth, and stand upon long footstalks: the flowers are shaped like those of the common greater bindweed, each footstalk supporting only one flower.

Culture. The first and second sorts are propagated by seeds, which must be sown on a border of light earth. The second sort must have some tall stakes placed near them for their branches to twine about, otherwise they will spread on the ground and make a bad appearance. The third sort is annual, and must be propagated by seeds sown on a hot-bed in the spring, and towards the end of May they should be planted out in warm borders, and treated in the same manner with the former. The fourth species is sometimes propagated in this country. The roots must be planted on a hot-bed in the spring; and if the plants

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Convolvulus

Convolvulus are covered in bad weather with glasses, they will produce flowers and some small bulbs from the joints of the stalks: but if they are exposed to the open air, they seldom grow to any size. The fifth is propagated by laying down the young shoots in the spring, which generally put out roots in three or four months: they may then be taken from the old plants, and each placed in a separate pot, which is to be set in the shade till they have taken new root; after which they may be placed with other hardy green-house plants till autumn, when they should be removed into the green-house, and afterwards treated in the same manner as myrtles and other green-house plants. The turbith and jalap are too tender to live in this country, unless they are constantly kept in a stove. The other species require no particular directions for their cultivation.

Uses. The root of the first sort is a very acrid purgative to the human race, but is eaten by hogs in large quantities without any detriment. The inspissated juice of the second species is used in medicine as a strong purgative; as are also the roots of the jalappa and turpethum. The foldanella has likewise been used with the same intention. Half an ounce of the juice, or a drachm of the powder, is an acrid purge. The leaves applied externally are said to diminish dropical swellings of the feet. See SCAMMONY, JALAP, and TURPETH.

CONVOY, in naval affairs, one or more ships of war, employed to accompany and protect merchant ships, and prevent their being insulted by pirates, or the enemies of the state in time of war.

CONVOY, in military matters, a body of men that guard any supply of men, money, ammunition, or provisions, conveyed by land into a town, army, or the like, in time of war.

CONUS, a cone, in botany: a species of fruit or scaly seed-vessel, so termed by Tournefort and other botanists. Linnæus has substituted STROBILUS in its place.

CONVULSION, a preternatural and violent contraction of the membranous and muscular parts of the body. See (the *Index* subjoined to) MEDICINE.

CONWAY, a market-town of Caernarvonshire in North Wales, situated near the mouth of a river of the same name, 15 miles west of St Asaph. W. Long. 3. 50. N. Lat. 53. 20.

CONYZA, FLEABANE; a genus of the polygamia superflua order, belonging to the syngenesia class of plants; and in the natural method ranking under the 49th order, *Compositæ*. The pappus is simple, the calyx imbricated and roundish, the corollæ of the radius trisid. There are 19 species, none of which merit any particular description.

CONZA, a town of the kingdom of Naples in Italy, situated on the farther principate, on the river Offanto, 50 miles south-east of the city of Naples. E. Long. 16. 0. N. Lat. 41. 0. It is the see of an archbishop.

COOK (Sir Anthony), descended from Sir Thomas Cook lord mayor of London, was born in 1506, and supposed to have been educated at Cambridge. He was so eminent for his learning, piety, and prudence, that the guardians of king Edward VI. appointed him

to be his chief instructor in learning, and to form his manners. He had four daughters; and being resolved to have sons by education, lest he should have none by birth, he taught his daughters those lessons by night that he had instilled into the prince by day: he was happy in his endeavours, as they proved learned in Greek and Latin, and equally distinguished by virtue, piety, and good fortune. Mildred was married to the great lord Burleigh; Ann to Sir Nicholas Bacon, lord keeper of the great seal; Elizabeth to Sir John Ruffel, son and heir of Francis earl of Bedford; and Catharine to Sir Henry Killigrew. He lived in exile during the Marian persecution; and returning on the accession of queen Elizabeth, spent the rest of his days in peace and honour, dying in 1576.

COOK (Captain James), one of the most celebrated navigators ever produced by Britain or any other country, was the son of James Cook, supposed to have been a native of the county of Northumberland. His station was no higher than that of a servant in husbandry, and he was married to a woman in his own sphere of life at Morton, a village in the North riding of Yorkshire. From this place they removed to another village in the same riding named *Marton*, where Captain Cook was born on the 27th of October 1728. He was one of nine children, all of whom are now dead except a daughter, who married a fisherman of Redcar. He received the first rudiments of education from the schoolmistress of the village; and afterwards, on his father's removal to Great Ayton, he was put to a day school, at the expence of Mr Skottow, his father's employer, where he was instructed in writing and in a few of the first rules of arithmetic. Before the age of thirteen he was bound apprentice to Mr W. Sanderfon, a haberdasher or shopkeeper at Straiths, about ten miles from Whitby: but some disagreement taking place between him and his master, he indulged his own inclination in binding himself apprentice to Messrs Walkers of Whitby, who had several vessels in the coal trade; and after serving a few years longer in the situation of a common sailor, he was at length raised to be mate of one of Mr Walker's ships. During all this period it is not recollected that he exhibited any thing peculiar either in his abilities or conduct.

Early in the year 1755, when hostilities broke out between France and England, Cook entered on board the *Eagle* of sixty guns, to which vessel Sir Hugh Palliser was soon after appointed, who soon distinguished him as an active and diligent seaman; and his promotion was forwarded by a letter of recommendation which was written by Mr Osbaldeston, member for Scarborough, at the request of several neighbours, in Mr Cook's favour. On the 15th of May 1759, he was appointed master of the *Mercury*, which soon after sailed to America, and joined the fleet under Sir Charles Saunders at the memorable siege of Quebec. His interest with the admiralty appears even then to have been very strong; for on Mr Osbaldeston's letter he was appointed master of the *Grampus* sloop; but the proper master having unexpectedly returned to her, the appointment did not take place. Four days after he was made master of the *Garland*; when upon inquiry it was found that he could not join her, as the vessel

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vessel had already sailed; and the next day, May 15th 1759, he was made master of the *Mercury*. On this occasion he was recommended by Captain Palliser to a difficult and dangerous service, *viz.* to take the soundings of the river St Lawrence, between the island of Orleans and the north shore, which he performed in the most complete manner; and soon afterwards he was employed to survey the most dangerous parts of the river below Quebec: these were his first efforts with the pencil. After this expedition he was appointed, on the 22d of September, master of the Northumberland, stationed at Halifax, where he first read Euclid, and applied to astronomy and other branches of science. In the year 1762 he was with the Northumberland, assisting at the recapture of Newfoundland; and in the latter end of the same year he returned to England, and married, at Barking in Essex, Miss Elizabeth Batts. Early in 1763, when admiral (then Captain) Greaves was appointed governor of Newfoundland, Mr Cook went out with him to survey the coasts of that island. At the end of the season he returned to England; but in the beginning of 1764, Sir Hugh Palliser being appointed governor of Newfoundland and Labradore, Mr Cook accompanied him in the same capacity of surveyor, and had the Grenville schooner to attend him on that business; in this situation he continued till 1767.

While Mr Cook remained on this station, he had an opportunity of exhibiting publicly a specimen of his progress in the study of astronomy, by a short paper printed in the 57th volume of the *Philosophical Transactions*, intitled "An observation of an eclipse of the sun at the island of Newfoundland, August 5. 1766, with the longitude of the place of observation deduced from it." Mr Cook's observation was made at one of the Burgeo islands near Cape Ray, in N. Lat. 47° 56' 19", and by the comparisons of it made by Mr Mitchel with an observation of Dr Hornsby at Oxford, it appeared to have been accurately done: and Mr Cook at that time obtained the character of an able astronomer.

In the mean time a spirit for geographical discoveries, which had gradually declined since the beginning of the 17th century, began to discover itself anew. Two voyages of this kind had been performed in the reign of George II. the one under Captain Middleton, the other by Captains Moore and Smyth, with a view to discover a northwest passage through Hudson's Bay to the East Indies. Two others, under Captains Byron, Wallis, and Carteret, had been undertaken soon after the conclusion of the peace in 1763 by order of his present Majesty; and before the return of these navigators, who were ordered to sail round the world, another voyage was resolved upon for astronomical purposes. It having been calculated that a transit of Venus over the sun's disk would happen in 1769, a long memorial to his Majesty was presented by the Royal Society; in which they set forth the great importance of making proper observations on this phenomenon, the regard that had been paid to it by the different courts of Europe; and intreating, among other things, that a vessel might be fitted out, at the expence of government, for conveying proper persons to some of the Friendly Islands, in order to make the necessary observations. This being complied with on the part of his Majesty,

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Alexander Dalrymple, Esq; an eminent member of the Royal Society, was appointed to take the command of the bark appropriated for the purpose. In the execution of the project, however, an unexpected difficulty occurred. Mr Dalrymple, sensible of the impossibility of guiding a vessel through unknown and dangerous seas without any proper command over the crew, demanded a brevet commission as captain of the vessel, in the same manner as had formerly been granted to Dr Halley in a voyage of discovery made by him. This commission Sir Edward Hawke absolutely refused to sign; declaring, when pressed upon the subject, that he would rather suffer his right hand to be cut off than trust any of his Majesty's ships to a person who had not been properly bred to the service: and in this proceeding he seemed to be justified by the mutinous behaviour of Dr Halley's crew; who, denying the legality of his authority over them, had involved him in a very disagreeable dispute, and which was attended with pernicious consequences. Mr Dalrymple, on the other hand, being equally determined in his refusal to proceed without the authority in question, there was a necessity for finding out some person of science who might also be free from the objection made by Sir Edward Hawke. Mr Cook therefore was proposed by Mr Stephens; and his recommendation being seconded by Sir Hugh Palliser, he was immediately appointed to direct the expedition; and on this occasion was promoted to the rank of lieutenant in his Majesty's service.

Mr Cook's commission as lieutenant was dated May 25. 1768; a vessel of 370 tons, named the *Endeavour*, was provided for him; and while the necessary preparations were making for the voyage, Captain Wallis returned. It having been recommended to this gentleman to fix upon a proper place for making the astronomical observations, he had accordingly chosen the island named by him *George's Island*, but since known by the name of *Otaheite*; judging also that Port Royal harbour in it would afford an eligible situation. This proposal being accepted, directions for the purpose were accordingly given to Mr Cook, with whom Mr Charles Green was joined in the astronomical part; the latter having been assistant to Dr Bradley in the Royal Observatory at Greenwich, and thus judged to be every way qualified for the office. The lieutenant was likewise accompanied by Mr Banks, now Sir Joseph Banks, Dr Solander, &c. The principal design of the voyage was, as has already been hinted, to make observations on the transit of Venus; but this being done, Mr Cook was directed to make further discoveries in the Pacific Ocean; and on the 30th of July 1768 he set sail on his expedition. An account of the voyage, and the discoveries made during the time of it, is given in the next article: here it is sufficient to observe, that throughout the whole Mr Cook approved himself an able seaman; and from his behaviour both to his own people and to the savage nations he occasionally met with, showed a most exact regard to the rules both of justice and humanity. On his first arrival at Otaheite, the following regulations were drawn up for his people, which he took care should be punctually obeyed: 1. To endeavour, by every fair means, to cultivate a friendship with the natives, and to treat them with all imaginable humanity. 2. A proper person or persons

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Cook. to be appointed to treat with the natives for provisions, fruits, &c. and no other person belonging to the ship to do so without leave. 3. Every person on shore to attend punctually to his duty, and to pay proper attention to his tools or arms; and if lost through negligence, to have the full value charged against his pay, with such farther punishment inflicted as occasion might require. 4. The same penalty to be inflicted on every one who should embezzle, trade with, or offer to trade with, any part of the ships stores; and, 5. No iron to be given in exchange for any thing but provisions. His rigid adherence to these rules was manifested in several instances, particularly by severely punishing the ship's butcher, who had threatened the life of a woman, wife to one of the chiefs of the island, for refusing a stone hatchet on the terms he proposed. On erecting their observatory, in order to go through the astronomical operations, an accident happened which had like to have disconcerted the whole scheme. This was the loss of their quadrant, which had been stolen by some of the natives; but, chiefly through the exertions of Mr Banks, it was recovered, and the observations made accordingly. Scarce was this accomplished, however, before another theft of the natives demanded the most serious consideration of the commander. Some of them taking advantage of the attention of the officers being otherwise engaged, took the opportunity of breaking into one of the store-rooms, and stealing from thence a bag of spike nails of no less than an hundred weight. This was a most important affair; for as those nails were of great estimation among the Indians, the possession of such quantity must undoubtedly have much lessened their value, and thus rendered provisions of every kind greatly dearer on the island than before. One of the thieves therefore being discovered, was punished with 200 lashes: notwithstanding which he obstinately refused to discover any of his accomplices. Repeated thefts committed afterwards required all the wisdom and resolution of Mr Cook to conduct himself in a proper manner. After due consideration, he judged it to be a matter of importance to put an end to these practices at once, by doing something which might engage the natives themselves to prevent them for their common interest. This, however, he was not at present able to accomplish; nor indeed did it seem possible to prevent them without using fire-arms, which from motives of humanity he still determined to avoid. At last, after a stay of three months, when preparing to take his leave, the most disagreeable adventure took place that he had hitherto met with. This was the desertion of two of his people, who having married young women of the country, determined to take up their residence in it. Mr Cook was now obliged to seize some of the chiefs, and to inform them that they could not obtain their liberty unless the deserters were recovered. This at last produced the desired effect; the deserters were given up, and Mr Cook set sail, along with Tupia (who had formerly been the prime minister to Oberea, a prince of the island) and a boy of 13 years of age, both of whom were desirous of accompanying him to England.

While Mr Cook proceeded to visit others of the South Sea Islands, Tupia occasionally served as an in-

terpreter. On his arrival in New Zealand, Mr Cook found the people extremely hostile and insolent. At their very first meeting, one of the natives having threatened to dart his lance into the boat, was shot dead. Another, having carried off Mr Green's hanger, was fired at with small shot, and upon his still refusing to restore it, was fired at with ball and killed. This, however, produced very little effect on the rest, who offered to make an attack upon them, till several muskets were fired with small shot, which wounded three or four more. Next day the commander, having determined to force some of the natives on board, in order to conciliate their affections by kind treatment, directed his men to follow two canoes whom he perceived under way before him. One made her escape, but the other, not observing the boats in pursuit, was overtaken; on which the savages plied their oars so briskly, that the ship's boats were not able to keep up with them. Tupia, whose language the New Zealanders understood, called to them to return, with assurances that no hurt should be done them; but they continued their flight without minding him. A musket was then fired over their heads with a view to intimidate them, but upon this they prepared to fight; and on the coming up of the boats began the attack with so much vigour, that the lieutenant's people were obliged to fire upon them with ball, by which four out of seven that were in the boat were killed, and the other three jumped into the water, and were taken on board.

This part of Mr Cook's conduct seems inconsistent with that humanity for which he was in general so eminently distinguished; he was aware of the censure, and makes the following apology. "These people certainly did not deserve death for not choosing to confide in my promises, or not consenting to come on board my boat, even if they had apprehended no danger: but the nature of my service required me to obtain a knowledge of their country, which I could no otherwise obtain but by forcing into it in an hostile manner, or gaining admission through the confidence and good will of the people. I had already tried the power of presents without effect; and I was now prompted by my desire to avoid farther hostilities, to attempt to get some of them on board; the only method we had left of convincing them that we intended them no harm, and had it in our power to contribute to their gratification and convenience. Thus far my intentions certainly were not criminal; and tho' in the contest, which I had not the least reason to expect, our victory might have been complete without so great an expence of life; yet in such situations, when the command to fire has once been given, no man can pretend to restrain its excess, or prescribe its effect."

Notwithstanding the disaster just mentioned, to which the three New Zealanders, who were taken on board, had been witnesses, they were soon conciliated, and began to sing with a degree of taste that surprised the English gentlemen. They were boys, the oldest about 19 and the youngest about 11; but no kindness which could be shown them was in any degree effectual to bring about a reconciliation with the rest. On the contrary, having perceived the ship in some distress, they instantly showed a disposition to make an attack; and from this they were only prevented by the

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the firing of a four-pounder charged with grape shot. Even this did not produce any permanent effect; another attack was determined upon, and would undoubtedly have been made, had not Tupia informed them, that if they persisted in the attempt, the arms of their adversaries, like thunder, would destroy every one of them. This was enforced by the fire of another four-pounder with grape shot, which spreading wide in the water, terrified them to such a degree that they began to paddle away as fast as possible. Notwithstanding this, however, some intercourse began to take place; but in every instance the New Zealanders manifested their hostility and treachery in such a manner as showed that they were not to be gained by fair means. At last an attempt to carry off Tayeto, Tupia's boy, rendered it absolutely necessary to fire upon them in order to rescue him from certain destruction, some of the savages having got him into a canoe, where they held him down by violence. In consequence of this one of the savages was killed on the spot, and several more wounded, by the discharge of muskets from the boats; Tayeto recovered his liberty, jumped into the water, and swam to the ship. Some partial intercourse again took place: but still it appeared that the innate rancour of these savages was neither to be subdued by fair means nor foul; and it was only by the powerful arguments of cannon and musketry that they could be kept from attempting to do mischief.

From the account of this voyage published by Dr Hawkefworth, indeed, it appears, that a considerable number of savages perished in a manner similar to that above mentioned, and they seem to have manifested a more hostile behaviour than afterwards: on those melancholy occasions, however, it is observed to the honour of Mr Cook, that his humanity was eminently conspicuous beyond that of the common people, who all along showed as much inclination to destroy the Indians as a sportsman does to kill the game he pursues.

While Mr Cook coasted the islands of New Zealand, he was sometimes in the most imminent danger of being shipwrecked. In the latitude of 35° south, and in the midst of summer in that climate, he met with such a gale of wind as he scarce ever experienced before; so that he was no less than three weeks in getting ten leagues to the westward, and two more before he could get 30 leagues farther. Fortunately, however, they were all this time a considerable way from land, otherwise it is probable that the storm must have proved fatal.

Mr Cook having spent six months in circumnavigating and fully exploring the islands of New Zealand, he sailed from thence on the 31st of March 1770. It must be observed, however, that the extreme hostility manifested by the inhabitants in that part of the island where he first arrived, was not universally diffused, but that a friendly intercourse was for a long time maintained with those about Queen Charlotte's Sound. From New Zealand he proceeded to New Holland, and on the 28th of April came in sight of Botany Bay. Here all their endeavours to induce the natives to have any intercourse with them proved ineffectual, tho' happily there was no blood spilt in any quarrel.

During their navigation round New Holland, the
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coasts of which are full of dangerous rocks and shoals, our navigators were brought into a more perilous situation than ever; and from which the escape was so extraordinary, that it deserves a particular relation. This happened on the 10th of June 1770, as they pursued their course from Trinity Bay, and nearly in the latitude assigned to the islands discovered by Quirós. At that time they had the advantage of a fine breeze and a clear moonlight; and in standing off from six till near nine o'clock, the ship had deepened her water from 14 to 21 fathoms; but while the navigators were at supper, it suddenly shoaled to 12, 10, and 8 fathoms; in the space of a few minutes. Every thing was then ready for putting the ship about, when they suddenly got into deep water again, and continued in 20 and 21 fathoms for some time, so that the gentlemen went to bed in perfect security. A little before eleven, however, the water shoaled at once from 20 to 17 fathoms; and before the lead could be heaved again, the ship struck, and remained immovable, excepting as far as she was heaved up and down and dashed against the rocks by the surge. The alarm was now universal, and not indeed without the greatest reason. It appeared that the vessel had been lifted over the ledge of a rock, and lay in a hollow within it, where there were in some places from three to four fathoms water, and in others scarce as many feet: the sheathing boards were disjoined, and floating round the ship in great numbers; and at last the false keel also was destroyed, while the rock kept grating her bottom with such force as to be heard in the fore store-room. It was now necessary to lighten the ship as much as possible; and this was done with all expedition to the amount of more than 50 tons. In the morning of the 11th of June they discovered the land at about eight leagues distance, without any island between, on which they could have been sent ashore in the event of the ship going to pieces, that so they might have been carried to the main land by turns. To add to their distress, the ship drew so much water, that it could scarce be kept under by three pumps. Lastly, it appeared, that even the rising of the tide, on which they had ultimately depended for relief, was insufficient to answer the purpose, as the day tide fell considerably short of that in the night-time. Having therefore lightened the ship still farther, by throwing out every thing that could possibly be spared, they waited with patience for the next tide; when, after incredible exertion, the ship righted, and they got her over the ledge of the rock into deep water. By continual labour, however, the men were at last so much exhausted, that they could not stand to the pumps more than five or six minutes at a time; after which they threw themselves flat on the deck, though a stream of water between three and four inches deep ran over it; and in this situation they lay till others, exhausted as well as themselves, took their places, on which they started up again, and renewed their exertions. In this dreadful extremity Mr Monkhouse, a midshipman, proposed the expedient of tothing the ship, as it is called, by which means he said that he had seen a merchant ship brought from Virginia to London after she had sprung a leak that admitted more than four feet water in an hour. The expedient being approved of, it was put in execution in the following manner. He took

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took a lower fludding-sail, and having mixed a large quantity of oakum and wool together, fitched them down by handfuls as lightly as possible; the whole being afterwards spread over with the dung of the sheep and other filth. The sail was then hauled under the ship's bottom by means of ropes which kept it extended. When it came under the leak, the wool and oakum, with part of the sail, were forced inwards by the pressure of the water, which thus prevented its own ingress in such an effectual manner, that one pump, instead of three, was now sufficient to keep it under. Thus they got the ship into a convenient port on the coast of New Holland, where there was an opportunity of fully repairing her defects. Here they discovered that their preservation had not been owing entirely to the expedient above mentioned; for one of the holes was in a great measure filled up by a piece of rock which had broken off and stuck in it; and this hole was so large, that had it not been filled up in the manner just mentioned, they must undoubtedly have perished notwithstanding all the assistance that could have been derived from the pumps.

The dangers they sustained in navigating this coast were innumerable, insomuch that for very near three months they were obliged to have a man constantly in the chains heaving the lead. They were always entangled among rocks and shoals, which could not have failed to destroy a less experienced navigator; and even Mr Cook, with all his sagacity, could not sometimes have extricated himself, had it not been for the favourable interposition of some natural events, which no human penetration could foresee or have the least dependence upon. Of this we shall only give the following instance. Having at last, as they thought, got safely over the vast reefs of sunk rocks with which the coast of New Holland is surrounded, they flattered themselves that all danger was passed, and the vast swell of the water convinced them that they were now in the open ocean. The remembrance of former dangers, however, induced them frequently to take the precaution of founding; notwithstanding which, in the latitude of about $14\frac{1}{2}^{\circ}$ S. they found themselves one morning only about a mile distant from the most hideous breakers, though the sea all around was unfathomable. Their situation was rendered the more dreadful by its being a dead calm, at the same time that they were carried towards the rock with such rapidity, that by the time they had got the ship's head turned by means of the boats, she was scarcely 100 yards distant from it. Their only resource then was to tow the ship, if possible, by means of the boats and pinnace, out of a situation so very perilous; but all their efforts would have been unsuccessful, had not a breeze of wind sprung up, which, though too light to have been noticed at any other time, was found to second their efforts so effectually, that the ship began to move perceptibly from the reef in an oblique direction: during the time that this breeze lasted, which was not more than ten minutes, they had made a considerable way. A dead calm succeeding, they began to lose ground, and in a little time were driven within 200 yards of the rocks: but fortunately the breeze returned, and lasted ten minutes more; during which time a small opening was perceived in the reef at the distance of about a quarter of a

mile. The mate being sent out to examine this opening, reported that it was not more than the length of the ship in breadth, but that there was smooth water within. On this it was determined to push into it by all means. The attempt failed of success; as, just when they had brought the ship with great labour to the mouth of the opening, they found a current setting out from it by reason of the tide now beginning to ebb. But though their hopes were disappointed in getting through the opening, they were, by the current setting out from it, driven in a very short time to the distance of a quarter of a mile from the rocks; and by dint of towing and other exertions, they were got by noon to the distance of two miles. This temporary deliverance, however, afforded but small prospect of being ultimately relieved. They had still no other expectation than of being forced back into their former situation by the return of the tide; but happily they now perceived another opening about a mile to the westward. Mr Hicks the lieutenant being sent to examine this opening, returned with an account of its being narrow and hazardous, but capable of being passed. To this place therefore the ship was directed by every possible means; and a light breeze happening to spring up, they fortunately reached it, and were instantly hurried through with great rapidity by the current of the returning tide; which, had it not been for this opening, would undoubtedly have dashed them to pieces against the rocks.

From the time they quitted the coast of New Holland till their arrival at Batavia in the island of Java, our navigators met with no other danger but what is common in sea-voyages. They were obliged to stay for some time at this place to repair their damages; and on viewing the condition of the ship, found they had more reason than ever to admire the manner in which they had been preserved. Both the false-keel and main-keel were greatly injured; great part of the sheathing was torn off; several of the planks were much damaged, and among these there were two, and half of another, which for six feet in length were not above the eighth part of an inch in thickness, besides being penetrated with worms quite to the timbers. Here the crew were excessively annoyed by sickness, which obliged them to remain much longer than they would otherwise have done: and it is worthy of notice, that every one of the crew was ill excepting the sail-maker, an old man between 70 and 80 years of age, and who was drunk every night. Poor Tupia, with his boy Tayeto, fell sacrifices to the unhealthiness of the climate, as well as the surgeon, three seamen, and Mr Green's servant. Nor did the evil stop here; for on their setting out from Batavia, the seeds of disease which had been received there broke out in the most violent and fatal manner, insomuch that in the course of about six weeks there died one of Mr Banks's assistants, by name Mr Sporing, Mr Parkinson his natural history painter, Mr Green the astronomer, the boatswain, carpenter, and mate; Mr Monkhouse the midshipman, the corporal of the marines, two of the carpenter's crew, and nine seamen. Even the jolly old sail-maker could now hold out no longer; but whether his death might not in some measure be attributed to his being less plentifully supplied with liquors than

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Cook. formerly, might have deserved inquiry. These unfortunate events probably made a considerable impression on Mr Cook's mind; and perhaps induced him to direct his attention to those methods of preserving the health of seamen which he afterwards put in execution with so much success. After touching at St Helena, they continued their voyage for England, where they arrived on the 11th of June 1771; and on the 29th of August the same year, his Majesty testified his approbation of Mr Cook's conduct by appointing him a captain in the navy. On this occasion Mr Cook wished to have been advanced to the rank of post-captain, which, though not more profitable than the other, is more honourable; but this being inconsistent with the rules of preferment in the navy, the earl of Sandwich, at that time at the head of the admiralty, could not agree to it.

Captain Cook was not allowed to remain long inactive. The idea of a southern continent had long been entertained, and Mr Dalrymple had renewed the attention of the public towards the question, by his historical collection of voyages to the Pacific Ocean, published in two quarto volumes, one in 1770, the other in 1771. To determine the matter finally, Captain Cook was again sent out: and the object of this voyage was not merely to settle the question just mentioned, but to extend the geography of the globe to its utmost limits. That the undertaking might be carried on with the greater advantage, it was determined to employ two ships, on the choice and equipment of which the utmost attention was bestowed. The successful voyage which had already been made in the Endeavour, suggested the idea of that ship being a proper model for the two which were to be sent out; and the opinion of Lord Sandwich concurring with the general idea, two vessels, constructed by the same person who had built the Endeavour, were purchased for the voyage. These were about 14 or 16 months old at the time they were purchased; and in the opinion of Captain Cook, were as fit for the purpose as if they had been but newly built. The larger of the two, of 462 tons burden, was named the Resolution; the smaller, of 336 tons, had the name of the Adventure: the complement of men on board the former, of which Captain Cook was commander, being 112; on the latter, commanded by Mr Tobias Furneaux, 81. In their equipment, every article that could be supposed necessary, however much out of the common line, was procured, and every circumstance that could be supposed to contribute to the success of the voyage was attended to in the most scrupulous manner. Besides the usual stores and provisions, all of which were of the best kinds, the ships were furnished with malt, sour-kraut, salted cabbage, portable soup, salop, mustard, marmalade of carrots, beer, and inspissated wort. Mr Hodges, an excellent landscape painter, was engaged to make drawings and paintings of such objects as required them. Mr John Reinhold Forster, with his son, were both engaged, in order to explore and collect the natural history of the countries through which they passed; and lastly, that nothing might be wanting to render the voyage as complete as possible, Mr William Wales and Mr William Bayley were engaged by the board of longitude to make celestial observations. They were furnished with the

best instruments of every kind, and among the rest with four time-pieces; three constructed by Mr Arnold, and one by Mr Kendal on Mr Harrison's principles.

At Plymouth Captain Cook received his instructions; which were not only to sail round the globe, but to sail round it in high southern latitudes, and to make such traverses as might finally resolve the question concerning the southern continent. In pursuance of these instructions he set sail on the 13th of July 1772, and on the 29th of the same month reached the Madeiras. As he proceeded afterwards in his voyage, he made three puncheons of beer from the inspissated wort carried out along with him, and found it excellent to answer the purpose, provided the material could have been kept without fermentation in its inspissated state; but as this was found impossible, the expedient seems to have failed. In this voyage, however, the Captain used with the greatest success such methods as appeared likely to contribute to the preservation of the health of his men. In rainy weather, he took care that the ship should be aired and dried by means of fires made between the decks, the damp places were smoked, and the people were ordered to air their bedding, and wash and dry their clothes, whenever an opportunity offered. Thus he reached the Cape of Good Hope without having a single man sick. Having left it, and kept on his course to the southward, he soon began to meet with cold and stormy weather, by which he lost almost the whole of his live stock of sheep, hogs, and geese. The bad effects of this stormy weather upon the men were guarded against by an addition to their clothing, and giving them a dram on particular occasions. On the sixth of December, being in the latitude of 50° 40', he fell in with islands of ice, and continued among them in various latitudes till the 17th of January 1773; when he set sail for New Zealand, which he reached on the 27th.

The reception of our navigator by the New Zealanders was now much more friendly than in the former voyage, so that there were no contests with the natives; nor did Captain Cook observe any one of those whom he had seen before, neither was there the smallest remembrance of former hostilities. Having staid in this country till the 7th of June, our navigators set sail for Otaheite; but during the voyage the crews of both ships were attacked by the scurvy. Those of the Adventure were in a very sickly state; the cook was dead, and 20 of her best men incapable of duty. On board the Resolution matters were much better; and the only reason that could be conjectured for the difference was, that the people of the Adventure had been in an habit of body more inclined to the scurvy than those of the Resolution, and had eat fewer vegetables. Here it was observed, that the aversion of seamen to a change of diet is so great, that it can only be overcome by the steady and persevering example of a commander. While he remained at New Zealand, the Captain had discovered a tree which greatly resembled the American black spruce. Persuaded, therefore, that it would be attended with effects equally salutary on the health of the people, he employed them in brewing beer from it. This was done while they continued at Dusky Bay, in order to supply the want of vegetables, which were not to be

procured there; but on removing to Queen Charlotte's Sound, they were more fortunate. Captain Cook himself went to look out for antiscorbutic vegetables; and returned in a very short time with a boat-load of scurvy-grass, celery, &c. These were boiled with the peas and wheat; and though some of the people disliked them at first, they soon became so sensible of their good effects, that they cheerfully followed the example of the rest; and the freedom of the crew from the scurvy and other distempers was by every one attributed to the New Zealand spruce beer and vegetables. From this time forward the Captain had scarce occasion to give orders for gathering vegetables when they came to any land.

During this voyage Captain Cook experienced another narrow escape from shipwreck. Being becalmed at the distance of half a league from a reef of rocks near Osnaburg Island, it was found necessary to order out the boats to tow off the ships; but this was found impossible. The calm continuing, and the situation of our navigators becoming every moment more dangerous, the Captain attempted to get through an opening in the reef which he had judged practicable: but on approaching it, found that there was not sufficient depth of water; at the same time that the draught of the tide through it forced the ship thither in a manner scarce to be resisted. One of the warping machines, with about 400 fathoms of rope, was then ordered out, but did not produce any effect. They were within two cables length of the breakers, and no bottom could be found for casting anchor. Having no other resource, however, they did drop an anchor; but before it took hold, the Resolution was in less than three fathoms water, and struck at every fall of the sea, which broke violently close under her stern, threatening destruction to every one on board. At last the tide ceasing to act in the same direction, the boats were ordered to try to tow off the vessel; in which being assisted by the land-breeze, which fortunately sprung up at that instant, they with much labour succeeded.

Having spent a considerable time in the South Sea islands, Captain Cook returned to New Zealand, and from thence set sail for the southern part of the continent of America. Here he explored all the islands in the neighbourhood, and then returned to England, where he arrived in safety on the 30th of July 1774, having been absent three years and 18 days; and in all that time lost only one man, who died of a consumption probably begun before he set out on the voyage.

The reception our navigator now met with was suited to his merit. He was immediately raised to the rank of post-captain, and soon after unanimously elected a member of the Royal Society; from whom he received the prize of the gold medal for the best experimental paper that had appeared throughout the year. It was the custom of Sir John Pringle, at the delivery of this medal, annually to make an elaborate discourse, containing the history of that part of science for which the medal was given; and as the subject of Captain Cook's paper (the means of preserving the health of seamen) was analogous to the profession of Sir John Pringle himself as a physician, he had the greater opportunity of displaying his eloquence on the occasion.

The speech he made was in the highest degree honourable to Captain Cook. He remarked, that the Society had never more meritoriously bestowed the medal than on the person who now received it. "If (says he) Rome decreed the civic crown to him who saved the life of a single citizen, what wreaths are due to the man who, having himself saved many, perpetuates in your Transactions the means by which Britain may now, on the most distant voyages, preserve numbers of her intrepid sons, her mariners; who, braving every danger, have so liberally contributed to the fame, to the opulence, and to the maritime empire of the country?" These honourable testimonies of the public regard, however, Captain Cook did not receive, being already embarked on another voyage, from which he never returned.

The third voyage of this celebrated navigator was not undertaken by any express command of his Majesty. Captain Cook had already done so much, that it was thought but reasonable he should now spend the remainder of his life in quiet; and in order to enable him to do this in the more comfortable manner, besides his rank of post-captain in the navy, he was also made a captain in Greenwich. Still, however, there were some points in the science of geography which had very much engaged the attention of the public, and were indeed of such importance as to become a national concern. These were to discover the connection between Asia and America, and to determine whether there was not a possibility of shortening the passage to the East Indies by sailing round the northern parts of the continents of Europe and Asia. Many attempts, indeed, had already been made by various navigators of different nations; but all of them had failed, and, what was worse, had left the point still undetermined. An act of parliament had been passed in 1745, by which a reward of L. 20,000 was held out to the ships of any of his Majesty's subjects for accomplishing this important voyage, but without mentioning any thing of those belonging to his Majesty; and this reward was further confined to the finding out of the north-west passage to the East Indies through Hudson's Bay. In the year 1776, however, both the errors just mentioned were corrected. It was now enacted, "That if any ship belonging to any of his Majesty's subjects, or to his Majesty, shall find out, and sail through, any passage by sea between the Atlantic and Pacific Oceans, in any direction or parallel of the northern hemisphere, to the northward of the 52d degree of northern latitude; the owners of such ships, if belonging to any of his Majesty's subjects, or the commanders, officers, and seamen, of such ship belonging to his Majesty, shall receive, as a reward for such discovery, the sum of L. 20,000.

It was not, as has already been hinted, now deemed proper to solicit Captain Cook to undergo fresh dangers by undertaking a voyage of this kind; nevertheless, as he was universally looked upon to be the fittest person in the kingdom for the purpose, the eyes of every person were tacitly fixed upon him: he was consulted on every thing relating to it, and solicited to name the person whom he judged most proper to conduct it. To determine this point, Captain Cook, Sir Hugh Palliser, and Mr Stephens, were invited to the house of Lord Sandwich to dinner; where, besides

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the consideration of the proper officer for conducting the expedition, many things were said concerning the nature of the design. They enlarged upon its grandeur and dignity, its consequences to navigation and science, and the completeness it would give to the whole system of discoveries; until at last Captain Cook was so much inflamed by the representation of the importance of the voyage, that he started up, and declared that he would conduct it himself. This was what the parties present had desired, and probably expected; his offer was therefore instantly laid before the king, and Captain Cook appointed commander of the Expedition by the 10th of February 1776. At the same time it was agreed, that on his return from the voyage he should be restored to his place at Greenwich; and if no vacancy occurred during the interval, the officer who succeeded him was to resign in his favour. The instructions he now received were, that he should attempt the high latitudes between the continents of Asia and America, and if possible return to England along the northern coasts of Asia and Europe. This was most probably the result of the Captain's own deliberations, and what had been suggested by him to Lord Sandwich and other people in power. He was particularly desired to sail first into the Pacific Ocean thro' the chain of newly discovered islands which he had lately visited. After having crossed the equator, and passed into the northern parts of the ocean just mentioned, he was then to hold such a course as might tend to settle many interesting points of geography, and produce some intermediate discoveries, before he arrived at the main scene of operation. With regard to this principal object, he was ordered, immediately on his arrival on the coast of New Albion, to proceed northward as far as the latitude of 65 degrees, without losing any time in exploring creeks or rivers previous to his arrival in that latitude: and for his further encouragement, the act of 1745, offering a premium for the discovery of the passage, was amended in the manner above mentioned. That nothing might be wanting which could promote the success of the grand expedition, Lieutenant Pickersgill was sent out, in 1776, with directions to explore the coasts of Baffin's Bay; and the next year Lieutenant Young was commissioned not only to examine the western parts of that bay, but to endeavour to find a passage on that side from the Atlantic to the Pacific Ocean. Nothing, however, was performed by either of these gentlemen which in the least could promote Captain Cook's success. Two vessels were provided as in the former voyage, *viz.* the *Resolution* and the *Discovery*; the command of the former being given to Captain Cook, and of the latter to Captain Charles Clerke. The only thing in which the appointment of the *Discovery* differed from that of the *Resolution* was, that the former had no marine officer on board. Every degree of attention was bestowed, as in the former voyage, upon the proper victualling and other necessaries for the two ships; and that the inhabitants of those countries which our navigator intended to visit might derive some permanent benefit from the intercourse they had with him, it was determined to send abroad a breed of domestic animals, and likewise a quantity of useful seeds, to be left in proper places. With this view, a bull, two cows with their calves, and several sheep, with hay and

corn for their subsistence, were taken on board; and it was likewise purposed to take in others at the Cape of Good Hope. A large assortment of iron tools and trinkets was also sent out; and, in short, every thing that could be judged proper either to conciliate the good will of the natives or to prove serviceable to them, was provided for the voyage, as well as every convenience for the ships companies. In the former voyage Captain Cook had brought along with him a native of one of the South Sea islands, named *Omai*, who resided in England during the interval between the second and third voyages, and was now happy at getting an opportunity of returning to his own country. Though he could by no means complain of the entertainment he had met with in England, the idea of returning home loaded with treasure, which might enable him to make a figure among his countrymen, soon overcame all uneasy sensations which the leaving of his English friends might excite. His majesty had taken care to furnish him with every thing that could possibly be of use when he came to his native country; and he had besides received several valuable presents from Lord Sandwich, Sir Joseph Banks, and several ladies and gentlemen of his acquaintance; so that nothing was omitted which could possibly be done to convey, by his means, to the inhabitants of the South Sea Islands an idea of the British power and greatness.

Every thing being prepared for the voyage, our navigator set sail from the Nore on the 25th of June 1776; but by reason of some delay in receiving his instructions, did not leave Plymouth till the 12th of July. He had not been long at sea before he began his operations for preserving the health of his people; which were found equally efficacious in this as in the former voyage. Finding his stock of provender for the animals on board likely to run short, he touched at Teneriffe, in order to procure a supply, having judged that to be a more proper place than Madeira for the purpose. On sailing from thence he ran a great risk of running upon some sunken rocks on the island of Bonavista; but in this, as well as on other occasions of danger, he behaved with the same judgement, coolness, and presence of mind, that distinguished him throughout the whole course of his life. On the 12th of August he arrived before Port Praya, in one of the Cape de Verde islands named *St Jago*; but not finding it necessary to go in there, he continued his voyage to the southward. The weather now becoming gloomy and rainy, required a continuance of the methods he had already practised for preserving the health of his people; and, as formerly, they were attended with the greatest success. In this voyage, the effect of these precautions was the more remarkable, as at this time the seams of the vessel were opened to such a degree as to admit the rain, so that scarce any person on board could lie dry in his bed; and all the officers in the gun-room were driven out of their cabbins by the water which came through the sides. Such was the humanity of the commander, however, that while the ships continued at sea, he would not trust the workmen over their sides to repair the defects, though caulkers were employed in the inside as soon as settled weather returned. On the 1st of September our navigators crossed the equator, and on

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Cook. the 18th of October anchored in Table Bay at the Cape of Good Hope. Here they met with a violent tempest, the effects of which were felt both on sea and land. It lasted three days, and the Resolution was the only ship in the bay that rode out the storm without dragging her anchors. On shore the tents and observatory were destroyed, and the astronomical quadrant narrowly escaped irreparable damage. The Discovery, which had been some time later in sailing from England, was driven off the coast, and did not arrive till the 10th of November.

While they remained in this place, a disaster happened which threatened the loss of most of their live stock. The bull and two cows had been put ashore to graze among other cattle; but Captain Cook had been advised to keep the sheep, 16 in number, near the tents, where they were penned in every night. Some dogs having got in among them in the night-time, killed four, and dispersed the rest. Six of them were recovered the next day, but the two rams and two of the finest ewes in the flock were missing. The captain applied to Baron Plettenburg the governor; but all his endeavours were unsuccessful, until he employed some of the meanest and lowest of the people, fellows whose character was, that for a ducatoon they would cut their master's throat, burn the house over his head, and bury him and his whole family in ashes. This is mentioned as an instance how far the boasted policy of the Dutch government at the Cape of Good Hope falls short of its alleged perfection. After all, two of the finest ewes in the flock were missing, and never could be recovered. The captain, therefore, to repair this loss, and to make an addition to his original stock, purchased two young bulls, two stone horses, two mares, two heifers, two rams, several ewes and goats, with some rabbits and poultry; when, having finished all his business, he set sail on the 30th of November, though it was not till the 3d of December that he got clear of land. Soon after his putting to sea, he had the misfortune to lose several of the goats, especially the males, together with some sheep; and it was with the utmost difficulty that the rest of the cattle were preserved, by reason of the ship tossing and tumbling about in a very heavy sea. Having explored some desolate islands in the southern seas, Captain Cook set sail for New Zealand. During this part of the voyage, our navigators were involved in so thick a fog, that, according to the authors of Captain Cook's life, "they sailed 300 leagues in the dark." The first land they afterwards reached was New Holland; where, having remained till the 30th of January 1777, they set sail for New Zealand, and on the 12th of February they anchored in Queen Charlotte's Sound. Here the people were shy and timorous, on account of their having formerly destroyed 10 of Captain Furneaux's people, who had been sent ashore to gather vegetables. The cause of the quarrel could not be known, as none of the party were left alive to tell the news. Lieutenant Burney, who went ashore in quest of them, found only some fragments of their bodies; from which it appeared that they had been killed and eaten by the savages. It was not the intention of Captain Cook, at this distance of time, to resent the injury; he even refused to put to death a chief named *Kaboora*, who, as he was informed by the natives themselves, had killed Mr Rowe the commander of the par-

ty. He was, however, particularly careful that no opportunity should now be given the savages of committing such an action with impunity; and with this view a boat was never sent on shore without being well armed, and the men under the command of such officers as could be depended upon. The New Zealanders were no sooner assured of Captain Cook's pacific disposition, than they threw aside their fears and suspicions, and entered into a commercial intercourse with the people. It would have been the less excusable in Captain Cook to have revenged at this time the massacre of Mr Rowe's party, as he was assured that the quarrel originated from some petty thefts of the savages, which were too hastily resented on the part of the British; and had it not been for this, no mischief would have happened.

On the 25th of February our navigator left New Zealand, taking with him, at the request of Omai, two boys, the eldest about 18 and the youngest about 10. These were soon cured of their passion for travelling, being both violently sea-sick: but as it was then too late to repent, they expressed their grief in loud and almost continual lamentation; and this in a kind of song which seemed to consist of the praises of their native country, whence they were now to be separated for ever. By degrees, however, the sea-sickness abated, their lamentations became less frequent, and at last ceased entirely; their native country was forgotten, and they appeared to be as firmly attached to their new friends the English as if they had been born among them.

So much time was now spent in sailing up and down in the Pacific Ocean, where several new islands were discovered, that Captain Cook judged it impossible to accomplish any thing for this year in the high northern latitudes; for which reason he determined to bear away for the Friendly Islands, in order to supply himself with those necessaries which he had found impossible to be got at any of the islands which he had just discovered. In his run thither several new islands were visited; and in prosecuting these discoveries our navigator once more narrowly escaped being shipwrecked. The danger at this time arose from a low sandy island, which the Resolution was very near running upon. From this she was only saved by the circumstance of all the men having been accidentally called upon deck to put the vessel about, and most of them being at their stations when the danger was discovered. Soon after this both ships struck upon some sunk coral rocks, but happily were got off without damage.

After a stay of between two and three months, Captain Cook took leave of the Friendly Islands on the 13th of July 1777; and on the 12th of August reached Otaheite, where he introduced Omai to his country people, and whose reception by them is particularly related under the next article. Here the Captain found the people of Otaheite ready to engage in a war with those of Eimeo; but though strongly solicited by the former to assist them in an expedition against their enemies, he refused to take any concern in the affair, alleging, by way of excuse, that the people of Eimeo had never offended him. This seemed to satisfy most of the chiefs; but one, named *Towha*, was so much displeased, that Captain Cook could never regain his favour. He even threatened, that as

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soon as the Captain should be gone, he would make war upon Otoo, one of the princes of these islands whom he knew to be in strict friendship with him; but from this he was deterred by the Captain's threatening to return and chastise him if he made any such attempt. As a mark of Otoo's friendship, he gave our navigator a canoe, which he desired him to carry to the king of Britain, having nothing else, as he said, worth his acceptance.

From Otaheite Captain Cook proceeded to Eimeo, where, on account of some thefts committed by the natives, he was obliged to commence hostilities, by burning a number of their war canoes and even some houses. These transactions gave him much concern; and the more that he had been so much solicited to make war on these people by his friends at Otaheite, to whose entreaties he had refused to listen. From Eimeo he proceeded to Huaheine, where he saw Omai finally settled, and left with him the two New Zealand youths already mentioned. The youngest of these was so much attached to the English, that it was necessary to carry him out of the ship and put him ashore by force. During his stay on this island, the Captain was obliged to punish a thief with greater severity than he had ever done before, viz. by causing his head and beard to be shaved, and his ears cut off. Some other disagreeable transactions took place, particularly the desertion of two of his people, who were not recovered without the greatest difficulty. In the course of his exertions for their recovery, he found it necessary to detain the son, daughter, and son-in-law, of the chief of an island named Otaha. This had almost produced very serious consequences, the natives having formed a plot for carrying off Captain Cook himself, as well as Captain Clerke and Mr Gore. With regard to the commander, they were disappointed by his own caution and vigilance; but Messrs Clerke and Gore were in particular danger: and it was only owing to the circumstance of one of them having a pistol in his hand, as they walked together on shore, that they were not seized.

Having left the Society Islands, and discovered a new group, which, in honour of his patron the Earl of Sandwich, our commander named the *Sandwich Isles*, he set out on the 2d of January 1778 on his voyage northward. In this he was very successful, ascertaining the vicinity of the continents of Asia and America, which had never been done, or but very imperfectly, before. From these desolate regions he returned to the island of Oonakashka; whence having refitted and taken in provisions, he returned to the southward, and on the 26th of November reached the Sandwich Islands, where he discovered a new one named *Mowee*, and on the 30th of the same month another of much larger extent, named *O-why-bee*. Seven weeks were spent in exploring the coasts of this island; and during all this time he continued to have the most friendly intercourse with the people, who, however, appeared to be much more numerous and powerful than those of any island our navigators had yet touched at. Several of the chiefs and principal people had attached themselves greatly to the commander, and in general the people appeared to be much more honest in their dispositions than any whom he had ever visited. But by the time he had finished

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his circumnavigation of the island, and cast anchor in a bay called *Karakakooa*, matters were greatly altered. An universal disposition to theft and plunder had now taken place; and in this it was evident that the common people were encouraged by their chiefs, who shared the booty with them. Still, however, no hostilities were commenced: the greatest honours were paid to the commander; and, on his going ashore, he was received with ceremonies little short of adoration. A vast quantity of hogs and other provisions were procured for the ships; and on the 4th of February 1779, they left the island, not without most magnificent presents from the chiefs, and such as they had never before received in any part of the world. Unluckily they met with a storm on the sixth and seventh of the same month; during which the *Resolution* sprung the head of her foremast in such a manner that they were obliged to return to *Karakakooa* bay to have it repaired. As they returned, Captain Cook had an opportunity of showing his humanity to the people by the relief he afforded to some of their canoes which had suffered in the storm. The same friendly intercourse which had formerly been held with the natives now commenced, and Captain Cook was treated with the usual honours; but on the 13th of this month it was unhappily broken off on the following account. One of the natives being detected in stealing the tongs from the armourer's forge in the *Discovery*, was dismissed with a pretty severe flogging; but this example was so far from being attended with any good effect, that in the afternoon another, having snatched up the tongs and a chissel, jumped overboard with them and swam for the shore. The master and midshipman were instantly dispatched in pursuit of him; but he escaped on board a canoe, which paddled away so quickly that the cutter could not come near it. A chief named *Pareah*, who was at this time on board the *Resolution*, understanding what had happened, promised to go ashore and get back the stolen goods; but before this could be done the thief had made his escape into the country. Captain Cook, who was at that time ashore, had endeavoured to intercept the canoe when it landed, but was led out of the way by some of the natives who pretended to be his guides. The tongs and chissel, however, were brought back to the master as he advanced to the landing place; but he being now joined by some of the rest of the people in the pinace, could not be satisfied with the recovery of the stolen goods, but insisted upon having the thief or the canoe which carried him by way of reprisal. On his preparing to launch this last into the water, he was interrupted by *Pareah*, who insisted that it was his property, and that he should not take it away. As the officer paid no regard to his remonstrances, *Pareah*, who seems to have been a very strong man, seized him, pinioned his arms behind, and held him fast by the hair of the head. On this one of the sailors struck the chief with an oar, on which, quitting the officer, he instantly snatched the oar out of the man's hand, and broke it in two across his knee. The Indians then attacked the sailors with stones, and soon drove them to their boats, to which they were forced to swim, as they lay at some distance from the shore. The officers who could not swim retired to a small rock, where they were closely pursued by the Indians;

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and here the master narrowly escaped with his life, till Pareah returned and obliged the Indians to give over their attacks. The gentlemen, sensible that Pareah's presence alone could protect them, entreated him to remain with them till they could be brought off in the boats. On his refusal, the master set out to the place where the observatories had been erected, for farther assistance; but Pareah, who met him, and suspected his errand, obliged him to return. In the mean time the multitude had begun to break in pieces the pinnace, after having taken every thing out of her that was loose: on the return of Pareah, however, they were again dispersed, and some of the oars restored, after which the gentlemen were glad to get off in safety. Before they reached the ship Pareah overtook them in a canoe, and delivered the midshipman's cap which had been taken from him in the scuffle; he also joined noses with them in token of friendship, and desired to know whether Captain Cook would kill him on account of what had happened. They assured him that he would not, and made signs of reconciliation on their part. On this he left them, and paddled over to the town of Kavaroa; and that was the last time that he was seen by the English. In the night-time the sentinels were much alarmed by shrill and melancholy sounds from the adjacent villages, which they took to be the lamentations of the women. Next day it was found that the large cutter of the Discovery had been carried off in the night-time; on which Captain Cook ordered the launch and small cutter to go under the command of the second lieutenant, and to ly off the east point of the bay in order to intercept all the canoes that might attempt to get out, and if necessary to fire upon them. The third lieutenant of the Resolution was dispatched to the western part of the bay on the same service; while the master was sent in pursuit of a large double canoe already under sail, and making the best of her way out of the harbour. He soon came up with her, and by firing a few shots, obliged her to run on shore, and the Indians to leave her. This was the canoe belonging to a chief named *Omea*, whose person was reckoned equally sacred with that of the king, and to the neglect of securing him we may attribute the succeeding disaster. Captain Cook now formed the resolution of going in person to seize the king himself in his capital of Kavaroa; and as there was reason to suppose that he had fled, it was his design to secure the large canoes, which on that account he caused to be hauled up on the beach. With this view he left the ship about seven o'clock in the morning of Sunday the 14th of February, being attended by the lieutenant of marines, a serjeant, corporal, and seven private men. The crew of the pinnace, under the command of Mr Roberts, were also armed; and as they rowed towards the shore, the captain ordered the launch to leave her station at the opposite point of the bay, in order to assist his own boat. Having landed with the marines at the upper end of the town, the Indians flocked round him, and prostrated themselves before him. No sign of hostility, nor even much alarm, appeared; the king's sons waited on the commander as soon as he sent for them, and by their means he was introduced to the king, who readily consented to go on board; but in a little time the Indians began to arm

themselves with long spears, clubs, and daggers, and to put on thick mats which they use as defensive armour. This hostile appearance was greatly augmented by an unlucky piece of news which was just now brought by a canoe, *viz.* that one of the Indian chiefs had been killed by the people in the Discovery's boats. On this the women, who had hitherto sat on the beach conversing familiarly, and taking their breakfasts, removed, and a confused murmur ran through the crowd. An old priest now appeared with a cocoa-nut in his hand, which he held out as a present to Captain Cook, singing all the while, and making a most troublesome noise as if he meant to divert the attention of the Captain and his people from observing the motions of the Indians, who were now every where putting on their armour. Captain Cook beginning to think his situation dangerous, ordered the lieutenant of the marines to march towards the shore, as he himself did, having all the while hold of the king's hand, who very readily accompanied him, attended by his wife, two sons, and several chiefs. The Indians made a lane for them to pass; and as the distance they had to go was only about 50 or 60 yards, and the boats lay at no more than five or six yards distance from land, there was not the least apprehension of the catastrophe which ensued. The king's youngest son Keowa went on board the pinnace without the least hesitation, and the king was about to follow, when his wife threw her arms about his neck, and, with the assistance of two chiefs, forced him to sit down. The Captain might now have safely got aboard, but did not immediately relinquish the design of taking the king along with him. Finding at last, however, that this could not be accomplished without a great deal of bloodshed, he was on the point of giving orders for the people to reembark, when one of the Indians threw a stone at him. This insult was returned by the Captain, who had a double barrelled piece, by a discharge of small shot from one of the barrels. This had little effect, as the man had a thick mat before him; and as he now brandished his spear, the Captain knocked him down with his musket. The king's son, Keowa, still remained in the pinnace, and the detaining him would have been a great check upon the Indians; but unluckily Mr Roberts, who commanded the pinnace, set him ashore at his own request soon after the first fire. In the mean time another Indian was observed in the act of brandishing his spear at the commander; who thereupon was obliged to fire upon him in his own defence. Missing his aim, however, he killed one close by his side; upon which the serjeant observing that he had missed the man he aimed at, received orders to fire also, which he did, and killed him on the spot. This repressed the foremost of the Indians, and made them fall back in a body; but they were urged on again by those behind, and discharged a volley of stones among the marines, who immediately returned it by a general discharge of their muskets; and this was instantly followed by a fire from the boats. Captain Cook expressed his astonishment at their firing, waved his hand to them to cease, and called to the people in the boats to come nearer to receive the marines. This order was obeyed by Mr Roberts; but the lieutenant who commanded the launch, instead of coming nearer, put off

off to a greater distance; and by this preposterous conduct deprived the unfortunate commander of the only chance he had for his life: for now the Indians, exasperated by the fire of the marines, rushed in upon them and drove them into the water, leaving the Captain alone upon the rock. A fire indeed was kept up by both boats; but the one was too far off, and the other crowded with the marines, so that they could not direct their fire with proper effect. Captain Cook was then observed making for the pinnace, carrying his musket under his arm, and holding his other hand on the back-part of his head to guard it from the stones. An Indian was seen following him, but with marks of fear, as he stopped once or twice seemingly undetermined to proceed. At last he struck the Captain on the back of the head with a club, and then precipitately retreated. The latter staggered a few paces, and then fell on his hand and one knee, and dropped his musket. Before he could recover himself another Indian stabbed him with a dagger in the neck, though still without putting an end to his life. He then fell into a pool of water knee-deep, where others crowded upon him; but still he struggled violently with them, got up his head, and looked towards the pinnace as if soliciting assistance. The boat was not above five or six yards distance; but such was the confused and crowded state of the crew, that no assistance could be given him. The Indians then got him under again, but in deeper water, though he still continued to struggle, and once more got his head up; but being quite spent, he turned towards the rock as if to support himself by it, when a savage struck him with a club, which probably put an end to his life, as he was never seen to struggle any more. The savages hauled his lifeless body up on the rocks, and used it in the most barbarous manner, snatching the daggers out of one another's hands, in order to have the pleasure of mangling it. If any thing could add to the misfortune of this celebrated navigator's death, it was, that even his mangled remains were not saved from the hands of the barbarians. The lieutenant already mentioned, who, by his removing to a distance when he ought to have come on shore, seemed to have been the occasion of his death, returned on board without making any attempt to recover his body; though it appeared from the testimonies of four or five midshipmen who arrived soon after at the fatal spot, that the beach was almost deserted by the Indians, they having at last yielded to the continual fire from the boats. The officer alleged in his own excuse for removing at first from the shore, that he mistook the signals; but be this as it will, the complaints against him were so many and so great, that Captain Clerke was obliged publicly to take notice of them, and to take the depositions of his accusers in writing.—These papers, however, were not found, and it is supposed that the Captain's bad state of health had induced him to destroy them. After all we are informed, that, in the opinion of Captain Philips, who commanded the marines, it is very doubtful whether any effectual relief could have been given to the commander, even if no mistake had been committed on the part of the lieutenant. The author of all the mischief was Pareah, the chief already mentioned, who had employed people to steal the boat in the night-time. The

king was entirely innocent both of the theft and the murder of Captain Cook; but the latter was perpetrated by some chiefs who were his near relations. The chief who first struck him with a club was named *Karinans raba*, and he who stabbed him with the dagger was called *Nooah*. The latter, Mr Samwell, from whose narrative this account is taken, observes, was stout and tall, had a fierce look and demeanour, and united in his person the two properties of strength and agility more than he had ever observed in any other person.—Both of them were held in great estimation by their countrymen on account of the hand they had in his death.

By reason of the barbarous disposition of the Indians, it was found impossible to recover Captain Cook's body after the first opportunity already mentioned was lost. By dint of threats and negotiations, however, some of the principal parts were procured with great difficulty; by which means the navigators were enabled to perform the last offices to their much respected commander. These being put into a coffin, and the service read over them, were committed to the deep with the usual military honours on the 21st of February 1779. Soon after his death a letter was issued by M. de Sartine, secretary to the marine department of France, and sent to all the commanders of French ships, importing, that Captain Cook should be treated as the commander of a neutral and allied power; and that all captains of armed vessels who might meet with him, should make him acquainted with the king's orders, but at the same time let him know, that, on his part, he must refrain from hostilities. This humane and generous proceeding, with regard to France, originated from M. Turgot; but the thought seems first to have struck Dr Franklin. Thus much at least is certain, that the doctor, while ambassador from the United States, wrote a circular letter to the American naval commanders something to the purport of that already mentioned: but in this he was not supported by Congress; for an edict was instantly issued, that special care should be taken to seize Captain Cook if an opportunity of doing it occurred. The Spaniards proceeded in the same manner, and both acted on a principle equally mean and absurd, that the obtaining a knowledge of the western coast of America, or of a northern passage into the Pacific Ocean, might be attended with some bad consequence to their respective states.

Captain Cook was a man of plain address and appearance, but well looked, and upwards of six feet high. His head was small, and he wore his hair, which was brown, tied behind. His face was full of expression; his nose exceedingly well shaped; his eyes, which were small and of a brown cast, were quick and piercing; his eye-brows prominent, which gave his countenance altogether an air of austerity. Notwithstanding this, it was impossible for any one to excel him in humanity, as is evident from the whole tenor of his behaviour both to his own people and the many savage nations with whom he had occasion to interfere. This amiable property discovered itself even in the final catastrophe of his life; his utmost care being directed to the preservation of his people, and the procuring them a safe retreat to their boats. And it cannot be enough lamented, that he who took so much

Care of others, should have perished in such a miserable manner for want of being properly supported by them. The perseverance with which he pursued every object which happened to be pointed out as his duty was unequalled. Nothing ever could divert him from what he had once undertaken; and he persevered in the midst of dangers and difficulties which would have disheartened persons of very considerable strength and firmness of mind. For this he was adapted by nature, having a strong constitution, inured to labour, and capable of undergoing the greatest hardships. His stomach bore without difficulty the coarsest and most ungrateful food; and he submitted to every kind of self-denial with the greatest indifference. To this strength of constitution he joined an invincible fortitude of mind, of which the circumnavigation of New Holland, and his voyage towards the South Pole, furnish innumerable instances. He was master of himself on every trying occasion; and the greater the emergency, the greater always appeared his calmness and recollection; so that in the most dangerous situations, after giving proper directions to his people, he could sleep soundly the hours that he had allotted to himself. That he possessed genius in an eminent degree cannot be questioned: his invention was ready, and capable not only of suggesting the most noble objects of pursuit, but the most proper methods of attaining them. His knowledge of his own profession was unequalled; and to this he added a very considerable proficiency in other sciences. In astronomy, he became so eminent, that he was at length enabled to take the lead in making the astronomical observations during the course of his voyages. In general learning he likewise attained to such a proficiency as to be able to express himself with clearness and propriety; and thus became respectable as the narrator, as well as the performer, of great actions. He was an excellent husband and father, sincere and steady in his friendship, and possessed of a general sobriety and virtue of character. In conversation he was unaffected and unassuming; rather backward in pushing discourse, but obliging and communicative to those who wished for information; and he was distinguished by a simplicity of manners almost universally the attendant of truly great men. With all these amiable qualities, the Captain was occasionally subject to an hastiness of temper, which has been set forth in its utmost extent, if not exaggerated by some, though but few, who are not his friends: but even these, as well as others, when taking a general view of his character, are obliged to acknowledge that he was undoubtedly one of the greatest men of his age.

Captain Cook is distinguished as an author by an account of his second voyage written by himself. His first voyage, as well as that of several other navigators, had been recorded by Dr Hawkesworth; but on the present occasion it was not judged necessary to have recourse to any other than the pen of the author himself; and his journal, with a few occasional alterations, and being divided into chapters, was sufficient for the purpose. The style is clear, natural, and manly; and it is not improbable that even a pen of more studied elegance could not have made it appear to more advantage. When it appeared, which was not till some time after the author had left England, the book was recommend-

ed by the accuracy and excellency of its charts, and by a numerous collection of fine engravings done from the original drawings of Mr Hodges.

We cannot conclude this article without taking some notice of the honours paid to our celebrated navigator after his death, both by his own countrymen and those of other nations. Perhaps indeed it may be said with justice, that foreigners hold his memory in an estimation unequalled even in this country; a remarkable proof of which occurs in the eulogy upon him by Michael Angelo Gianetti, read in the Florentine academy on the 9th of June 1785, and published at Florence the same year. It is said also, that one of the French literary academies proposed a prize for the best eulogium on Captain Cook; and many poetical testimonies of his merit appeared in our own language. The Royal Society of London resolved to testify their respect to him by a medal, for which purpose a voluntary subscription was opened. A gold medal was given to such of the fellows as subscribed 20 guineas, and a silver one for those who subscribed smaller sums; and each of the other members received one of bronze. Those who subscribed 20 guineas were, Sir Joseph Banks president, the Prince of Anspach, the Duke of Montague, Lord Mulgrave, and Messrs Cavendish, Peachey, Perrin, Poli, and Shuttleworth. Many designs were proposed on the occasion; but the following was that which was actually struck. On one side was the head of Captain Cook in profile, with this inscription round it, JAC. COOK OCEANI INVESTIGATOR ACCERRIMUS; and on the exergue, REG. SOC. LOND. SOCIO SUO. On the reverse is a representation of Britannia holding a globe, with this inscription round her, NIL INTENTATUM NOSTRI LIQUERE; and on the exergue, AUSPICIIS GEORGH III. One of the gold medals struck on this occasion was presented to the king, another to the queen, and a third to the prince of Wales. Another was sent to the French king on account of the protection he had granted to the ships; and a second to the empress of Russia, in whose dominions they had been treated with every expression of friendship and kindness. Both these great personages condescended to accept of the present with marks of satisfaction. The French king wrote a handsome letter to the Society, signed by himself, and undersigned by the Marquis de Vergennes; and the Empress of Russia commissioned Count Osterman to signify to Mr Fitzherbert the sense she had of the value of the present, and that she had caused it to be deposited in the museum of the Imperial Academy of Sciences. As a further testimony of the pleasure she derived from it, the empress presented to the Royal Society a large and beautiful gold medal, containing on one side the effigies of herself, and on the other a representation of the statue of Peter the Great. After the general assignment of the medals, which took place in 1784, there being a surplus of money still remaining, it was resolved by the president and council, that an additional number of medals should be thrown off, to be disposed of in presents to Mrs Cook, the Earl of Sandwich, Dr Benjamin Franklin, Dr Cooke provost of King's College Cambridge, and Mr Planta. At the same time it was agreed that Mr Aubert should be allowed to have a gold medal of Captain Cook on his

Cook. paying for the gold and the expence of striking it, in consideration of his intention to present it to the King of Poland.

During the two visits of the ships at Kamtschatka, Colonel Behm, the commandant of that province, had bestowed, in the most liberal manner, every kind of assistance which it was in his power to bestow; and such was the sense entertained by the lords of the admiralty of the kindness he had showed, that they determined to make him a present of a magnificent piece of plate, with an inscription expressive of his humane and generous conduct. The inscription was drawn up by Dr Cooke, and afterwards submitted to the opinion and correction of some gentlemen of the first eminence in classical taste.

Sir Hugh Palliser, who had all along displayed an uncommon respect and kindness for Captain Cook, likewise displayed his regard for his memory in a most eminent manner. On his estate in Buckinghamshire he constructed a small building with a pillar, containing the character of Captain Cook, which is given at the end of the introduction to the last voyage. This was drawn up by the Honourable Admiral Forbes, admiral of the fleet and general of the marines, to whom Captain Cook was known only by his merit and extraordinary actions.

Amidst all these expressions of unavailing praise, it was not forgotten to show some essential service to the widow and family of our celebrated navigator. A memorial for a pension of L. 200 *per annum* was given in to the king from the commissioners of the admiralty, and signed by the Earl of Sandwich, Mr Butler, the Earl of Lisburne, Mr Penton, Lord Mulgrave, and Mr Mann. His Majesty complied with the request of the memorial, and the grant was passed through the usual forms with all possible speed. By this L. 200 *per annum* were settled on the widow during life; and L. 25 a-year on each of her three sons. After her death the L. 200 was to be divided between her children; a fourth was allotted to Captain King, and the remaining fourth to Mr Bligh and the representatives of Captain Clerke.

The last honour paid to the memory of Captain Cook was the granting a coat of arms to the family, which was done by patent on the 3d of September 1785; and of this we have the following description. Azure, between the two polar stars: Or, a sphere on the plane of the meridian, north pole elevated, circles of latitude for every ten degrees, and of longitude for every 15; showing the Pacific Ocean between 60° and 240° west, bounded on one side by America and on the other by Asia and New Holland; in memory of the discoveries made by him in that ocean, so very far beyond all former navigators. His track thereon is marked with red lines; and for crest, in a wreath of the colour is an arm imbowed, vested in the uniform of a captain of the Royal Navy. In the hand is the Union Jack, on a staff proper. The arm is encircled by a wreath of palm and laurel.

Cook's Discoveries. The number of countries discovered by Captain Cook, and which had never before been visited by any European, is very considerable; but it was a remarkable property of our celebrated navigator, that, wherever he touched, every thing relative to the place was determined with such accuracy and

precision, that all former accounts seemed to go for nothing, and the discovery to belong entirely to Captain Cook. Thus it was not unusual with him to make discoveries in places already well known; and thus his voyages have conveyed a vast fund of knowledge perfectly original. Though the accounts of the different places, therefore, at which he touched, are particularly given under their names in the order of the alphabet, we shall in this article endeavour to join the whole together in such a manner as to give the reader some idea of the benefit which has accrued to science from voyages attended not only with much expence and labour, but even with the loss of the celebrated navigator's life.

When he set out in the Endeavour in the year 1768, the first place touched at was Madeira. Here Mr Banks and Dr Solander, besides some additions to the science of botany, discovered undoubted marks of the island having a volcanic origin. On leaving this place they found it necessary to touch at Rio de Janeiro for provisions; and during the run thither the commander had an opportunity of determining the cause of the luminous appearance of the sea. On the 29th of October they observed that the water frequently emitted flashes like lightning, though much smaller; but such was their frequency, that eight or ten of them were visible almost at the same moment. This appearance they found, both at this time and afterwards, to arise from a small kind of animal with which the water abounded. While staying at Rio de Janeiro, a melancholy observation was made of the prodigious waste of human lives with which the working of the Portuguese gold mines was attended, no fewer than 40,000

negroes being annually imported for this purpose, none of whom, it seems, survive the labour of the year; and our navigator was informed, that in 1766 this number was so far short, that they were obliged to draught 20,000 more from the town of Rio itself. Proceeding from thence to the southern coasts of America, he had an opportunity of determining a question of great importance to navigation, viz. whether, in sailing to the Pacific Ocean, it is better to pass through the straits of Magellan, or to double Cape Horn and sail through those of Le Maire? From Captain Cook's voyage it appears, contrary to the opinion of former navigators, that the latter is the preferable passage. Through this he was only 33 days in coming round the land of Terra del Fuego from the east entrance of the strait of Le Maire till he had advanced about 12 degrees to the westward, and three and a half to the northward, of Magellan's straits. During all this time the ship scarcely received any damage, though if he had passed the other way he could not have accomplished his passage in less than three months, besides immense fatigue to his people and damage to the ship. In these stormy regions, however, he experienced the same inconveniences felt by other navigators; such a sea being met with off Cape Diego, that the ship frequently pitched her bowsprit under water. Here also the excessive cold and mutability of weather in these southern regions was experienced in such a manner as had nearly proved fatal to some of the gentlemen who sailed along with him. Dr Solander, Mr Banks, Mr Monkhouse the surgeon, and Mr Green the astronomer, with their attendants and servants, set out on a botanical

Cook's Discoveries.

1
Madiera, a volcanic island.

2
Luminous appearance of the sea occasioned by animals.

3
Vast number of negroes destroyed by the working of the gold mines.

4
Best passage into the Pacific Ocean through the Straits of Le Maire.

5
Excessive storms and cold in the southern regions.

Cook's Discoveries

Cook's Discoveries

cal expedition while the ship lay at anchor in the bay of Good Success. It was then the middle of summer, and the morning on which they set out was as mild and warm as it usually is in the month of May in England: but having ascended a mountain for the purpose of botanizing, they were surpris'd by such storms of snow and hail that they could not get back that night. Dr Solander, who warn'd them of their danger, that people when about to perish with cold were seiz'd with a violent inclination to sleep, was the first who seem'd likely to fall a victim to it; and it was not in the power of his companions to keep him from sitting down for that purpose. He was awak'd in a few minutes; but during this short interval his feet had become so much diminished by the contraction of the vessels, that his shoes fell off from them when he was again made to rise. Even these dreary regions, however, are not without inhabitants, whom our voyagers justly concluded to be the lowest of the human species. Indeed, considering the little convenience they have, it is wonderful how they can resist the severity of the climate, for they are almost without clothing; they dwell in miserable hovels, which admit both the wind and snow or rain; and they have not any utensil for dressing their food. Nevertheless, these miserable creatures, as they appear'd to our navigators, seem'd to have no wish to possess more than they enjoy'd; and they were absolutely indifferent about every thing that was offer'd them, except large beads which they would take as ornaments. Hence Dr Hawkesworth, who wrote the account of the voyage, concludes, that these people may be on a level with ourselves with respect to the real happiness they enjoy.

Miserable state of the natives.

Islands discovered between Cape Horn and Otaheite.

Transit of Venus observed.

On the 26th of January 1769 our navigators left Cape Horn; and from that time to the first of March, during which they run no less than 660 leagues, met with no current by which the ship was affected. Hence it is probable, that during all this time they had never been near any land, the currents of the ocean being usually met with in the neighbourhood of islands. Several islands, however, were discovered before they reach'd Otaheite, on which they bestow'd the names of Lagoon Island, Thrumb-cap, Bow Island, the Groups, Bird Island, and Chain Island. All these seem'd to be inhabited, and were covered with a most delightful verdure; which appear'd to the greater advantage, as our navigators had for a long time seen no land but the dreary hills and wastes of Terra del Fuego. Having arriv'd at Otaheite, they set about observing the transit of Venus over the sun, which indeed was the main purpose for which the voyage had been undertaken. The anxiety which they underwent when the time of the expected phenomenon approach'd may easily be imagin'd, as the whole depend'd on the circumstance of a clear sky, which though more readily to be expect'd in that climate than one more to the northward, was still a matter of uncertainty. In consequence of some hints which had been given by the Earl of Morton, Captain Cook determin'd to send out two parties to different places to make the observations; by which means there would be a chance of success, even if those at Otaheite should fail. For this purpose he sent Mr Gore in the long-boat to Eimeo, a neighbouring island, along with Mr Monkhouse, Mr Banks, and Mr Sporing, who were furnish'd with proper instruments by

Mr Green the astronomer. Messrs Hicks, Clerke, Pickersgill, and Saunders, were sent in the pinnace to a convenient spot to the eastward of the main observatory, where they were likewise order'd to make observations with such instruments as they had. The day on which the transit happen'd was the 3d of June 1769, when they had the satisfaction to see the sun rise without a cloud; and as the weather continu'd equally clear throughout the day, there was the best opportunity of making the observations in a proper manner. All of them saw an atmosphere or dusky cloud round the planet, which disturb'd their observation, and probably caus'd them to differ from each other more considerably than they would otherwise have done. According to Mr Green, the times of ingress and egress of the planet were as follow:

	MORNING.	h.	min.	sec.
First external contact,	-	9	25	42
First internal contact, or total immersion,	-	9	44	4
AFTERNOON.				
Second internal contact,	-	3	14	8
Second external contact, or end of the transit,	-	3	32	10

From these observations the latitude of the observatory was found to be 17° 29' 15" S. and the longitude 149° 32' 30" W. of Greenwich. Several curious remarks were made both on the country itself and on the inhabitants. Mr Banks, in an excursion up the country, discover'd many traces of volcanic fire; the stones, like those of Madeira, had evidently the appearance of being burnt, and the very clay on the hills had the same appearance. The natives, though addicted to thieving, appear'd in general harmless and friendly, and very ready to supply the ship with necessaries in exchange for such things as they want'd. The articles on which they set the greatest value were hatchets, axes, large nails, spikes, looking glasses, and beads. They were also fond of fine linen, whether white or printed; but an axe of the value of half a crown would buy more provisions than a piece of cloth of the value of 20 shillings. They are very fickle and inattentive; so that it was not possible to engage them to pay any regard to the worship of the Deity which they saw perform'd before them; nor would they attend to any explanation of it that was given them. They are not, however, destitute of a religion of their own; and are particularly careful of the repositories of the dead, which they will not allow to be violat'd on any account. Of this Captain Cook had an instance, when some of his people offer'd to take down an inclosure of one of these repositories. They were violently oppos'd by the natives, who sent a messenger to acquaint them that they would never suffer any such thing; and the only insult that ever was offer'd to an Englishman by the people of this island was on a similar account. From Otaheite our navigators carried with them Tupia, formerly high-priest of the country and prime minister to Queen Oherea. From his practice it appear'd that the priests of Otaheite, as well as elsewhere, take care to place themselves a step nearer the Deity than the common people, and to use the deceptions too frequently put in practice by such mediators. While on board the Endeavour, he frequently pray'd to his god *Tane* for a wind; and according to

[S] Otaheite volcanic island.

9 Account of the natives.

Cook's
Discoveries.

his own account never failed of success. This, however, he took care to ensure; for he never began his prayers till he perceived the breeze already on the water, and so near that it must reach the ship before they could well be ended. It was observed likewise of the people of Otaheite, that they had their bards or minstrels, who went about the country with musical instruments. The band whom they saw at this time consisted of two players on flutes and three drummers; the latter accompanying the flutes with their voices. Their songs were made extempore, and the English themselves were generally the subject.

10
Society
Islands discovered.

From Otaheite our navigators sailed towards a neighbouring island named *Tethuroa*; but finding it small, low, and without any settled inhabitants, the Captain chose rather to direct his course towards Huaheine and Ulietea, which he was informed were well inhabited. These had never been visited by any European ship: but the inhabitants, though peaceable and friendly, were very slow and cautious in trading, so that the Captain was obliged to bring out his hatchets to market; a commodity which he had hoped might have been concealed from those who had never seen an European ship before. On his arrival at Ulietea he found, by the discourse of Tupia, that the inhabitants of a neighbouring island named *Bolabola* were of such a martial disposition as to be the terror of those of Huaheine, Ulietea, and others, insomuch that he apprehended great danger to our navigators should they touch at an island which the Bolabola men had lately conquered. This, however, had so little effect upon Captain Cook, that he not only landed on the island already mentioned, but took possession, in his Majesty's name, of Bolabola itself, together with Ulietea, Huaheine, and another named Otaha, which were all visible at once. During their stay here they paid a visit to Opoony, the formidable monarch of Bolabola; whom, to their surprise, they found a feeble wretch, withered and decrepid, half blind with age, and so stupid that he seemed scarce to be possessed of a common degree of understanding. About these islands they spent six weeks, bestowing upon them the name of the *Society Isles*, on account of their being so near to each other. They are six in number, Ulietea, Huaheine, Bolabola, Otaha, Tubai, and Maurua. The smaller ones in their neighbourhood are Tethuroa, Eimeo, Tapoamanoa, Oatara, Opururu, Tamou, Toahoatu, and Whennuaia.

11
Wretched
appearance
of the king
of Bolabola.

12
Oheteroa
island discovered.

Leaving the Society Islands, which are situated between Lat. 16. 10. and 16. 55. S. and between 150. 57. and 152. W. from the meridian of Greenwich, they fell in with the island of Oheteroa, situated in S. Lat. 22. 27. and W. Long. 150. 47.; but this was found to be destitute of any harbour or safe anchorage, and the disposition of the inhabitants so hostile that they could not by any means be conciliated, so that no attempts were made to land. From Tupia Captain Cook learned that there were several islands in the neighbourhood, which our navigator conjectured to be Boscawen and Keppel's Islands, discovered by Captain Wallis; but without spending more time in exploring these, he set sail to the southward in search of a continent.

13
Comet of
1769 observed.

Our voyagers left Oheteroa on the 15th of August 1769, and on the 30th had a view of the comet which

appeared that year; its tail subtending on an angle of 42 degrees. This proved a new source of apprehension to Tupia, who instantly cried out, that as soon as it was seen at Bolabola, the people of that country would attack those of Ulietea, who would undoubtedly be obliged to fly with precipitation to the mountains to save their lives. On the 6th of October they discovered land, which from its size, and the enormous mountains observable on it, was supposed by the gentlemen on board to be part of *Terra Australis incognita*; but on farther examination it was found to be part of New Zealand. Here the inhabitants were found to speak a dialect of the language of Otaheite, so that they could understand Tupia, and lie them; yet so extremely hostile were their dispositions, that not the smallest intercourse could be held with them; nor could any thing necessary for the ships be procured excepting wood: so that the name Captain Cook thought proper to bestow on this part of the country was *Poverty-Bay*. By the natives it is called *Taoneroa*, and lies in S. Lat. 38. 42. and W. Long. 181. 36. During the time of his stay in this part of the world the Captain circumnavigated almost the whole country of New Zealand, which he found to consist of two islands separated from each other by a narrow strait, which, from its discoverer, has obtained the name of *Cook's Strait*. In some places the disposition of the inhabitants was as favourable as could be wished; so that Dr Solander, Mr Banks, and other gentlemen, had an opportunity of exploring the country in some degree, with a view to discover its natural productions. In one of their excursions, as they passed through a valley, the hills on each side of which were very steep, they were suddenly struck with the sight of a very extraordinary natural curiosity. It was a rock perforated through its whole substance, so as to form a rude but stupendous arch or cavern, opening directly to the sea. This aperture was 75 feet long, 27 broad, and 45 in height, commanding a view of the bay and the hills on the other side, which were seen through it; and opening at once on the view, produced an effect far superior to any of the contrivances of art. On that part of the coast, which, from having observed a transit of Mercury, they named *Mercury bay*, oysters were found in such plenty, that they might have loaded not only their boats but even their ship with them. They were about the same size with those met with in this country; and on account of their being found in such plenty, and likewise that the adjacent country abounds with conveniences, Captain Cook was at great pains to point out the situation of the place. By his observations, the latitude of Mercury bay is 36° 48' 28" S.

Cook's
Discoveries.

14
They arrived at New Zealand.

15
Rock of an extraordinary shape.

16
Natural products of the country.

Leaving this bay our commander proceeded to explore other parts of the country, which by their account seems to abound with rivers. Two large ones were met with in Mercury bay; one of which, from the abundance of oysters found at its mouth, was called *Oyster river*; the other they named *Mangrove river*, from the number of mangrove trees growing there. A third, which they called *Thames*, was met with in that part called the Bay of Islands, up which they sailed 14 miles. Its banks were every where adorned with lofty trees, which they had likewise observed in other parts of the country. They were too heavy for mats,

Cook's
Discoveries.

masfs, but would make the finest planks imaginable; and as they resembled the pitch pine, the timber of which is lightened by tapping, the carpenter was of opinion that they might thus be rendered more proper for masfs than any European timber. One of these trees measured 19 feet 8 inches in circumference at the height of six feet from the ground, and was no less than 89, with very little taper, to the branches; so that the lieutenant supposed it must contain 356 feet of solid timber. In Queen Charlotte's Sound, the country was little other than one vast forest, with plenty of excellent water, and the coast abounding with fish. As the ship lay at the distance of only a quarter of a mile from the shore, they were agreeably entertained with the singing of an infinite number of small birds, which formed a melody greatly superior to any thing they had ever heard before. The music of these little choristers seemed to be like small bells, most exquisitely tuned, though probably the distance and intervention of the water had a considerable effect in heightening it. They began to sing about two in the morning, and continued their song till sun-rise, after which they were silent all the day, resembling in this respect the nightingales of our own country.

17
General
description
of the coun-
try.

The time which Capt. Cook spent in exploring the coasts of New Zealand was not less than six months. By his researches it was shown to consist of two large islands, the most northerly of which is called *Eaheinomauwe*, and the most southerly *Tovy*, or *Tavai Poenamoo*; though it is not certain whether the whole southern island or only a part of it is comprehended under this name. This island seems to be barren and mountainous, but *Eaheinomauwe* has a much better appearance; and it was universally believed by the gentlemen on board, that all kinds of European grain, as well as garden plants and fruit, would flourish in the greatest abundance and perfection; and from the vegetables found here it was concluded that the winters are not more severe than those of England, and it was known by experience, that the summer was not hotter, though the heat was more equal than in this country. Here are no quadrupeds except dogs and rats; and the latter are so scarce, that they escaped the notice of many on board. The birds are not numerous, and the gannet is the only one of the European kind that was observed. The insects are equally scarce; but the sea makes abundant recompence for this scarcity of land animals; every creek swarms with fish, equally delicious with those in this country. The forests are of vast extent, and filled with excellent timber trees, the largest, straightest, and cleanest that Mr Cook had ever seen. There is here one plant which answers the purposes of both hemp and flax, and excels all other of the kind that has been met with in other parts of the world. If the settling of New Zealand therefore should ever be deemed an object worthy of the attention of Great Britain, Captain Cook was of opinion, that the best place for establishing a colony would be either on the banks of the Thames or in the Bay of Islands; each of these places having the advantage of an excellent harbour. Settlements might be extended, and a communication made with the inland parts of the country by means of the river; and vessels easily constructed of the excellent timber with which the country every where abounds.

18
proper
place for
settling a
colony
here.

The inhabitants of New Zealand are in a very barbarous state, and have a degree of ferocity unknown to the inhabitants of the South-Sea islands, though they seem to have the same origin. During their residence there, our navigators had the most convincing evidences of their being cannibals, and accustomed to devour the bodies of their slain enemies. Notwithstanding these barbarous practices, however, they seemed to enjoy a state of uninterrupted health. In all the visits made to their towns, none was ever perceived who had the least bodily complaint, not even the slightest eruption on the skin. This extraordinary degree of health was likewise manifested by the ease with which their wounds were healed without the smallest application, as well as by the number of old men with which the island abounded. Many of these, by the loss of their hair and teeth, seemed to be extremely old, but none of them were decrepid; and though inferior in strength to the young men, they came not behind them in the least with regard to cheerfulness and vivacity. The universal and only drink of the New Zealanders is water.

Cook's
Discoveries.19
Account of
the inhabi-
tants.

Our navigator had now explored three-fourths of that part of the globe where the southern continent was supposed to lie, without being able to find it; and his voyage had demonstrated, that the lands seen by former navigators could not have been parts of such a continent, though, as he had never proceeded farther to the southward than 40 degrees, the arguments for it were not as yet entirely overthrown. Mr Cook, however, did not at this time proceed farther in the search of such a continent, but sailed from New Zealand to the coasts of New Holland, where he anchored in Botany Bay on the 20th of April. Here he found a few savage inhabitants more barbarous and degenerate than any that had yet been observed. Their language was harsh and dissonant, totally unintelligible even to Tupia; they appeared to have little curiosity, and set no value upon any present that could be made them. The most remarkable circumstance in this country seems to be its extreme scarcity of water; not a single stream of any consequence having ever been observed by any navigator. Some were of opinion indeed, that Moreton's Bay, in S. Lat. 26. 56. and W. Long. 206. 28. opens into a river; though the only reason they had for this opinion was, that the sea looked paler in that part than usual, and the land at the bottom part of the bay could not be seen. At this time, however, the matter could not be determined by experiment, on account of the wind being contrary. The scarcity of water here is the more surprising, on account of the vast extent of the country, and likewise its having an abundance of tolerable high hills. In this island there were found many curious plants and animals; and it was found, that in several places the magnetical needle was affected to such a degree as to vary its position even to 30 degrees. At one time it varied no less than two points on being removed to the distance of only 14 feet. Some of the loose stones being taken up and applied to the needle produced no effect; but Mr Cook was of opinion that the whole phenomenon was to be ascribed to iron ore in some of the mountains, and of which traces had been already met with. This irregularity continued in some degree even at sea; for when the ship was close under Cape Upstart, the variation

20
Discoveries at
New
Holland.21
Magnetic
needle sur-
prisingly af-
fected.

Cook's Discoveries.

ation of the needle in the evening of the 4th of June was 9. East, and next morning only 5. 35.; and this was in like manner accounted for from iron ore, or some magnetical matter below the surface of the ground. The great island has many other small ones round it; several of which were visited by our navigators. One of them named *Eagle Island*, seemed to be inhabited by a monstrous kind of birds, the nest of one of which measured no less than 26 feet in circumference and two feet eight inches in height; and in the Philosophical Transactions, vol. xx. there is an account of one of these nests still larger; but the bird to which it belonged was not seen. That which our navigators saw was built of sticks, and lay upon the ground.

22
Birds nests of an immense size.

23
Vast extent of the country.

The country which goes by the name of *New Holland* is by far the largest island in the world. Its eastern part, called *New South Wales*, now first explored by Captain Cook, extends upwards of 2000 miles in length, if the coast were reduced to a straight line. Though inhabited, as we have already said, by very barbarous savages, their number appears to bear no proportion to the extent of their territory. The intercourse they had with our navigators was so small, that they could pick up but a few words of their language. As a British settlement, however, is now made in that country, there is no doubt that much more exact and accurate accounts will soon be obtained than even the diligence and attention of Captain Cook could collect on such a transient visit.

24
Separated by straits from New Guinea.

In this voyage our navigator, besides exploring the eastern part of the island, which had never been done before, discovered that it was separated from the island of New Guinea, to which it had formerly been thought to join. The two countries are separated by a strait to which the commander gave the name of *Endeavour Strait*. The north entrance of this lies in S. Lat. 10. 39. and W. Long. 218. 36. the passage is formed by the main land and a congeries of islands to the north, on which our navigator bestowed the name of *Prince of Wales's Islands*. These are very different both in height and extent; and the Captain was of opinion that several passages might be found out among them. On the coast of New Holland opposite to New Guinea are found cockles of an immense size; some of them being as much as two men could move, and containing 20 pounds of good meat. In these seas as well as on the coasts of Brazil, our navigators found the surface of the water covered with a kind of scum, called by the sailors *sea-spawn*. It was examined by Mr Banks and Dr Solander; but they could determine nothing farther than that it was of vegetable origin.

25
Cockles of vast size, sea scum, &c.

26
Unaccountable method of the natives of letting off fires.

The natives of New Guinea were so hostile that no discoveries of any consequence could be made. They resembled the New Hollanders in stature, and having short cropped hair. Like them too they were absolutely naked, but somewhat less black and dirty. They had a surprising method of letting off a kind of fires, exactly resembling the flashes of fire-arms, but without any explosion. It was not known in what manner this was done, as they were never near enough to make a particular observation. Those who discharged them had a short piece of stick which they swung sideways from them, upon which there issued the fire and smoke just mentioned. This seems to have been in-

tended as a defiance; for they had no effect as offensive weapons, and others were armed with bows and arrows. The country appeared extremely pleasant and fertile. The place at which they touched lies in S. Lat. 6. 15.

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As the condition of the *Endeavour* was now very much shattered by having sailed so long in these dangerous seas, the commander determined to make the best of his way for Batavia in order to refit. In this voyage he first passed two unknown islands without touching at either of them. They were supposed to belong to the Aurora islands; but if this be the case, the latter must be laid down at too great a distance from New Guinea. The Weasel Isles, laid down by former navigators at about 20 or 25 leagues from the coast of New Holland, were not seen; for which reason Mr Cook is of opinion that they are erroneously laid down.

Passing by the islands of Timor, Timor-lavet, Rotta, and Seman, they next arrived at the island of Savu, where a settlement had lately been made by the Dutch. In this voyage they had the satisfaction of observing the aurora australis, which here seemed to differ in some respects from that in the northern hemisphere. It consisted of a dull reddish light extending about 20 degrees above the horizon; and though it varied at some times in extent, it was never less than eight or ten degrees. From this general mass of light there sometimes issued rays of a brighter colour, which vanished and were renewed like those of the aurora borealis, but without any of that tumultuous motion observed in the aurora borealis. The body of the light bore S. S. E. from the ship, and continued without any diminution of its brightness from 10 to 12 at night.

27
Aurora Australis.

The middle part of the island of Savu lies in 10° 35' south, and 237° 30' west longitude, and afforded a most beautiful prospect from the ship. The people are remarkable for the purity of their morals, which are said to be irreproachable, even on the principles of Christianity. Though no man is allowed to have more than one wife, instances of illicit commerce betwixt the sexes are scarce known among them. Instances of theft are likewise very rare; and so far are they from revenging a supposed injury by murder, that when any differences arise among them, they are immediately and implicitly referred to the determination of the king. They will not even make it the subject of private debate, lest they should be provoked to resentment and ill-nature; and the delicacy and cleanliness of their persons are said to be proportionable to the purity of their morals.

28
Excellent character of the inhabitants of Savu.

On the arrival of the *Endeavour* at Batavia, our navigator had an opportunity of observing the good effects of the electrical chains applied to ships in securing them from the effects of lightning. A dreadful storm of thunder happened one evening, during which the main-mast of one of the Dutch East India-men was split and carried away close by the deck, the main-top-mast, and top-gallant-mast being shivered to pieces. This ship lay near the *Endeavour*, that the latter would probably have shared the same fate, had it not been for the conducting chain which fortunately was just put up. The explosion shook her like an earthquake, the chain at the same time appearing like

29
Good effects of the electrical chains in preserving from the effects of lightning.

Cook's
Discoveries30
Death of
Tupia.

a line of fire. The stroke seemed to have been directed to the Dutch vessel by an iron spindle at the mast head; which practice our commander discommends, but strongly advises the use of the electrical chain.

On their landing at Batavia, Tupia was confined by sickness, so that he appeared quite lifeless and dejected when put into the boat; but on his arrival at land recovered his spirits surprisingly. The scene, to him so new and extraordinary, seemed to produce an effect similar to what is ascribed to enchantment. His attention was particularly engaged by the various dresses of the people; and being informed that at Batavia every one appeared in the dress of his own country, he expressed a desire of likewise appearing in the garb of Otaheite. Having therefore been furnished with South Sea cloth from the ship, he equipped himself with great quickness and dexterity. After the first flow of spirits had subsided, however, he soon began to feel the fatal effects of the climate; and his boy Tayeto, whose spirits had been still more elevated on his arrival, was attacked with an inflammation of the lungs, and in a little time fell a victim to the disease. Tupia himself did not long survive him, and his death was not attributed entirely to the unwholesomeness of the climate. Having been accustomed from his infancy to subsist chiefly upon vegetable food, and particularly on ripe fruit, he had soon contracted the disorders incident to a sea-life, and could scarce have been expected to reach England, even if the unwholesome climate of Batavia had been out of the question.

The Endeavour left Batavia on the 27th of December 1770, and on the 5th of January 1771 reached Prince's Island. This place had been formerly much frequented by the India ships, but of late entirely deserted on account of the supposed bad quality of the water: but this our navigator has discovered to be a mistake; and that though the water near the sea is brackish, it may be had of excellent quality by going a little way up the country. He is of opinion that this island is a more proper place for ships to touch at than either North Island or New Bay, because neither of these can afford other refreshments which may be had at Prince's Island.

The rest of this voyage affords little interesting matter. The Cape of Good Hope, which was their next stage, has been so fully described by former navigators that there was little room for addition. At St Helena the commander made some remarks on the rigorous treatment of the slaves, which was represented as worse than that of the Dutch either at Batavia or the Cape of Good Hope. In the account of his second voyage, however, this accusation was retracted.

Captain Cook's second voyage was undertaken in an especial manner to determine finally the question concerning the existence of a southern continent. It commenced in the year 1772; and, as in the former, he proceeded first to Madeira. From thence he proceeded to St Jago, one of the Cape de Verde Islands; where an opportunity was taken of delineating and giving such a description of Port Praya, and the supplies to be there obtained, as might be of use to future navigators. On the 8th of September he crossed the line in 8° west longitude, and had the satisfaction to meet with good weather, though he had been informed that

he had sailed at an improper time of the year, in consequence of which he would probably be becalmed. From his account, however, it appears, that though in some years such weather may be expected, it is by no means universally the case. In this part of the ocean he had also an opportunity of observing the cause of the luminous property of sea-water, which in his former voyage had been attributed to insects. Mr Forster being of a different opinion, the matter was again particularly inquired into, but the result was entirely conformable to the former determination. Some buckets of water being drawn up from along side the ship, were found to be filled with those insects of a globular form, and about the size of a small pin's head. No life indeed could be perceived in them; but Mr Forster was thoroughly convinced of their being living animals when in their proper element.

Proceeding southward in quest of a continent, they fell in with Ice Islands in S. Lat. 50. 40. and two degrees of longitude east from the Cape of Good Hope. One of these was so much concealed by the haziness of the weather, that it could not be seen at the distance of more than a mile. Captain Cook judged it to be about 50 feet in height and half a mile in circumference; its sides rising in a perpendicular direction, and the sea breaking against them with great violence. Two days after, they passed six others, some of which were two miles in circumference and 60 feet in height; yet such was the strength and violence of the waves that the sea broke quite over them. On the 14th they were stopped by a vast field of low ice, of which they could perceive no end. In different parts of this field there were seen islands or hills of ice like those already described, and some of the people imagined that they saw land over them; but upon a narrow examination this was found to be a mistake. On getting clear of the field of ice they again fell in with loose islands; and as it was a general opinion that these are only formed in bays and rivers, our navigators concluded that they could not be at a great distance from land. They were now in the latitude of 55° 40' south; and as they had sailed for more than 30 leagues along the edge of the ice without finding any opening, the Captain determined to run 30 or 40 leagues farther to the eastward, in hopes of then getting to the southward. If in this attempt he met with no land or other impediment, his design was to stretch behind the ice altogether, and thus determine the matter at once. In a short time, however, it became evident that the field of ice along which they had sailed so long did not join with any land; and the Captain now came to a resolution of running as far to the west as the meridian of Cape Circumcision. In the prosecution of this design he met with a very severe storm, which was rendered the more dangerous by the pieces of loose ice among which they were still entangled, and a vast field of which they could not perceive the boundaries, about three miles to the northward. Of this they could not get clear without receiving some severe strokes; and after all, when they arrived at the place where they ought to have found Cape Circumcision, it could not be discovered; so that the Captain concluded that what Bouvet took for land could have been nothing but ice.

During this run the fallacy of the general opinion

Cook's
Discoveries.33
Calms not
always to
be feared
near the
equinoctial.34
Luminous
quality of
sea-water
further de-
termined.35
Ice islands.31
Prince's
Island, a
proper
place for
ships to
touch at.32
Second
voyage.

had

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36
Ice not always found in the vicinity of land.

had been discovered, that the ice with which the polar regions abound has been formed in the vicinity of land. It was found likewise, that the water produced from the melting of ice, even though formed in the ocean, was perfectly sweet and well tasted. Of this circumstance the Captain took advantage to supply himself with water; and gave it as his opinion, that it was the most expeditious method of watering he had ever known. He had likewise an opportunity of detecting another popular error, *viz.* that penguins, albatrosses, and other birds of that kind, never go far from land. This indeed may be the case in open seas, but in such as are covered with ice it is very different; for they then inhabit the ice islands, and float out with them to sea to a great distance.

37
Irregularity of the magnetic needle.

When in the latitude of 49. 13. S. some signs of land were perceived; but as the wind did not admit of any search being made in the direction where it was supposed to lie, the Captain proceeded in his voyage to the eastward. A very remarkable alteration in the direction of the needle was now perceived, and which could not be supposed owing to the vicinity of any magnetic matter, as it happened while the ships were far out at sea. The circumstance was, that when the sun was on the starboard side of the ship the variation was least, but greatest when on the opposite side. An aurora australis was again observed, which broke out in spiral or circular rays, and had a beautiful appearance; but did not seem to have any particular direction, being conspicuous at various times in different parts of the heavens, and diffusing its light over the whole atmosphere.

38
Extreme cold of the southern seas.

The extreme cold and stormy weather which now began to take place, determined Captain Cook not to cross the antarctic circle a second time as he had once designed. His observations confirmed the accounts of former navigators, that the cold of the southern seas is much more intense than in equal latitudes in the northern hemisphere; but at the same time it showed that this cold cannot be owing to the vicinity of a continent, as had formerly been imagined. On the contrary, it was now determined beyond dispute, that if any such continent existed in the eastern part of the southern ocean, it must be confined within the latitude of 60 degrees. No farther discoveries therefore being practicable in higher latitudes, as the winter season was approaching, the commander steered for New Zealand, where he anchored in Dusky Bay on the 25th of March, having been at sea 117 days without once

39
Farther account of New Zealand.

coming in sight of land. Here the time was spent in procuring proper refreshments for the people, and exploring the sea-coast and country for the benefit of future navigators. Nor was our commander unmindful of the inhabitants. Here he left the five geese which yet remained, choosing for them a place where there were no people at the time to disturb them; and as they had there great plenty of food, he had no doubt of their breeding, and in a short time spreading over the country. Some days after a piece of ground was cleared by setting fire to the topwood, after which it was dug up and sowed with garden seeds. Dusky Bay is situated in the western island of New Zealand, called *Tarwaipoenamoo*, which, as has already been said, is less fertile than the other. The inland part is full of rugged mountains of a vast height: but the sea-coast

N^o 91.

is covered with trees, among which is the true spruce, which was found to be of great use. It was remarked, that though a vast quantity of rain fell during the time of residence here, it was not attended with any bad effects on the health of the people; which furnishes an additional argument of the healthiness of the place. Dusky Bay is reckoned by Captain Cook to be the most proper place in New Zealand for the procuring of refreshments, though it is attended with some disagreeable circumstances, particularly being infested with great numbers of black sand-flies, which were troublesome to an extreme degree. The natives seen at Dusky Bay were apparently of the same race with those seen in other parts of the country, and led a wandering life, without any appearance of being united in the bonds of society or friendship.

From Dusky Bay the Captain proceeded to Queen Charlotte's Sound, where he met with the *Adventure*, which had been separated from the *Resolution* for above 14 weeks. In his passage thither he had an opportunity of observing six water-spouts, one of which passed within 50 yards of the *Resolution*. It has been a common opinion, that these meteors are dissipated by the firing of a gun, and the Captain was sorry he had not made the experiment; but he acknowledges, that though he had a gun ready for the purpose, and was near enough, his attention was so much engaged in viewing them, that he forgot to give the necessary orders.

Having planted another garden in this part of the country, and left two goats, two breeding sows and a boar, in as private a situation as possible, that they might be for some time out of the reach of the natives, the Captain set sail for Otaheite. During the long absence of the *Adventure*, Captain Furneaux had visited the coast of New Holland, and discovered that there was no probability of Van Diemen's land being separated from it by straits: he had likewise found additional proofs that the natives of New Zealand were accustomed to eat human flesh. Captain Cook also remarked with concern, that the morals of the New Zealanders were by no means mended by the visit he had formerly paid them. At that time he looked upon the women to be more chaste than those of most of the nations he had visited; but now they were ready to prostitute themselves for a spikenail, and the men to force them to such an infamous traffic, whether agreeable to the inclinations of the females or not.

In the run from New Zealand to Otaheite, our commander passed very near the situation assigned by Captain Carteret to Pitcairn's island, discovered by him in 1767, but without being able to find it, though a sight of it would have been useful for correcting its longitude as well as that of others in the neighbourhood; but there was not at present any time to spend in searching for it. Proceeding farther on in his voyage, however, he fell in with a cluster of islands supposed to be the same discovered by M. Bougainville, and named by him the *Dangerous Archipelago*. To four of these Captain Cook gave the names of *Resolution*, *Doubtful*, *Furneaux*, and *Adventure* Islands. *Resolution* Island is situated in S. Lat. 17. 24. W. Long. 141. 39. *Doubtful* Island in S. Lat. 17. 20. W. Long. 141. 38. *Furneaux* Island in S. Lat. 17. 5. W. Long.

143.

Cook's Discoveries.

40
Water spouts.41
Discoveries of Captain Furneaux.42
New islands discovered.

Cook's Discoveries. 143. 16. and Adventure Island in S. Lat. 17. 4. and W. Long. 144. 30.

43 Mistake concerning the women of Otaheite corrected.

No discovery of any great consequence was made at the island of Otaheite or those in its neighbourhood, excepting that the Captain had an opportunity of correcting the opinion which till now had prevailed, of the excessive dissoluteness and immodesty of the women of Otaheite; and which had been enlarged upon by Dr Hawkefworth more than seemed to be consistent with decency. The charge, however, according to the accounts of this second voyage, is far from being indiscriminately true, even of the unmarried females of the lower class. Some additions were made to the knowledge of the geography of those islands; and from Huaheine Captain Furneaux took on board his ship one of the natives of Ulitea named *Omai*, afterwards so much spoke of in England. Captain Cook at first appeared dissatisfied with his choice of this youth, as being inferior in rank to many others, and having no particular advantage in shape, figure, or complexion; however he had afterwards reason to be better pleased. During the Captain's residence at Otaheite, he used his utmost endeavours to discover whether the venereal disease was endemic among them, or whether it had been imported by Europeans: but in this he could not meet with any perfectly satisfactory account; though it was universally agreed, that if it had been introduced by Europeans, it must have been by the French under M. Bougainville.

44 Harvey's island discovered.

Captain Cook having left Ulitea on the 17th of September 1773, directed his course westward, with an inclination to the south. In this course he discovered land in S. Lat. 19. 8. and W. Long. 158. 54. to which he gave the name of *Harvey's Island*. From thence he proceeded to the island of Middleburg, where he was treated in the most hospitable manner possible. To such an excess did the people carry their generosity, that they seemed to be more fond of giving away their goods than in receiving any thing for them; insomuch that many, who had not an opportunity of coming near the boats, threw over the heads of others whole bales of cloth, and then retired without either waiting or asking for any thing in return. From Middleburg he proceeded to Amsterdam Island, where the beauty and cultivation of the island afforded the most enchanting prospect. There was not an inch of waste ground; the roads were no wider than what was absolutely necessary, and the fences not above four inches thick. Even this was not absolutely lost; for many of these contained useful trees or plants.

45 South Sea lands generally surrounded by coral rocks.

It is observable of the isles of Middleburg and Amsterdam, as well as of most others in the South Sea, that they are guarded from the waves by a reef of coral rocks which extend about one hundred fathoms from the shore. Thus they are effectually secured from the encroachments of the ocean; by which they would probably soon be swallowed up, as most of them are mere points in comparison of the vast quantity of water which surrounds them. Here he left a quantity of garden vegetable seeds and pulse, which it was not doubted would be taken care of by the industrious inhabitants. In the last mentioned islands our navigators found no animals but hogs and fowls; the former being of the same kind with those usually seen in the other islands of the South Sea; but the latter greatly

preferable, equalling those of Europe in their size, and even preferable in respect of the goodness of their flesh.

Cook's Discoveries.

On the 7th of October Captain Cook left the island of Amsterdam, with a design to pay another visit to New Zealand, in order to take in wood and water for his voyage in quest of a southern continent. The day after he left Amsterdam, he fell in with the island of Piltart, formerly discovered by Tasman, and situated in S. Lat. 26', W. Long. 175° 59', 32 leagues distant from the east end of Middleburg. On his arrival at New Zealand, he exerted himself as much as possible to leave a proper assortment of vegetables and animals for the benefit of the inhabitants. One of the first things he did, therefore, was to make a present to a chief, who had come off in a canoe, of a quantity of the most useful garden seeds, such as cabbage, turnips, onions, carrots, parsnips, and yams; together with some wheat, French and kidney beans, and pease. With the same person he left also two boars, two fows, four hens, and two cocks. This present, however valuable in itself, seems to have been but indifferently received; for the chief was much better satisfied with a spiketail half the length of his arm than with all the rest; notwithstanding which, he promised to take care of the seeds, and not to kill any of the animals. On inquiring about those animals left in the country in the former part of his voyage, the Captain was informed, that the boar and one of the fows had been separated, but not killed. The other he saw in good condition, and very tame. The two goats, he was informed, had been killed by a native of the name of *Gauiah*. The gardens had met with a better fate; all the articles being in a very flourishing condition, though left entirely to nature, excepting the potatoes. Captain Cook, however, still determined to supply these islanders with useful animals, put on shore a boar, a young fow, two cocks and two hens, which he made a present of to the adjacent inhabitants. Three other fows and a boar, with two cocks and hens, he ordered to be left in the country without the knowledge of the Indians. They were carried a little way into the woods, and there left with as much food as would serve them for 10 or 12 days, in order to prevent them from coming down to the coast in quest of it, and thus being discovered.

46 Another visit to New Zealand.

A second separation with the Adventure had now taken place; notwithstanding which, Captain Cook set out alone with his vessel in quest of a southern continent; and such was the confidence put in him by the sailors, that all of them expressed as much satisfaction and alacrity as if not only the Adventure, but ever 10 many ships had been in company.

47 Voyage in quest of a southern continent.

On the 26th of November the Captain set sail from New Zealand; and on the 12th of December began to fall in with the ice, but considerably farther to the southward than they had met with it in the former part of his voyage; being now in the latitude of 62° 10' S. and 172° W. Long. As they proceeded southward, the number of ice islands increased prodigiously; and in Lat. 67° 31' and W. Long. 142° 54', they all at once got in among such a clutter of these islands, that it became a matter of the utmost difficulty and danger to keep clear of them. Finding it impossible, therefore, to get any farther to the southward at present,

Cook's
Discoveries.48
Is stopped
by ice.

the Captain determined to explore a considerable tract of sea to the north of his present situation, and then again to stand to the south. But in this he was still unsuccessful; no land being discovered either in sailing northward, eastward, westward, or southward; though he proceeded as far in the last direction as 71. 10. S. Lat. and 106. 54. W. It was now impossible to proceed; and the opinion of the Captain himself, as well as of most of the gentlemen on board, was, that the ice by which they were now stopped extended as far as the pole. As there was still room, however, in parts of the ocean entirely unexplored, for very large islands, our Commander determined not to abandon the pursuit in which he was engaged until there should not be any possibility of doing more; and besides the possibility of making new discoveries, he was conscious that many of the islands already discovered were so obscurely known, that it was of consequence to pay them a second visit. With this view he proposed to go in quest of Easter or Davis's Island; the situation of which was known with so little certainty, that none of the attempts lately made to discover it had been successful. He next intended to get within the tropic, and then to proceed to the west, touching at any islands he might meet with, and settling their situations, until he should arrive at Otaheite, where it was necessary for him to make some stay in order to look for the Adventure. It was part of his design also to run to the western as far as Terra Austral del Espiritu Sancto, discovered by Quiros, and which M. Bougainville had named *The Great Cyclades*. From this land he proposed to sail to the southward, and from thence to the east between the latitude of 50° and 60°. In the execution of this design, he determined if possible to reach Cape Horn during the ensuing November, when he would have the best part of the summer before him to explore the southern part of the Atlantic Ocean.

49
Nutritive
property of
dog's flesh.

In pursuing his course to the northward, it had been part of his design to find out the land said to have been discovered by Juan Fernandez in about the latitude of 38°; but he was soon convinced, that if any such land existed, it could only be a very small island: but the prosecution of the design was for some little time interrupted by a violent bilious disorder by which the Captain was attacked. In this, when he began to recover, as there was no fresh meat on board, he was obliged to have recourse to dog's flesh; and a favourite animal belonging to Mr Forster was sacrificed on the occasion. The Captain was able to eat not only of the broth made of this, but likewise of the flesh, when his stomach could bear nothing else. On the 11th of March they arrived at Easter Island, before which time the Captain was tolerably recovered. Here they made but few discoveries farther than determining the situation of it to be in S. Lat. 27° 5' 30", and W. Long. 109° 46' 20". The island itself was found barren and desolate, having every appearance of being lately ruined by a volcanic eruption; without either wood, fuel, or fresh water worth taking on board. The inhabitants were few in number; and the women in very small proportion to the men, but remarkable for their lewdness. A number of gigantic statues were observed, which had also been taken notice of by Commodore

50
Visits Easter
Island,

Roggewein, and the origin of which could not be accounted for.

Cook's
Discoveries.

On leaving Easter Island, Captain Cook was again attacked by his bilious disorder; but happily recovered before he reached the Marquesas, which they did on the 6th and 7th of April. One of these, being a new discovery, received the name of *Hood's Island*, from the young gentleman by whom it was first observed. These are five in number; situated between 9 and 10 degrees of south latitude, and between 138. 47. and 139. 13. of west longitude. They were discovered by Mendana a Spaniard; and their names are, La Magdalena, St Pedro, La Dominica, Santa Christina, and Hood's Island. The inhabitants are, without exception, the finest race of people in the South Sea, surpassing all others in that part of the world in the symmetry of their persons and regularity of their features. Their origin, however, from the affinity of language, was evidently the same with that of Otaheite. It was in St Christina that our commander anchored; and he has left particular directions for finding a particular cove in Resolution Bay in that island, which is the most convenient for procuring wood and water.

51
And the
Marquesas,

In the passage from the Marquesas to Otaheite, our navigators passed several low and small islands connected together by reefs of coral rocks. One of these, named by the inhabitants *Tiookea*, was visited by Lieutenant Cooper. It was discovered and visited by Captain Byron; and is situated in S. Lat. 27. 30. W. Long. 144. 56. The inhabitants are much darker in their complexions, and seem to be of a fiercer disposition than those of the neighbouring islands. They have the figure of a fish marked upon their bodies; a very proper emblem of their profession, deriving their subsistence almost entirely from the sea. Passing by St George's Islands, which had been also discovered and named by Captain Byron, our Commander now discovered four others, which he named *Palliser's Islands*. One of these is situated in S. Lat. 15. 26. and W. Long. 146. 20. another in S. Lat. 15. 27. and W. Long. 146. 3. They were inhabited by people resembling those of Tiookea, and like them were armed with long pikes. Here our navigator observed, that from W. Long. 138° to 148° or 150°, the sea is so full of small low islands, that one cannot proceed with too much caution.

52
Island
Tiookea.53
Palliser's
Islands.

On his arrival in Otaheite, provisions were met with in great plenty; and they were now very acceptable, by reason of the long time the ship had been at sea without obtaining any considerable supply. Two goats which had been given by Captain Furneaux to a chief named *Otoo*, appeared to be in a very promising situation. The female had brought forth two kids, which were almost large enough to propagate; and as she was again with kid, there was little doubt that the island would soon be stocked with these useful animals; though it was otherwise with the sheep, all of which had died except one. On this occasion, also, the Captain furnished the natives with cats, of which he gave away twenty; so that there was little danger of the flock of these animals decaying. During his residence at this time, he had an opportunity of making some computation of the number of inhabitants on the island, which he supposed to be no less than 200,000.

54
Arrival at
Otaheite.

Cook's
Discoveries.55
Huahine,
Ulictea,
Howe
Island, &c.

Huahine and Ulictea Islands were next visited, but without any remarkable occurrence. From the latter our Commander set sail on the 5th of June 1774; and next day came in sight of Howe Island, discovered by Captain Wallis, and situated in S. Lat. 16. 46. and W. Long. 154. 8. On the 16th a new island, named *Palmerstone Island*, was discovered in S. Lat. 18. 4. W. Long. 163. 10.; and, four days after, another was observed in S. Lat. 19. 1. W. Long. 169. 37. As it was evidently inhabited, the Captain determined to land; but found the people so extremely hostile, that no intercourse could be had: nay, he himself was in danger of losing his life by a lance thrown by one of the natives, which passed close over his shoulder. From the extreme hostility of the people of this island, it was named by Captain Cook *Savage Island*. It is of a round shape, pretty high, and has deep water close to the shore, but has no good harbour.

56
Rotterdam
Island.

Passing by a number of small islands, Captain Cook next anchored at that of Anamocka or Rotterdam, discovered by Tafman. It is situated in 20. 15. S. Lat. and 174. 31. W. Long. Its form is triangular, each side extending about three and a half or four miles. From the north-west to the south it is encompassed by a number of small islands, sand banks, and breakers; of which no end can be seen from the island on the northern side, and may possibly be as far extended as Amsterdam or Tongataboo. While the Captain remained on this island, he learned the names of more than 20 of the adjacent isles, some of which were in sight between the north-west and north-east. Two of these, which lie more to the westward than the others, are named *Amattafoa* and *Oghao*. They are remarkable for their height; and from a great smoke visible about the middle of Amattafoa, it was supposed to have a volcano. The island of Rotterdam, Middleburg or Eaooe, with Pilltart, form a group extending about three degrees of longitude and two of latitude. The whole group was named *The Friendly Isles* by Captain Cook, on account of the friendship which seemed to subsist among the inhabitants, and their courteous behaviour to strangers. The people of Rotterdam Island are similar to those of Amsterdam; but the island is not in such a state of high cultivation as Amsterdam, nor do its fruits come to such perfection. It is also inferior in the articles of cloth, matting, &c. which are accounted the wealth of these parts.

57
Supposed
volcano.

From Rotterdam island our navigator continued his course to the westward, where he first discovered a small island in S. Lat. 19. 48. W. Long. 178. 2. It was named Turtle Island, from the great number of these animals found upon it. Sixteen days after he fell in with the cluster of islands named by M. Bougainville the *Great Cyclades*. The first island on which he landed was Mallicollo, where, though the people were at first very hostile, they were soon conciliated, and a friendly intercourse took place. The language of these people is considerably different from that of the other South-sea islands; they are diminutive in their persons, and of ugly features; their hair black or brown, short and curling, but less soft than that of the negroes. They had no name for a dog in their language, and had never seen the animal; so that they were extremely fond of a dog and bitch of which Captain Cook made them a present. The harbour in

this island, in which the ship came to an anchor, was named Sandwich harbour, and lies on the north-east side in S. Lat. 16. 25. 20. E. Long 167. 57. 53. It is very commodious for the carrying on any operations at land, having a good depth of water, and many other advantages.

The next discovery was that of the Group named *Shepherd's Isles*, in honour of Dr Shepherd, Plumian professor of astronomy at Oxford. Numbers more were every day observed; of which one peaked rock, named the *Monument*, was uninhabited, being apparently inaccessible to any other creature but birds. Sandwich island is of considerable extent, and exhibits a most beautiful prospect. It is surrounded with other smaller islands, the principal of which were named Montague and Hinchinbrook. At Erromango they found the people hostile and treacherous; and from a skirmish they had with them near a promontory on the north-east point of the island, it was named *Traitor's Head*. Its situation is in S. Lat. 10. 43. E. Long. 169. 28.

From Erromango our navigator proceeded to Tanna, an island they had formerly discovered at a distance, and which is surrounded by some others, three of which are named *Immer*, *Footsona* or *Erroman*, and *Anatom*. At Tanna they staid for some time, on account of their wanting some quantity of wood. A volcano was seen about the middle of this island, which burned with great violence, particularly in moist and wet weather: but notwithstanding the friendly terms on which they were with the natives, the latter would never allow them to approach this mountain. There were some spots on the sea-coast which emitted an hot and sulphureous smoke; and the people also expressed much uneasiness when these were approached or meddled with. The port which the ship entered in this island was named *Resolution Harbour*, and is situated in S. Lat. 19. 32, 25½. E. Long. 169. 44. 35. It is a small creek three quarters of a mile long, and about half as broad. It is extremely convenient, having plenty of wood and water close to the shore. Among the vegetable productions of this island, there is reason to suspect the nutmeg-tree to be one, a pigeon having been shot, in the craw of which was a wild nutmeg. The inhabitants are two distinct races of people, and speak two different languages; one that of the Friendly islands, the other peculiar to Tanna and those in the neighbourhood. The people are very expert in the use of their weapons; on which Mr Wales makes the following remarks: "I must confess I have often been led to think the feats which Homer represents his heroes as performing with lances, their spears a little too much of the marvellous to be admitted in an heroic poem, I mean when confined within the strait stays of Aristotle; nay, even so great an advocate for him as Mr Pope acknowledges them to be surprising: but since I have seen what these people can do with their wooden spears, and them badly pointed, and not of an hard nature, I have not the least exception to any one passage in that great poet on this account. But if I see fewer exceptions, I can find infinitely more beauties in him, as he has, I think, scarcely an action, circumstance, or description of any kind whatever relating to a spear, which I have not seen and recognised among these people; as their whirling motion and whistling noise as they fly; their

Cook's
Discoveries.59
Shepherd's
Isles.60
Tanna
Island.[61]
Volcano.

61

Dexterity of
the inhabi-
tants in the
use of their
lances.

Cook's
Discoveries.

quivering motion in the ground when they fall; and meditating their aim when they are going to throw; and their shaking them in their hand as they go along."

The Archipelago, in which Captain Cook had now remained a considerable time, is situated between 14. 29. and 20. 4. S. Lat. and between 166. 41. and 170. 21. E. Long. extending 125 leagues in the direction of N. N. W. $\frac{1}{2}$ W. and S. S. E. $\frac{1}{2}$ E. The principal islands are the Peak of the Etoile, Tierra del Espiritu Santo, Mallicollo, St Bartholomew, the Isle of Lepers, Aurora, Whitfuntide Isle, Ambrym, Paom, Apee, Three Hills, Sandwich, Erromango, Tanna, Innmer, and Anatom. They were first discovered in 1606 by Quiros, who supposed them to be part of a southern continent; nor were they visited from that time till the year 1768, when M. Bougainville bestowed upon them the name of the *Great Cyclades*, as already mentioned. This gentleman, however, besides landing in the Isle of Lepers, only discovered that the country was not connected, but consisted of islands. Captain Cook examined the whole in such an accurate manner, ascertaining the situation of many of the islands, and discovering such numbers of new ones, that he thought he had an undoubted right to impose a new name upon them; and therefore called them the *New Hebrides*.

62
New Caledonia discovered.

From the New Hebrides Captain Cook set sail for New Zealand, in order to prosecute his voyage in search of a southern continent, but in three days discovered a large island, which he named *New Caledonia*; and which, next to New Zealand, is the largest in the Pacific Ocean. It lies between 19. 37. and 22. 30. S. Lat. and between 163. 37. and 167. 14. E. Long. lying N. W. $\frac{1}{2}$ W. and S. E. $\frac{1}{2}$ E. extending about 87 leagues in that direction, though its breadth does not any where exceed 10 leagues. The natives are strong, active, well made, and seem to be a middle race between those of Tanna and the Friendly Isles; and the women were more chaste than those of the islands farther to the eastward. The island afforded a considerable variety of plants for the botanists, and some excellent timber of the species of the pitch-pine, for masts and spars. The wood is close-grained, white, and tough; and very fit for the purpose. One of the small islands surrounding the large one was named the *Isle of Pines*, from the quantity of these trees found upon it; and another, from the number and variety of plants it afforded, had the name of *Botany Island*. The coast, however, was so dangerous, that our navigator, having no more time to spare, was obliged to leave some part of it unexplored, though the extent was determined, as has been already related. Mr Forster was of opinion, that the language of this people is totally different from that of any of the other South Sea islands.

63
Norfolk Island.

Proceeding from New Caledonia, our navigator next fell in with an island about five leagues in circumference, and of a good height, situated in S. Lat. 29. 2. 30. and E. Long. 168. 16.; on which he bestowed the name of *Norfolk Island*. It was entirely uninhabited. Various trees and plants common at New Zealand were observed here, particularly the flax-plant, which is more luxuriant in this island than in any part of New Zealand. The chief produce of the island is a kind of spruce pine, many of the trees of which are 10 or 12

feet in circumference. The palm-cabbage likewise abounds here; and the coasts are well stocked with excellent fish. On the 18th of October they arrived at Queen Charlotte's Sound in New Zealand; the situation of which was now ascertained by Mr Wales with the utmost accuracy, its latitude being found 41. 5. 56 $\frac{1}{2}$. S. and its longitude 174. 25. 7 $\frac{1}{2}$ E. On examining the gardens which had been made, it was found that they were in a thriving condition, though they had been entirely neglected by the natives. Some of the cocks and hens were supposed to be still in existence, as a new laid hen's egg was found, though none were seen.

On the 10th of November Captain Cook set sail from New Zealand in search of a southern continent; but having traversed a vast extent of sea for 17 days, from S. Lat. 43. 0. to 55. 48. he gave up all thoughts of finding any more land in this part of the ocean, and therefore determined to steer directly for the west entrance of the straits of Magellan, with a design of coasting the southern part of Terra del Fuego quite round Cape Horn to Le Maire's Straits. As the world had hitherto received but very imperfect accounts of this coast, he thought a survey of it would be of more advantage to navigation and geography than any thing he could expect to meet with in a higher latitude. On the 17th of December he reached the coast of Terra del Fuego, and in three days more anchored in a place to which he gave the name of *Christmas Sound*. The land appeared desolate beyond any thing he had hitherto experienced. It seems to be entirely composed of rocky mountains without the least appearance of vegetation. These mountains terminate in horrid precipices, the craggy summits of which spire up to a vast height; so that scarcely any thing in nature can have a more barren and savage aspect than the whole of the country. In the course of his voyage along this coast, he could not but observe, that at no time had he ever made one of such length where so little occurred of an interesting nature. Barren and dreary, however, as the coast was, it was not totally destitute of accommodations about Christmas Sound. Fresh water and wood for fuel were found about every harbour; and the country every where abounds with fowl, particularly geese. A considerable number of plants were also found upon it, almost every species of which was new to the botanists. In passing by Cape Horn, it was wished to determine whether it belonged to the land of Terra del Fuego or to a small island south from it; but this was found impracticable on account of the foggy weather and dangerous sea. Its latitude was now determined to be 55. 58. S. and its longitude 67. 46. W. The coast appeared less dreary here than on the western side of Terra del Fuego; for though the summits of some of the hills were rocky, the sides and valleys seemed covered with a green turf and wooded in tufts. In passing this cape a remark was made by the Captain, that if he were on a voyage round Cape Horn to the west, and not in want of wood or water, or any other thing which might make it necessary to put into port, he would sail a considerable way to the southward, so as to be out of the reach of land altogether. By this method he would avoid the currents, whose force, he was of opinion, would be broken

Cook's
Discoveries.64
Arrival at
Zealand;65
At Terra
del Fuego.66
Remarks on
a voyage
round Cape
Horn,

at.

Cook's Discoveries.

at 10 or 12 leagues distance from the shore, and farther off would be entirely destroyed. The extent of Terra del Fuego, and consequently of Magellan's Straits, was found to be less than what is commonly laid down in maps and charts, and the coast, in general, less dangerous than has been usually represented; though this must undoubtedly have been owing in a great measure to the weather, which happened to be remarkably temperate. In one of the small islands near Staten Land, and which, from their being discovered on new year's day, were called *New Year's Isles*, a remarkable harmony was observed among the animals of different species with which these desolate regions abound. The sea-lions occupy the greatest part of the sea-coast; the bears occupy the island; the shags are posted in the highest cliffs; the penguins in such places as have the best access to and from the sea; and the other birds choose more retired places. Occasionally, however, all these animals were seen to mix together like domestic cattle and poultry in a farm-yard, without one attempting to hurt the other in the least. Even the eagles and vultures were frequently observed sitting together on the hills among the shags, while none of the latter, either old or young, appeared to be disturbed at their presence. It is probable, therefore, that these birds of prey subsist by feeding on the carcases of the animals which die naturally or by various accidents, and which must be very numerous from the immense quantity existing on the island.

67
Surprising concord of the animals in these parts.

68
Farther discoveries in the southern regions.

Our navigator now set out in quest of that extensive coast laid down in Mr Dalrymple's chart, and in which is marked the Gulph of St Sebastian; but when he came into the place where it is supposed to lie, neither land nor any certain signs of it could be met with. Some islands, however, were discovered, particularly Willis's island, in S. Lat. 54. 0. W. Long. 38. 23; another named *Bird Island* and *South Georgia*, situated between 53. 57. and 54. 57. S. Lat. and between 38. 13. and 35. 34. W. Long. All these were covered with snow and ice to a great height. Not a tree was to be seen, not even a shrub, nor were there any rivulets or streams of water; the only vegetables to be met with were a coarse strong bladed grass, wild burnet, and a kind of moss. A considerable quantity of seals and penguins were met with, whose flesh, though, very coarse, was preferred by the ship's company, even by Captain Cook himself, to the salt provisions, which were now greatly decayed. The most southerly land discovered by our navigator was that on which he bestowed the name of *Southern Thule*, and which is situated in S. Lat. 59° 13' 30", W. Long. 27° 45'. This was still more desolate than South Georgia, being forsaken even by the seals and penguins which abounded on it. Not a single herb of any kind was seen upon it, but vast high and barren mountains, the tops of some of which reached above the clouds; and it may be remarked, that this seems to be the only part of the world hitherto discovered, entirely unfit for the support of animal life.

69
Of the existence of a southern continent.

Southern Thule was discovered on the 31st of January 1775; and from this to the 6th of February several other lands were discovered, and named *Cape Bristol*, *Cape Montague*, *Saunders's Isle*, *Candlemas Isles*, and *Sandwich's Land*. With regard to this last, Captain

Cook was undetermined whether it was a group of islands or part of a continent lying near the pole, as after all his disappointments he still was inclined to think that such a continent has an existence, on account of the vast quantity of ice met with in the southern seas; and which from its great height appears to be formed in bays and gulphs of the land, and not in the ocean itself. The greatest part of this southern continent, however, if it has any existence, must be within the polar circle, where the sea is so incumbered with ice, that the land must be inaccessible. So great is the danger in navigating these southern seas, that Captain Cook asserts on the most probable grounds in the world, that such lands as lie to the southward of his discoveries could not be explored; and that no man would ever venture farther than he had done. Thick fogs, snow-forms, intense cold, and every thing that can render navigation difficult or dangerous, must be encountered; all which difficulties are greatly heightened by the inexpressibly horrid aspect of the country itself. It is a part of the world doomed by nature never once to feel the warmth of the sun's rays, but to be buried in everlasting snow and ice. Whatever ports there may be on the coast, they are almost entirely covered with frozen snow of a vast thickness. If, however, any of them should be so far open as to invite a ship into it, she would run the risk of being fixed there for ever, or of coming out in an ice island. To this it may be added, that the islands and floats on the coast, the great falls from the ice-cliffs in the port, or a sudden snow-storm, might be attended with equally fatal effects. For these reasons our commander determined to abandon the pursuit of a land whose existence was so equivocal, but whose inutility, if it should be discovered, was certain. One thing only remained to complete what he wished to accomplish, and that was to determine the existence of Bouvet's land. In this inquiry he spent 16 days; but having run for 13 of these directly in the latitude assigned to that land, and found no appearance of it, or of Cape Circumcision, he concluded, that neither of them had any existence, but that the navigators had been deceived by the appearance of ice islands. Two days more were spent in quest of some land which had been observed more to the southward, but with the like bad success: after which our commander abandoned all farther thoughts of southern discoveries, and prepared for returning to England. On his way home, however, he determined to direct his course in such a manner as to fall in with the isles of Denia and Marseeven. These are laid down in Dr Halley's variation chart in the latitude of 41½. S. and about 4. 0. E. from the meridian of the Cape of Good Hope. None of these islands could be found; and therefore our commander, having very little time to spare either in searching for them or attempting to disprove their existence, made the best of his way to the Cape of Good Hope, and from thence to England. In his passage thither he visited the isles of St Helena, Ascension, and Fernando de Noronha. An experiment was made on the use of the still for procuring fresh water at sea; the result of which was, that though the invention was useful upon distilling the whole, yet it would not by any means be advisable to trust entirely to it. Provided indeed that there was not a scarcity of fuel, and that the coppers were good,

Cook's Discoveries.

70
Voyage in quest of Bouvet's land.

71
Of the isles of Denia and Marseeven.

72
Of the use of stills of sea-water.

Cook's
Discove-
ries.

as much might thus be procured as would support life; but that no efforts would be sufficient to procure the quantity necessary for the preservation of health, especially in hot climates. He was likewise convinced that nothing contributes more to the health of seamen than having plenty of fresh water. His last stage in this second voyage before his arrival in England was at Fayal, one of the Azores islands; and his only design in stopping here was to give Mr Wales an opportunity of finding the rate of the watches going, that so he might be enabled to find the longitude of these islands with the greater certainty.

73
Third voy-
age.

In our commander's third voyage he touched at the island of Teneriffe instead of Madeira, looking upon the former to be a better place for procuring refreshments; and was convinced of the justness of his conjecture by the facility with which provisions of all kinds were obtained. The air of the country is exceedingly healthy and proper for those subject to pulmonary complaints. This was accounted for by a gentleman of the place from the great height of the island, by which it was in the power of any person to change the temperature of the air as he pleased; and he expressed his surprize that physicians, instead of sending their patients to Nice or Lisbon, did not send them to Teneriffe. From the same gentleman it was learned, that the tea-shrub grows in that island as a common weed, which is constantly exterminated in large quantities. The Spaniards, however, sometimes use it as tea, and ascribe to it all the qualities of that brought from the East Indies. They give it also the name of tea, and say that it was found in the country when the islands were first discovered. Another botanical curiosity is the fruit called the *impregnated lemon*, which is a perfect and distinct lemon inclosed within another, and differing from the outer only in being a little more globular.

74
Visits the
isle of Te-
neriffe.75
Tea-shrub.76
Impregna-
ted lemon.77
Prince Ed-
ward's
islands dis-
covered.78
Voyage in
quest of
Kergue-
len's land.

From Teneriffe Captain Cook proceeded to the Cape of Good Hope, and from thence to the southward, where he fell in with two islands, the larger of which is about 15 leagues in circuit, and the smaller about nine; their distance from one another being about five leagues. The one of these islands lies in S. Lat. 46. 53. and E. Long. 37. 46; the other in S. Lat. 46. 4. E. Long. 38. 8. As the ships passed through between them, they could not discern either tree or shrub upon any of them even with the assistance of their best glasses. The shore seemed to be hard and rocky, their internal parts full of mountains, whose sides and summits were covered with snow. These two, with four others, which lie from 9 to 12 degrees of longitude more to the east, and nearly in the same latitude, had been discovered in the year 1772 by Captains Marion du Fresne and Crozet, two French navigators, in their passage from the Cape of Good Hope to the Philippines. As no names had been assigned to them in a chart of the Southern Ocean communicated to Captain Cook in 1775, the two larger ones were by him distinguished by the name of *Prince Edward's Islands*, in honour of his Majesty's fourth son; the other four, with a view to commemorate the discoveries, were called *Marion's* and *Crozet's Islands*.

From these our commander steered to the southward in search of Kerguelen's land, which he had been instructed to touch at, in order to discover, if possible,

a good harbour there. In his passage to it several new islands were discovered; to one which Kerguelen had given the name of the *Island of Rendezvous*, Captain Cook, on account of its shape, changed it to that of *Bligh's Cap*. It is situated in S. Lat. 48. 29. E. Long. 68. 40. and is a high round rock, inaccessible to all creatures but birds. Next day he fell in with Kerguelen's land, at first thought to be a part of the southern continent, but afterwards found by Kerguelen himself to be an island. The extent of it, however, was not determined either by the French navigator or by Captain Cook. The former reckons it at 200 leagues in circumference, but Captain Cook estimates it at much less. Our navigator could not get any extensive view of it on account of the foggy weather; but as far as could be discovered, it was barren and desolate, inasmuch that there was neither food nor covering for cattle of any kind, so that they would inevitably perish if any were left. Even the sea-coasts were in a great measure destitute of fish; but the shore was covered with innumerable multitudes of seals, together with penguins and other birds; all of which were so void of fear, that any quantity whatever might be killed without any difficulty. Not a single tree nor shrub could be seen, nor a piece of drift wood on the shore; and herbage of every kind was likewise very scarce. A prodigious quantity of the sea-weed, called by Sir Joseph Banks *fuscus giganteus*, was found in one of the bays. The whole variety of plants found in this island did not exceed 16 or 18 species. The harbour in which our navigator made his longest stay on this desolate coast was named *Port Palliser*, and is situated in S. Lat. 49. 3. E. Long. 69. 37. In this voyage our navigator undoubtedly displayed superior nautical abilities to those of M. Kerguelen, who in two voyages to the place had never been able to bring his ships to anchor on any part of the coast.

From Kerguelen's land our navigator proceeded to the coast of New Holland, where he now touched at the southern part called *Van Diemen's land*, where he anchored in Adventure Bay. Here they found plenty of wood and water, with abundance of grass, coarse indeed, where they went first ashore, but afterwards much finer and proper for the cattle. Here, as every where else, the latitudes and longitudes were settled with the greatest exactness. The bottom of Adventure Bay was found to lie in S. Lat. 43° 21' 6"; E. Long. 147° 29'. The inhabitants visited them in a friendly manner, but seemed as stupid and insensible as those they had formerly seen. They seemed to be totally ignorant of the use of iron, and set no value upon any thing in the ornamental way excepting beads; nor did they seem to be acquainted even with the use of fish hooks. Here they found the stories of the ancient fauns and satyrs living in hollow trees realized. Some huts covered with bark, and of a most wretched construction, were indeed found near the shore; but the most commodious habitations were afforded by the largest trees. These had their trunks hollowed out by fire to the height of six or seven feet; and there was room enough in one of them for three or four persons to sit round a hearth made of clay; and it may justly seem surprising, that notwithstanding the extreme violence offered to the vegetative powers of the

Cook's
Discove-
ries.79
Description
of that
island.80
Of Van
Diemen's
land.

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Discoveries.

the tree by forming this habitation, it still continued to flourish in consequence of one side being left entire. The people, notwithstanding their extreme barbarity, were supposed to proceed from the same stock with those of the South Sea Islands. As in one of their visits the natives had seized upon two pigs which had been brought ashore, apparently with an intention to kill them, the commander determined to make them a present of these animals; though from their excessive stupidity and inattention there was no probability of their allowing them to propagate, if they had been put directly into their hands. To prevent this, Captain Cook ordered the two they had attempted to seize, being a boar and sow, to be carried about a mile within the head of the bay, and saw them left by the side of a fresh water rivulet. He was prevented from leaving any other species by a consideration of the barbarity of the inhabitants.

81
Visit to
New Zealand.

From New Holland our navigator proceeded to New Zealand, where he arrived on the 12th of February 1777, and anchored in Queen Charlotte's Sound. Here he was desirous of leaving a further supply of animals; but the inhabitants had hitherto shown such carelessness about those which had been left, that he durst not venture to leave any other than two goats, a male and a female with kid, and two hogs, a boar and sow. He was informed, however, that one chief had several cocks and hens in his possession, so that there was some probability of these animals being allowed to multiply; and as ten or a dozen hogs had at different times been left by Captain Cook, besides those put on shore by Captain Furneaux, it seems also to be likely that this race of creatures will increase either in a wild or domestic state, or both. The gardens had still been almost totally neglected, and some of them destroyed. Those which remained, however, produced cabbages, onions, leeks, purslains, radishes, and a few potatoes. These last had been brought from the Cape of Good Hope, and were so greatly meliorated by the change of soil, that with proper cultivation they seemed to bid fair for excelling those of most other countries.

82
Extraordinary preservation of some of the natives of Otaheite.

Our navigator's next course was towards the Island of Otaheite; in the run to which he discovered the Island of Manglea, situated in S. Lat. 22. 57. E. Long. 301. 53. From thence he proceeded to Wateoa, where Omai, now on his way home, recognized three of his countrymen, natives of the Society Islands, who had arrived here by the following accident. About 12 years before, 20 of the natives of Otaheite had embarked in a canoe, in order to visit the neighbouring island of Ulietea. A violent storm arose, which drove them out of their course, and they suffered incredible hardships by famine and fatigue, so that the greatest part of them perished. Four men continued hanging by the side of the vessel for four days after it was overfet, when they were at last brought within sight of the people of this island. The latter immediately sent out their canoes, and brought them ashore, treating them afterwards with so much kindness, that the three who now survived expressed no desire of returning to their own country, though they had now an opportunity, but chose rather to remain where they were. This island is situated in S. Lat. 20. 1. E. Lon. 201. 45. and is about six leagues in circumference.

The inhabitants are said to be equally amiable in their persons and dispositions.

Visiting a small island named *Wennooa-ete*, or *Ota-kootaia*, situated in S. Lat. 19. 15. and E. Long. 201. 37. our commander found it without inhabitants, tho' there were undoubted marks of its being occasionally frequented. Harvey's Island, which in his former voyage had been destitute of inhabitants, was now found to be well peopled; but the inhabitants showed such an hostile disposition that no refreshments could be procured; for which reason it was determined to steer for the Friendly Islands, where there was a certainty of meeting with an abundant supply. In his way thither he touched at Palmerston Island, from a small isle near which a supply of 1200 cocoa nuts were obtained, besides abundance of fish and birds of various kinds. Had the island been capable of furnishing water, the Captain would have preferred it to any of the inhabited ones for the purpose of procuring refreshments, as they could be had in any quantity without molestation from the petulance of the inhabitants. As water at this time happened to be a scarce article, our navigator was obliged to supply himself from the showers which fell, and which afforded as much in an hour as he could procure by distillation in a month.

During the time of residence at the Friendly Islands our navigator visited one named *Hepae*, at which no European ship had ever touched before. Here he was entertained in a friendly manner, supplied with refreshments, and left some useful animals; great additions were made to the geography of these islands, and many curious remarks made on the inhabitants and natural products. It was observed by Mr Anderson, that the people had very proper notions of the immateriality and immortality of the human soul, and he thought himself authorized to assert, that they did not worship any part of the visible creation.

Passing by a small island named *Toobouai*, about five or six miles in extent, and situated in S. Lat. 23. 25. E. Long. 210. 37. our navigator now arrived at Otaheite. Here Omai met with his relations, some of whom received him with apparent indifference; but his meeting with an aunt and a sister was marked with expressions of the most tender regard. It was Huaheine, however, that was destined for the place of Omai's final residence, and thither the Captain repaired on purpose to settle him. The affair was conducted with great solemnity; and Omai brought with him a suitable assortment of presents to the chiefs, went through a great number of religious ceremonies, and made a speech, the subject of which had been dictated to him by Captain Cook. The result of the negociation was, that a spot of ground was assigned him, extending about 200 yards along the shore of the harbour, with a proportionable part of an adjacent hill. The carpenters of both ships were then employed in constructing an house for him, in which he might secure his European commodities. At the same time a garden was made for his use, in which were planted shaddockes, vines, pine-apples, melons, and several other garden vegetables. Here he met with a brother, sister, and sister-in-law, by whom he was very affectionately received: but it was discovered with concern, that none of his relations were able to protect him in case of any attack on his person.

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Discoveries.83
Palmerston Island a proper place of refreshment, but without water.84
Reception of Omai at Otaheite.85
He is settled at Huaheine.

Cook's
Discoveries.

or property; so that there was too much reason to fear that he would be plundered immediately on the departure of the English. To prevent this, if possible, Captain Cook advised him to conciliate the favour and engage the patronage and protection of some of the most powerful chiefs by proper presents; at the same time that he himself took every opportunity of letting the inhabitants know that it was his intention to return to the island again, and if he did not find Omai in the same state of security in which he left him, those by whom he had been injured would certainly feel the weight of his resentment. About a fortnight after leaving Huaheine, the Captain had a message from Omai; in which he informed him that every thing went well, only that his goat had died in kidding, for which he desired another might be sent; and accompanied this request with another for two axes, which were sent along with a couple of kids, male and female. On taking his final leave of the Society Islands, Captain Cook observes, that it would have been far better for these poor people never to have known the superiority of the Europeans in such arts as render life comfortable, than after once being acquainted with it to be again abandoned to their original incapacity of improvement; as, if the intercourse between them and us should be wholly discontinued, they could not be restored to that happy state of mediocrity in which they were found. It seemed to him that it was become in a manner incumbent on the Europeans to visit these islands once in three or four years, in order to supply them with those conveniences of which they have taught them the use. It is indeed to be apprehended, that by the time the iron tools which were then among them are worn out, they will have forgot the use of their own; as in this last voyage it was observed that the use of their former tools was almost totally abolished.

86
Remarks on
the Society
Islands.87
Christmas
Island dis-
covered.

Having left the Society Islands, Captain Cook now proceeded to the northward, crossing the equator on the 22d and 23d of December; and on the 24th discovered a low uninhabited island about 15 or 20 leagues in circumference. Here the longitude and latitude were exactly determined by means of an eclipse of the sun. The west side of it where the eclipse was observed, lies in N. Lat. 1. 59. E. Long. 202. 30. From the time of its discovery it obtained the name of *Christmas Island*. Plenty of turtle were found upon it, and the Captain caused the seeds of the cocoa-nut, yams, and melons, to be planted.

88
Sandwich
Isles.

Proceeding still to the northward, our navigator next fell in with five islands, to which he gave the general name of *Sandwich Isles*, in honour of his patron. Their names in the language of the country are Woa-hoo, Atooi, Oneehow, Oreehoua, and Tehoorā. They are situated in the latitude of 21. 30. and 22. 15. North, and between 199. 20. and 201. 30. E. Long. The longitude was deduced from no fewer than 72 sets of lunar observations. The largest of these islands is Atooi, and does not in the least resemble the other islands of the South Sea formerly visited by our navigator, excepting only that it has hills near the centre, which slope gradually towards the sea-side. The only domestic animals found upon it were hogs, dogs, and fowls. Captain Cook designed to have made the inhabitants of this island a present of some

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others; but being driven out of it by storms of weather, he was obliged to land them upon a smaller one named *Oneehow*. They were a he-goat with two females, and a boar and sow of the English breed, which is much superior to that of the South-Sea Islands. He left also the seeds of melons, pumpkins, and onions. The soil of this island seemed in general to be poor: it was observable that the ground was covered with shrubs and plants, some of which had a more delicious fragrantcy than had been experienced before. The inhabitants of these islands are much commended, notwithstanding their horrid custom of eating human flesh. In every thing manufactured by them there is an ingenuity and neatness in an uncommon degree; and the elegant form and polish of some of their fishing-hooks could not be exceeded by an European artist, even assisted by all his proper tools. From what was seen of their agriculture also, it appeared that they were by no means novices in that art, and that the quantity and goodness of their vegetable productions might with propriety be attributed as much to their skilful culture as to the fertility of the soil. The language of the Sandwich Isles is almost identically the same with that of Otaheite.

Proceeding farther to the northward, our navigators discovered the coast of New Albion on the 7th of March 1778. Its appearance was very different from that of the countries with which they had hitherto been conversant. The land was full of mountains, the tops of which were covered with snow; while the valleys between them, and the grounds on the sea-coast, high as well as low, were covered with trees, which formed a beautiful prospect as of one vast forest. The place where they landed was situated in N. Lat. 44. 33. E. Long. 235. 20. At first the natives seemed to prefer iron to every other article of commerce; but at last they showed such a predilection for brass, that scarcely a bit of it was left in the ships except what belonged to the necessary instruments. It was observed also, that these people were much more tenacious of their property than any of the savage nations that had hitherto been met with, inasmuch that they would part neither with wood, water, grass, nor the most trifling article, without a compensation, and were sometimes very unreasonable in their demands; with which, however, the Captain always complied as far as was in his power.

The place where the *Resolution* was now anchored was by our navigator called *St George's Sound*, but he afterwards understood that the natives gave it the name of *Nootka*. Its entrance is situated in the east corner of Hope Bay, in N. Lat. 49. 33. E. Long. 233. 12.

The climate, as far as they had an opportunity of observing it, was much milder than that on the eastern coast of the American continent in the same parallel of latitude; and it was remarkable that the thermometer, even in the night, never fell lower than 42°, while in the day-time it frequently rose to 60°. The trees met with here are chiefly the Canadian pine, white cypress, and some other kinds of pine. There seemed to be a scarcity of birds, which are much harassed by the natives, who ornament their clothes with the feathers, and use the flesh for food. The people are no strangers to the use of metals, having iron tools in general use among them; and Mr Gore procured two silver spoons of a construction similar to what may be observed in some

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Discoveries.89
American
coast dis-
covered.90
Nootka
Sound.91
Mildness of
the climate.92
Natives ac-
quainted
with the
use of me-
tals.

Flemish

Cook's
Discove-
ries.

Flemish pictures, from a native who wore them round his neck as an ornament. It is most probable that these metals have been conveyed to them by the way of Hudfon's Bay and Canada; nor is it improbable that some of them may have been introduced from the north-western parts of Mexico.

While Captain Cook sailed along this coast, he kept always at a distance from land when the wind blew strongly upon it; whence several large gaps were left unexplored, particularly between the latitudes of 50° and 55°. The exact situation of the supposed straits of Anian was not ascertained, though there is not the least doubt, that if he had lived to return by the same way in 1779, he would have examined every part with his usual accuracy. On departing from Nootka Sound, our navigator first fell in with an island in N. Lat. 59. 49. E. Long. 216. 58. to which he gave the name of *Kay's Island*. Several others were discovered in the neighbourhood; and the ship came to an anchor in an inlet named by the Captain *Prince William's Sound*. Here he had an opportunity of making several observations on the inhabitants, as well as on the nature of the country. From every thing relative to the former, it was concluded, that the inhabitants were of the same race with the Esquimaux or Greenlanders. The animals were much the same with those met with at Nootka, and a beautiful skin of one animal, which seemed to be peculiar to the place, was offered for sale. Mr Anderson was inclined to think that it was the same to which Mr Pennant has given the name of the *casan marmot*. The alcedo, or great king's-fisher, was found here, having very fine and bright colours. The humming-bird also came frequently, and flew about the ship while at anchor; though it is scarce to be supposed that it can live throughout the winter on account of the extreme cold. The water-fowl were in considerable plenty; and there is a species of diver which seemed to be peculiar to the place. Almost the only kinds of fish met with in the place were torsk and halibut. The trees were chiefly the Canadian and spruce pine, some of which were of a considerable height and thickness. The Sound is judged by Captain Cook to occupy a degree and a half of latitude and two of longitude, exclusively of its arms and branches, which were not explored. There was every reason to believe that the inhabitants had never been visited by any European vessel before; but our navigator found them in possession not only of iron but of beads, which it is probable are conveyed to them across the continent from Hudfon's Bay.

Soon after leaving Prince William's Sound, our navigators fell in with another inlet, which it was expected would lead either to the northern sea or to Hudfon's or Baffin's bay; but upon examination it was found to end in a large river. This was traced for 210 miles from the mouth, as high as N. Lat. 61. 30. and promises to vie with the most considerable ones already known, as it lies open by means of its various branches to a very considerable inland communication. As no name was given by our commander to this river, it was ordered by Lord Sandwich to be named *Cook's River*. The inhabitants seemed to be of the same race with those of Prince William's Sound; and like them had glass beads and knives, they were also clothed in very fine furs; so that

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it seemed probable that a valuable fur-trade might be carried on from that country. Several attempts have accordingly been made from the British settlements in the East Indies to establish a traffic of that kind; but little benefit accrued from it except to the proprietors of the first vessel, her cargo having greatly lowered the price of that commodity in the Chinese market. It must be observed, that on the western side of the American continent, the only valuable skins met with are those of the sea-otter; those of the other animals, especially foxes and martins, being of an inferior quality to such as are met with in other parts.

Proceeding farther to the northward, our navigator now fell in with a race of people who had evidently been visited by the Russians, and seemed to have adopted from them some improvements in dress, &c. In the prosecution of this part of their voyage, it appeared that they had been providentially conveyed in the dark through a passage so dangerous, that our commander would not have ventured upon it in the day time. They were now got in among those islands which had lately been discovered by Captain Beering and other Russian navigators, and came to an anchor in an harbour of Oonalashka, situated in N. Lat. 53. 55. E. Long. 193. 30. Here it was remarked, that the inhabitants had as yet profited very little by their intercourse with the Russians; so that they did not even dress the fish they used for their food, but devoured them quite raw.

From Oonalashka our navigator proceeded again towards the continent, which he continued to trace as far as possible to the northward. In the latitude of 54. 48. E. Long. 195. 45. N. Lat. is a volcano of the shape of a perfect cone, having the crater at the very summit. On the coast farther to the north the soil appears very barren, producing neither tree nor shrub, though the lower grounds are not destitute of grass and some other plants. To a rocky point of considerable height, situated in N. Lat. 58. 42. E. Long. 197. 36. our commander gave the name of *Cape Newnham*.

Here Mr Anderson, the surgeon of the Resolution, died of a consumption under which he had laboured for more than twelve months. Soon after he had breathed his last, land being seen at a distance, it was named *Anderson's Island*; and on the 9th of August the ship anchored under a point of the continent, which he named *Cape Prince of Wales*. This is remarkable for being the most westerly point of the American continent hitherto known. It is situated in N. Lat. 65. 46. E. Long. 191. 45. It is only 39 miles distant from the eastern coast of Siberia; so that our commander had the pleasure of ascertaining the vicinity of the two continents to each other, which had only been imperfectly done by the Russian navigators. Setting sail from this point next day, he steered to the west and north, when he soon fell in with the country of the Tschutski, which had been explored by Beering in 1728. Here he had an opportunity of correcting M. Stœhlin's map, who had placed in these seas an imaginary island, on which he bestowed the name of *Alaschka*. Being convinced that the land he had now reached was part of the Asiatic continent, our commander directed his course eastward, in order to fall in with that of America; and on the 17th reached the latitude of 70. 33. and E. Long. 197. 41. Here they

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nents of
Asia and
America.

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99.
The progress northward stopped by ice.

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Arrival at
Oonalashka.

they began to perceive that brightness in the horizon called by mariners the *blink of the ice*; and in 70. 41. they had got quite up to it, so that no farther progress could be made. Next day they made a shift to get as far as 70. 44; but the ice was now as compact as a wall, and about ten or twelve feet in height. Its surface was extremely rugged, and farther to the northward appeared much higher. Its surface was covered with pools of water; and great numbers of sea-lions lay upon it, whose flesh they were now glad to use as food. Our commander continued to traverse the Icy Sea till the 29th; but the obstructions becoming every day greater and greater, it was thought proper to give over all further attempts of finding a passage to Europe for that year. He did not, however, omit the investigation of the Asiatic and American coasts until he had fully ascertained the accuracy of Captain Beering's accounts as far as he went, and corrected the errors of M. Stæhlin. Great additions were thus made to the geographical knowledge of this part of the globe, and Mr Coxe observes, that "it reflects no small honour upon the British name, that our great navigator extended his discoveries much farther in one expedition, and at so great a distance from the point of his departure, than the Russians accomplished in a long series of years, and in parts belonging or contiguous to their own empire."

An end of this celebrated navigator's discoveries, however, was now at hand. From Beering's straits he sailed for Oonalashka, where he arrived on the 2d of October, and staid for some time in order to repair his ships. While the carpenters were employed in this work, one third of the people had permission to go on shore by turns, in order to gather berries, with which the island abounds, and which, though now beginning to decay, were of great service, in conjunction with the spruce-beer, to preserve the people from the scurvy. Such a quantity of fish was likewise procured, as not only served to supply the ships for the present, but likewise allowed a great number to be carried out to sea; so that hence a considerable saving was made of the provisions of the ships, which was an article of very considerable consequence. On the eighth of the month our commander received a very singular present from some persons unknown, by the hands of an Oonalashka man named *Derramoushk*. It consisted of a rye-loaf, or rather a salmon-pye in the form of a loaf, and highly seasoned with pepper. This man had the like present for Captain Clerke, and each of them was accompanied with a note which none on board could understand: a few bottles of rum, with some wine and porter, were sent in exchange; it being supposed that such a present would be more acceptable than any other thing that could be spared. Corporal Leardiard of the marines, an intelligent man, was at the same time directed to accompany *Derramoushk*, for the purpose of gaining a more satisfactory account of the country. On the tenth of the month he returned with three Russian seamen or furriers, who, with several others, resided at *Egoochac*, where they had a dwelling house, some store-houses, and a sloop about 30 tons burden. One of these people was either master or mate of the vessel, and all of them were very sober and decent in their behaviour. The greatest difficul-

ty arose from the want of an interpreter; for which reason the conversation was carried on by signs. However, the Captain obtained a sight of two sea-charts, both of which he was allowed to copy. One of them included the sea of *Penshinsk*, part of the coast of *Tartary* down to the latitude of 41°; the *Kurile Islands*, and the peninsula of *Kamtschatka*. The other comprehended all the discoveries that had been made from the time of Captain Beering to the year 1777; but these were found to be very trifling. Indeed our navigator was assured by all the Russians whom he had occasion to see, that they knew of no other islands than those laid down in the charts just mentioned, and that none of them had ever seen any part of the American continent excepting what lies opposite to the country of the *Tichutski*. With regard to the natives of *Oonalashka*, they are to appearance the most inoffensive and peaceable people in the world, not to be in a state of civilization; though perhaps this may be owing in some measure to the connection they have long had with the Russians. From the affinity observed between the language of the *Esquimaux*, *Greenlanders*, and those of *Norton's Sound* in N. Lat. 64. 55. there is great reason to believe that all those nations are of the same extraction; and if that be the case, there is little reason to doubt that a communication

by sea exists between the eastern and western sides of the American continent; which, however, may very probably be shut up by ice in the winter time, or even for the most part throughout the year. The return of Captain Cook to the *Sandwich Islands*, with the lamentable catastrophe that ensued, have been already related under the former article. We shall now briefly enumerate the consequences of his discoveries with respect to the advancement of science. These are principally his having overthrown the hypothesis of a southern continent of immense extent, usually spoken of under the name of *Terra australis incognita*; his demonstration of the impracticability of a northern passage either by *Asia* or *America* to the *East Indies*; and his having established a sure method of preserving the health of seamen through the longest sea-voyages. It is remarked by the bishop of *Carlisle*, that one great advantage resulting from the late surveys of the globe, is the refutation of fanciful theories too likely to give birth to impracticable undertakings. The ingenious reveries of speculative philosophers will now be obliged to submit, perhaps with reluctance, to the sober dictates of truth and experience; nor is it only by discouraging future unprofitable searches that the late voyages are likely to be of service to mankind, but likewise by lessening the dangers and distresses formerly experienced in those seas which are within the actual line of commerce and navigation.

The interests of science, as well as of commerce, are highly indebted to the labours of our illustrious navigator. Before his time almost half the surface of the globe was involved in obscurity and confusion: but now such improvements have been made, that geography has assumed a new face, and become in a manner a new science; having attained such completeness as to leave only some less important parts to be explored by future voyagers. Other sciences besides geography

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ces of Cap-
tain Cook's
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have been advanced at the same time. Nautical astronomy, which was in its infancy when the late voyages were undertaken, is now brought to much greater perfection; and, during Captain Cook's last expedition, many even of the petty officers could take the distance of the moon from the sun or from a star, the most delicate of all observations, with sufficient accuracy; and the officers of superior rank would have been ashamed to have it thought that they did not know how to observe for, and compute, the time at sea; a thing before hardly mentioned among seamen. It must, however, be remembered, that a great part of the merit in this respect is due to the board of longitude. In consequence of the attention of that board to the important object just mentioned, liberal rewards have been given to mathematicians for perfecting the lunar tables and facilitating calculations; and artists have been amply encouraged in the construction of watches, and other instruments better adapted to the purposes of navigation, than any that formerly existed.

A vast addition of knowledge has been gained with respect to the ebbing and flowing of the tides; the direction and force of the currents at sea; the nature of the polarity of the needle, and the cause of its variations. Natural knowledge has been increased by experiments on the effects of gravity in different and very distant places; and from Captain Cook's having penetrated so far into the southern regions, it is now ascertained, that the phenomenon usually called the *aurora borealis*, is not peculiar to high northern latitudes, but belongs equally to all cold climates, whether north or south.

No science, however, perhaps stands more indebted to these voyages than that of botany. At least 1200 new species of plants have been added to those formerly known; and every other department of natural history has received large additions. Besides all this, there have been a vast many opportunities of observing human nature in its different situations. The islands visited in the middle of the Pacific Ocean are inhabited by people, who, as far as could be observed, have continued unmixed with any different tribe since their first settlement. Hence a variety of important facts may be collected with respect to the attainments and deficiencies of the human race in an uncultivated state, and in certain periods of society. Even the curiosities brought from the newly discovered islands, and which enrich the British museum and the late Sir Ashton Lever's (now Mr Parkinson's) repository, may be considered as a valuable acquisition to this country, and affording no small fund of instruction and entertainment.

There are few inquiries more generally interesting than those which relate to the migrations of the various colonies by which the different parts of the earth have been peopled. It was known in general, that the Asiatic nation called the *Malayans* possessed in former times much the greatest trade of the Indies, and that their ships frequented not only all the coasts of Asia, but even those of Africa likewise, and particularly the large island of Madagascar: but that from Madagascar to the Marquesas and Easter Island, that is, nearly from the east side of Africa till we approach the west coast of America, a space including almost half the circumference of the globe, the same nation of the oriental world should have made their settle-

ments, and founded colonies throughout almost every intermediate stage of this immense tract, in islands at amazing distances from the mother-continent, is an historical fact that before Captain Cook's voyages could not be known, or at least but very imperfectly. This is proved, not only by a similarity of manners and customs, but likewise by the affinity of language; and the collections of words which have been made from all the widely-diffused islands and countries visited by Captain Cook, cannot fail to throw much light on the origin of nations, and the manner in which the earth was at first peopled.

Besides this, information has been derived concerning another family of the earth formerly very much unknown. This was the nation of the Esquimaux or Greenlanders, who had formerly been known to exist only on the north-eastern part of the American continent. From Captain Cook's accounts, however, it appears, that these people now inhabit also the coasts and islands on the west side of America opposite to Kamtschatka. From these accounts it appears also, that the people we speak of have extended their migrations to Norton Sound, Oonalashka, and Prince William's Sound; that is, nearly to the distance of 1500 leagues from their stations in Greenland and the coast of Labrador. Nor does this curious fact rest merely on the evidence arising from the similitude of manners; for it stands confirmed by a table of words, exhibiting such an affinity of language as must remove every doubt from the mind of the most scrupulous inquirer.

From the full confirmation of the vicinity of the two great continents of Asia and America, it can no longer be supposed ridiculous to believe, that the latter received its inhabitants from the former; and by the facts recently discovered, a degree of further evidence is added to those which might formerly be derived from nature concerning the authenticity of the Mosaic accounts. It is not indeed to be doubted, that the inspired writings will stand the test of the most rigorous investigation; nor will it ever be found, that true philosophy and Divine Revelation can militate against each other. The rational friends of religion are to far from dreading the spirit of inquiry, that they wish for nothing more than a candid and impartial examination of the subject, according to all the lights which the improved reason and enlarged science of man can afford.

Another good effect of the voyages of Captain Cook is, that they have excited in other nations a zeal for similar undertakings. By order of the French government, Messrs de la Peyrouse and de Langle sailed from Brest in August 1785, in the frigates Bouffole and Astrolabe, on an enterprize, the purpose of which was to improve geography, astronomy, natural history, and philosophy, and to collect an account of the customs and manners of different nations. For the more effectual prosecution of the design, several gentlemen were appointed to go out upon the voyage, who were known to excel in different kinds of literature. The officers of the Bouffole were men of the best information and firmest resolution; and the crew contained a number of artificers in various branches of mechanics. Marine watches, &c. were provided, and M. Dagelet the astronomer was particularly directed to make observations with M. Condamine's invariable pendulum;

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ries

to determine the differences in gravity, and to ascertain the true proportion of the equatorial to the polar diameter of the earth. It has likewise been made evident, that notwithstanding all that has been done by Captain Cook, there is still room for a farther investigation of the geography of the northern parts of the world. The object accordingly was taken up by the Empress of Russia, who committed the care of the enterprize to Captain Billings an Englishman in her majesty's service. We shall only make one observation more concerning the benefits likely to accrue from the voyages of Captain Cook, and that is relative to the settlement in Botany Bay. Whatever may be supposed to accrue to the nation itself from this settlement, it must undoubtedly give the highest satisfaction to every friend to humanity to be informed, that thus a number of unhappy wretches will be effectually prevented from returning to their former scenes of temptation and guilt, which may open to them the means of industrious subsistence and moral reformation. If the settlement be conducted with wisdom and prudence, indeed it is hard to say what beneficial consequences may be derived from it, or to what height it may arise. Rome, the greatest empire the world ever saw, proceeded from an origin little, if at all, superior to Botany Bay. For an account of this settlement see the article *NEW-HOLLAND*.

One other object remains only farther to be considered with regard to these voyages, and that is the advantages which may result from them to the discovered people. Here, however, it may perhaps be difficult to settle matters with precision. From the preceding accounts, it must be evident that the intentions of Captain Cook were in the highest degree benevolent; and if at any time the people were the sufferers, it must have been through their own fault. In one instance indeed it might be otherwise, and that is with respect to the venereal disease. The evidence in this case cannot be altogether satisfactory. Mr Samwell, who succeeded Mr Anderson as surgeon of the Resolution, has endeavoured to show, that the natives of the lately explored parts of the world, and especially of the Sandwich islands, were not injured by the English; and it was the constant care and solicitude of Captain Cook to prevent any infection from being communicated to the people where he came. But whether he was universally successful in this respect or not, it is evident that the late voyages were undertaken with a view exceedingly different from those of former times. The horrid cruelties of the Spanish conquerors of America cannot be remembered without concern for the cause of religion and human nature; but to undertake expeditions with a design of civilizing the world, and meliorating its condition, is certainly a noble object. From the long continued intercourse betwixt this country and the South Sea islands, there cannot be any doubt that some degree of knowledge must already have been communicated to them. Their stock of ideas must naturally be enlarged by the number of uncommon observations which have been presented to them, and new materials furnished for the exercise of their rational faculties. A considerable addition must be made to their immediate comfort and enjoyment by the introduction of useful animals and vegetables; and if the only benefit they should ever receive from Britain should be

the having obtained fresh means of subsistence, this of itself must be considered as a valuable acquisition. Greater consequences, however, may soon be expected. The connection formed with these people may be considered as the first step towards their improvement; and thus the blessings of civilization may be spread among the various tribes of Indians in the Pacific Ocean, which in time may prepare them for holding an honourable place among the nations of the earth.

As a supplement to this account of the discoveries made by Captain Cook himself, we shall here subjoin a narrative of the subsequent part of the voyage by Captains Clerke, &c. until the return of the ships to England. At the time of Captain Cook's death, the great point of a north-west passage remained in some measure to be still determined: for though, by the event of the former attempt, it had been rendered highly improbable that they should succeed in this, it was still resolved to try whether or not, at certain seasons of the year, the ice might not be more open than they had hitherto found it. The first object that naturally occurred, however, was the recovery of Captain Cook's body; for which Mr King was of opinion that some vigorous measure ought instantly to be pursued. His motives for this, besides the personal regard he had for the Captain, were to abate the confidence which must be supposed to ensue on the part of the natives, which would probably incline them to dangerous attempts; and this the more particularly, as they had hitherto discovered much less fear of the fire-arms than other savage nations were accustomed to do. Mr Samwell also takes notice of the intrepidity of the natives in this respect; but ascribes it, in the first instance, to ignorance of their effects; and in the next, to a notion, that as the effects of these arms were occasioned by fire, they might be counteracted by water. For this purpose they dipped their war-mats in water; but finding themselves equally vulnerable after this method had been pursued, they became more timid and cautious.

As matters stood at present, there was even reason to dread the consequences of a general attack upon the ships; and therefore Mr King was the more confirmed in his opinion of the necessity of doing something to convince them of the prowess of their adversaries. In these apprehensions he was seconded by the opinion of the greater part of the officers on board; and nothing seemed more likely to encourage the islanders to make the attempt than an appearance of being inclined to an accommodation, which they would certainly attribute to weakness or fear. Captain Clerke, however, and those who were in favour of conciliatory measures, urged, that the mischief was already irreparable; that the natives, by reason of their former friendship, had a strong claim to the regard of the English; and that the more particularly, as the late calamitous accident did not appear to have taken its rise from any premeditated design: they urged also the ignorance of the king concerning the theft, and the mistake of the islanders who had armed themselves on a supposition that some attempt would be made to carry off the king. To all this was added, that the ships were in want of refreshments, particularly water; that the Resolution's foremast would require seven or eight days before it could be properly repaired; and as the spring was fast advancing, the speedy prosecution of the voyage to the northward

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ought now to be the only object; that a vindictive contest with the natives might not only justify an imputation of needless cruelty, but would occasion great delay in the equipment of the ships.

In consequence of the prevalence of these sentiments lenient measures were adopted, though the behaviour of the natives continued to be very insolent. A great body still kept possession of the shore; many of whom came off in their canoes within pistol-shot of the ships, and provoking the people by every kind of insult and defiance. A train of negotiations for Captain Cook's body took place; in which the natives showed the most hostile and treacherous disposition, and, as afterwards appeared, had cut the flesh from the bones and burnt it. A piece of about ten pounds weight was brought by two natives at the hazard of their lives, who gave information that the rest had been burnt, and that the bones were in the possession of the king and some of the principal chiefs. Information was given, at the same time, that the chiefs were very desirous of war in order to revenge the death of their countrymen.

Thus it appeared that the pacific plan had answered no good purpose. No satisfactory answer had been given to the demands made of the bodies of the slain; nor was any progress made in the great work intended, viz. a reconciliation with the natives; they still remained on shore in an hostile posture, as if determined to oppose any endeavours that might be made by our people to land; at the same time that a landing was become absolutely necessary, in order to complete the flock of water. Had this spiritless conduct been persisted in, there is not the least doubt that neither this purpose nor any other could have been effected. The insolence of the natives became every day greater and greater; insomuch that one of them had the audacity to come within musket-shot of the Resolution, and, after throwing several stones, waved Captain Cook's hat over his head, while his countrymen on shore were exulting and encouraging his audacity. By this insult the people were so highly enraged, that, coming on the quarter-deck in a body, they begged that they might no longer be obliged to put up with such reiterated provocation, but might be allowed to make use of the first opportunity of revenging the death of their Captain. The necessity of more vigorous measures, therefore, being now apparent, a few discharges of the great guns, with the burning of a village and some other acts of severity, at last produced the mangled remains of Captain Cook. They were wrapped up in a bundle, in which were found both his hands entire, which were easily known by a scar in one of them dividing the fore-finger from the thumb the whole length of the metacarpal bone. Along with these was the skull, but with the scalp separated from it, and the bones of the face wanting; the scalp, with the ears adhering to it, and the hair cut short; the bones of both the arms, with the skin of the fore-arms hanging to them; the bones of the thighs and legs joined together, but without the feet. The ligaments of the joints were observed to be entire; the whole showing evident marks of having been in the fire, except the hands, which had the flesh remaining upon them, and were cut in several places and crammed with salt, most probably for the purpose of preserving them. The skull was not fractured; but the

scalp had a cut in the back part of it. The lower jaw and feet were wanting, having been seized by different chiefs.

Having accomplished the purposes of their stay in this place, Captain Clerke set sail from Karakakooa bay in O-why-hee towards Mowee, with a design to explore the coasts of that island more fully than had been done, but were unable to accomplish their purpose: nor indeed was it in their power to accomplish any discovery of consequence among these islands. The only intelligence worth mentioning which they were able to procure was, that wars had ensued about the property of the goats which were left by Captain Cook on the island of Oneehow, as has been already mentioned, and that during the contest all these poor animals, who had already begun to multiply, were destroyed; so that the benevolent attempts of our illustrious navigator in favour of these islanders had proved abortive.

On quitting the island of Oneehow our navigators set sail for another named MODOOPAPAPPA, which they were assured by the natives lay within five hours sailing of Tahoora, a small island in the neighbourhood of Oneehow. In this they proved unsuccessful; on which it was determined to steer for the coast of Kamtschatka. In the passage thither they arrived at that place where de Gama is said to have discovered a great extent of land; but of this they could discover no appearance. This imaginary continent is said to have been discovered by a navigator called *John de Gama*, but who seems also to have been imaginary, as no person can find out either the country where he lived or the time when he made the discovery. We are informed by Muller, that the first account of it was published by Texeira in a chart in 1649, who places it between the latitude of 44 and 45 degrees, and about 160° E. Long. and calls it "land seen by John de Gama, in a voyage from China to New Spain." By the French geographers it is removed five degrees farther to the east. When they arrived at Kamtschatka they were entertained in the most hospitable manner, and furnished with every thing that could be procured in that desert and barren region. "In this wretched extremity of the earth (says the narrator of the voyage), beyond conception barbarous and inhospitable, out of the reach of civilization, bound and barricaded with ice, and covered with summer snow, we experienced the tenderest feelings of humanity, joined to a nobleness of mind and elevation of sentiment which would have done honour to any clime or nation." From Major Behm, in particular, they received so many and so great obligations, that an handsome acknowledgement was made him by the Royal Society, as has been already observed. Even the sailors were so struck with his gratitude, that they voluntarily requested that their allowance of grog might be withheld, in order to compliment the garrison of Bolcheretk with the spirits; saying, that they knew brandy was extremely scarce in that country, the soldiers on shore having offered four roubles a bottle for it. The officers, however, would not allow them to suffer by their generosity in this inclement country and season of the year (the month of March not being yet expired); but, in room of the small quantity of brandy which Major Behm consented to accept, substituted an equal quantity of rum.

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Tschutski
submit to
the Em-
press.

It is worth observing, that the kindness with which the empress had ordered the British navigators to be treated in this part of her dominions was amply rewarded, even with no less than the addition of a new kingdom to the Russian empire, which hitherto her arms had not been able to subdue. Among the northern Asiatics none had been able to maintain their independence except the Tschutski, who inhabit the north-eastern extremity of the continent. No attempt to subdue these people had been made since the year 1750, when the Russian forces had at last been obliged to retreat, after having lost their commanding officer. The Russians afterwards removed their frontier fortress from the river Anadyr to the Ingiga, which runs into the northern extremity of the sea of Okotsk, and gives its name to a gulf to the west of the sea of Penschinsk. On the day that Captains Clerke and Gore arrived at Bolcharetsk, Major Behm received dispatches from this fort, acquainting him that a party of the Tschutski had been there with voluntary offers of friendship and a tribute. That on asking the reason of such an unexpected alteration in their sentiments, they had acquainted his people, that two large Russian boats had visited them towards the end of the preceding summer; that they had been shown the greatest kindness by the people who were in them, and had entered into a league of amity with them; and that, in consequence of this, they came to the Russian fort in order to settle a treaty upon terms agreeable to both nations. This incident had occasioned much speculation, and could never have been understood without the assistance of those who were now present; the large *Russian boats* having been in truth no other than the *Resolution* and *Discovery*, under Captains Cook and Clerke.

110
Vast quantity of fish.

About the middle of May the snow began to melt very fast in this inhospitable region, and the ships being now on their passage northward, met with an excellent opportunity of supplying themselves with fish. The beach was cleared of ice on the 15th of the month; from which time vast quantities came in from every quarter. Major Behm had ordered all the Kamtschadales to employ themselves in the service of the English ships; so that often they found it impossible to take on board the quantities that were sent. They chiefly consisted of herrings, trout, flat fish, and cod. These fish were here found in such plenty, that once the people of the *Discovery* surrounded such an amazing quantity with the seine, that they were obliged to throw out a very considerable number, lest the net should have been broken to pieces; and the cargo was still so abundant, that, besides having a stock for immediate use, they filled as many casks as they could conveniently spare for salting; and after sending on board the *Resolution* a tolerable quantity for the same purpose, they left behind several bushels upon the beach.

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Spirituos
liquors per-
nicious in
the sea-
scurvy.

While they remained in this country an opportunity offered of observing the pernicious effects of spirituous liquors in producing the sea-scurvy. All the Russian soldiers were in a greater or lesser degree afflicted with that disorder, some of them being in the last stage of it; and it was particularly observed that a serjeant, with whom our people had kept up a most friendly intercourse, had, *in the course of a few days*, brought upon himself the most alarming scorbutic

symptoms, by drinking too freely of the liquors with which he had been presented by the English. Captain Clerke soon relieved them, by putting them under the care of the surgeons of the ships, and supplying them with four-kroot and malt for sweet wort. In consequence of this a surprising alteration was soon observed in the figures of most of them; and their speedy recovery was principally attributed to the sweet wort.

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On the 12th of June they began to proceed northward along the coast of Kamtschatka, and three days after had an opportunity of observing an eruption of one of the volcanoes of that peninsula. On the 15th, before day light, they were surprised with a rumbling noise like distant thunder; and when the day appeared, found the decks and sides of the ships covered near an inch thick with fine dust like emery. The air was at the same time loaded and obscured with this substance; and in the neighbourhood of the volcano itself, it was so thick that the body of the hill could not be discovered. The explosions became more loud at 12 o'clock and during the afternoon, being succeeded by showers of cinders, generally of the size of pease, though some were as large as hazle-nuts. Along with these there also fell some small stones which had undergone no alteration from the action of the fire. In the evening there were dreadful claps of thunder with bright flashes of lightning, which, with the darkness of the sky, and the sulphureous smell of the air, produced a most awful and tremendous effect. The ships were at this time about 24 miles distant from the volcano; and it appeared that the volcanic shower had been carried to a still greater distance, as they next day found the bottom of the sea to consist of such small stones as had fallen upon the decks of the ships. The mountain was still observed to be in a state of eruption on the 18th.

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Eruption
of a vol-
cano.

For some time Captain Clerke kept the coast of Kamtschatka in view, with a design to make an accurate survey of it; but in this he was disappointed by foggy and squally weather: however, he determined the position of some remarkable promontories, and at last finding the season too far advanced to accomplish his design, set sail for Beering's Straits, chiefly with a view to ascertain the situation of the projecting points of the coast.

113
Voyage to
the north-
ward.

On the 3d of July our navigators came in sight of the island of St Lawrence, and another which was supposed to lie between it and Anderson's island. The latter being entirely unknown to Captain Clerke, he was inclined to have approached it, but was unable to effect his purpose. All these islands, as well as the coast of the Tschutski on the continent, were covered with snow, and had a dismal appearance.

In the preceding year Captain Cook had determined the situation of the Islands of St Diomed to be in 65° 48' latitude; but now being somewhat at a loss to reconcile this with the position of the continent, they stood for some time over to the latter, till fully convinced of the accuracy of the former observation. At this time they approached within two or three leagues of the eastern cape of Asia, which is an elevated round head of land extending about five miles from north to south, and forms a peninsula connected with the continent by a narrow isthmus of low land. It has a bold shore, and three lofty detached spiral

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spiral rocks are seen off its northern part. It was still encompassed with ice, and is covered with snow. Here they found a strong current setting to the northward, which at noon had occasioned an error in the computation of the latitude of no less than 20 miles. A similar effect had been observed the preceding year in passing this strait. On steering to the north-east the weather cleared up, so that they had a view of the eastern cape of Asia, Cape Prince of Wales on the western coast of America, with a remarkable peaked hill on the latter, and the two islands of St Diomed lying between them. Here they met with great numbers of very small hawks, having a compressed bill rather large in proportion to the body; the colour dark brown, or rather black, the breast whitish, and towards the abdomen of a reddish hue.

114
Are stopped by the ice.

On the 6th of July at 12 o'clock, the ships were in N. Lat. 67. 0. E. Long. 191. 6. when having already passed many large pieces of ice, and observed that in several places it adhered to the continent of Asia, they were suddenly stopped about three in the afternoon by an extensive body, which stretched towards the west. By this their hopes of reaching any higher latitude than what had been attained last year were considerably diminished; but finding the course obstructed on the Asiatic side, they proceeded to the north eastward, in order to explore the continent of America, between the latitudes of 68° and 69°; which had last year been found impracticable on account of the foggy weather: but in this also they were partly disappointed; for on the 7th, about six in the morning, they met with another large body of ice stretching from north-west to south-east; but not long afterwards, the horizon becoming clear, they had a view of the American coast at the distance of about ten leagues, extending from north-east by east to east, and lying between N. Lat. 68° and 68° 20'. As the ice was not very high, the view extended a great way over it, so that they could perceive it exhibiting a compact solid surface, and apparently adhering to the land. Soon after the weather became hazy, so that they lost sight of the land; and it being impossible to get nearer, they continued to steer northward close by the side of the ice. This course was continued till next morning, during which time the ships passed some drift-wood; but the morning following, the wind shifting to the north, they were obliged to stand to the westward. At two in the afternoon they were again close to an immense expanse of ice; which from the mast head seemed to consist of very large compact bodies, united towards the exterior edge, tho' in the interior parts some pieces floated in the water; it extended from west south-west to north-east by north. There was now a necessity for steering towards the south, as the strong northerly winds had drifted down such numbers of loose pieces, that they had encompassed the ships for some time, and it was impossible to avoid very severe strokes while sailing among them. Thus, however, they reached the latitude of 69. 12. and E. Long. 188. 5.; but having now sailed almost 40 leagues to the west along the edge of the ice without perceiving any opening, Captain Clerke determined to bear away south by east, the only quarter which was clear at present, and to wait till the season was somewhat farther advanced before any further attempts were made. The intermediate

time he proposed to employ in surveying the bay of St Lawrence, and the coast situated to the southward of it; as it must be a great satisfaction to have an harbour so near in case of the ships receiving any damage from the ice; and the Captain was also desirous of paying another visit to the Tchutski, especially in consequence of the accounts of them that had been given by Major Behm. In this navigation they killed several sea-horses, and had an opportunity of observing the strength of parental affection in those monstrous animals. On the approach of the boats towards the ice, all of them took their young ones under their fins, and attempted to make their escape with them into the sea. Some, whose cubs were killed or wounded, and left floating upon the surface of the water, rose again, and carried them down, sometimes just as they were on the point of being taken into the boat; and could be traced bearing them to a considerable distance through the water, which was stained with their blood. They were afterwards observed bringing them at intervals above the surface, and again plunging under its surface with an horrid bellowing; and one female, whose young one had been killed and taken on board, became so furious, that she struck her tusks through the bottom of the cutter.

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Discoveries115
Remarkable affection of the sea horses towards the young.

Our navigators still found themselves disappointed in their attempts. On approaching the coast of the Tchutski they met with a large and compact body of ice, extending to the north-east, south-west, and south-east, as far as the eye could reach; so that they were again obliged to sail back to the northward. Here also their course was soon stopped; for, on the 13th, being in N. Lat. 69. 37. and about the middle of the channel between the two continents, they once more fell in with a compact body of ice, of which they could perceive no limit. Captain Clerke therefore determined to make a final attempt on the coast of America, the passage northward having been found last year practicable much farther on than the Asiatic side. Thus they attained the latitude of 70. 8. at the distance, as was supposed, of 25 leagues from the coast of America; and some days after got about three minutes farther to the northward, about the distance of seven or eight leagues from the Icy Cape. This, however, was the utmost limit of the voyage to the north-east; and they were soon obliged to relinquish all hopes of proceeding farther on the American side. Another effort was still resolved on to try the practicability of a north-west passage; and for this purpose our navigators altered their direction on the 21st of July, passing through a great quantity of loose ice. About ten at night the main body was discovered at a very small distance, so that they were obliged to proceed to the southward. During this perilous navigation, the Discovery, after having almost got clear out from the ice, became so entangled by several large pieces, that her progress was stopped, and she immediately dropped to leeward, falling broadside foremost on the edge of a considerable body of ice, on which she struck with violence, there being an open sea to windward. At length the masts were either broken or moved so far, that the crew had an opportunity of making an effort to escape. But unluckily, before the ship gathered way sufficient to be under command, she fell to leeward a second time upon another

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The ships finally stopped by ice.117
Dangerous situation of the Discovery.

other

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other piece of ice; and the swell rendering it unsafe to lie to windward, and finding no prospect of getting clear, they pushed into a small opening, and made the vessel fast to the ice with hooks. Here the Resolution for some time lost sight of her consort, which occasioned no small uneasiness in both vessels; but at length, on a change of wind, the Discovery, setting all her sails, forced a passage, though not without losing a considerable part of her sheathing, and becoming very leaky by reason of the blows she had received.

Thus the two vessels continued to make every effort to penetrate through the immense quantities of ice with which those seas are filled winter and summer, but without success. Captain Clerke therefore finding that it was impossible either to get to the northward, or even to reach the Asiatic continent, the ships being also greatly damaged, determined to proceed southward to the bay of Awatska, on the Kamtschadale coast, to refit, and afterwards take a survey of the coasts of Japan before the winter should set in.

118
Of the extent of the Asiatic continent to the northward.

During this navigation, two general conclusions were adopted relative to the extent of the Asiatic coast, in opposition to the opinion of Mr Muller. One is, that the promontory, called the *East Cape*, is in reality the most easterly point of Asia; and that no part of that quarter of the globe extends farther than the longitude of $190^{\circ} 22'$ E. The other conclusion is, that the latitude of the most north-easterly point of Asia does not exceed 70° N. but is rather somewhat below it. As the present discoveries, however, were terminated on the Asiatic side in the 69^{th} degree of latitude, the probable direction of the coast afterwards can only be conjectured. The only sources of knowledge in this case are the Russian charts and journals; and these in general are so defective and contradictory, that the particulars of their real discoveries can scarce be collected. Hence the Russian geographers are greatly divided in their opinions concerning the extent and figure of the peninsula of the Tschutski. Mr Muller, in a map published in 1754, supposes it to extend north-east as far as the latitude of 75° , and E. Long. 19° , ending in a round cape which he calls *Tschukotskoi Nofs*. To the southward of this cape he supposes the coast to form a bay to the west, bounded in the latitude of $67^{\circ} 18'$ by Serdze Kamen, the most northerly point observed by Beering in his expedition in 1728. A new form is given to the whole peninsula in a map published by the academy at Petersburg in 1776. Here its most north-easterly extremity is placed in N. Lat. 73° , E. Long. $178^{\circ} 30'$; and its most easterly point in N. Lat. 65° , E. Long. $189^{\circ} 30'$. All the other maps vary between these two situations; and the only thing in which all of them agree is the position of the east cape in N. Lat. 66° . The form of the coast, however, is very erroneous in the map published by the academy, and may be entirely disregarded. In Mr Muller's map, the northern part of the coast has some resemblance to that laid down in Captain Cook's and Clerke's survey, as far as the latter extends; only that Mr Muller does not make it trend sufficiently to the west, but supposes it to recede only five degrees of longitude between the latitudes of 66° and 69° ; whereas it really recedes almost ten.

We must next examine Mr Muller's authority for
N^o 91.

supposing the coast to bend round to the north and north-east in such a manner as to form a large promontory.—Mr Coxe, whose accurate researches into this matter must give great weight to his opinion, thinks, that the extremity of the promontory was never doubled by any person except Deshneff and his party; who sailed, in the year 1648, from the river Kovyma, and are imagined to have got round to the river Anadyr. The account of this voyage, however, gives no geographical delineation of the coast, so that its figure must be determined by other circumstances; and from these it evidently appears, that the Tschukotskoi Nofs of Deshneff is in reality the East Cape of Captain Cook. Speaking of this Nofs, he says, that a person, with a favourable wind, may sail from the isthmus to the Anadyr in three days and three nights. This agrees entirely with the situation of the East Cape, which is about 120 leagues from the mouth of the river Anadyr; and there being no other isthmus to the north between that and the latitude of 69° , it seems evident, that by this description he certainly means either the East Cape or some other situated to the southward of it. In another place he says, that opposite to the isthmus there are two islands, upon which some of the Tschutski nation were observed, having pieces of the teeth of sea-horses fixed in their lips; and this exactly coincides with the two islands that lie to the south east of the East Cape. Our navigators indeed did not observe any inhabitants upon these islands; but it is by no means improbable, that some of those from the American coast, whom the above description perfectly suits, might have accidentally been there at the time, and been mistaken for a tribe of Tschutski.

Other circumstances, though less decisive than those just mentioned, concur in the same proof. Deshneff says, that in sailing from the Kovyma to the Anadyr, a great promontory, which projects far into the sea, must be doubled; and that this promontory extends between north and north-east. From these expressions, perhaps, Mr Muller was induced to represent the country of the Tschutski in the form we find in his map; but if he had been acquainted with the position of the East Cape as determined by Captain Cook, and the striking agreement between that and the promontory or isthmus in the circumstances above mentioned, it is most probable that he would not have deemed these expressions of sufficient weight to authorise his extending the north-eastern extremity of Asia either as far to the north or to the east as he has done.

Another authority used by Mr Muller seems to have been the deposition of the Cossack Popoff, taken at the Anadirskoi Ostrog in 1711. Popoff was sent by land, in company with several others, to demand tribute of the independent Tschutski tribes, who inhabited the country about the Nofs. In the account of this journey, the distance betwixt Anadirsk and Tschukotskoi Nofs is represented as a journey of ten weeks with loaded rein-deer. From such a vague account, indeed, we can judge but very little; but as the distance between the East Cape and Anadirsk does not exceed 200 leagues, and consequently might be accomplished in the space above mentioned at the rate of 12 or 14 miles a-day, we cannot reckon Popoff's account of its situation inconsistent with the supposition of its being the East Cape. It may likewise be observed,

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that

that Popoff's rout lay along the foot of a rock named *Maskol*, situated at the bottom of a spacious gulf, which Muller supposes to have been the bay he lays down between the latitudes of 66° and 72° ; and he accordingly places the rock *Matkol* in the centre of it: but it seems more probable, that it might be a part of the gulf of *Anadyr*, which they would undoubtedly pass in their journey towards the East Cape.

But what seems to put the matter beyond all doubt, and to prove that the cape which Popoff visited cannot be to the northward of 69° Lat. is that part of his deposition which relates to an island lying off the Nofs, from whence the opposite coast might be discerned; for as the opposite continents, in the latitude of 69° , diverge so far as to be upwards of 100 leagues distant, it is highly improbable that the Asiatic coast should again trend eastward in such a manner as to come almost in sight of that of America. As an additional proof of the position in question, we may observe, that the *Tschukotkoi Nofs* is constantly laid down as dividing the sea of *Kovyma* from that of *Anadyr*; which could not possibly be the case if any large cape had projected to the north-east in the higher latitudes.

The next question to be determined is, to what degree of latitude the northern coast of Asia extends before it inclines directly westward? Captain Cook was always strongly inclined to believe, that the northern coast of this continent, from the *Indigirka* eastward, has hitherto been usually laid down above two degrees to the northward of its true situation; for which reason, and on the authority of a map that was in his possession, as well as from intelligence received at *Oonahaska*, he placed the mouth of the *Kovyma* in the latitude of 68 degrees. Should he be right in his conjecture, it is probable that the coast of Asia does not any where extend beyond the latitude of 70 degrees before it trends to the west; and consequently our navigators must have been only one degree from its northern extremity. This seems to be confirmed by the silence of the Russian navigators concerning any extent of continent to the northward of *Shelatkoï Nofs*; nor do they mention any remarkable promontory, except the East Cape, between the *Anadyr* and the *Kovyma*. Another particular which *Deshneff* relates may perhaps be deemed a farther confirmation of this opinion, viz. that he met with no obstruction from ice in sailing round the north-eastern extremity of Asia; though he adds, that this sea is not at all times so free of it, which indeed appears evidently to be the case. That part of the continent which lies between *Cape North* and the mouth of the *Kovyma* is about 125 leagues in extent. A third part of this space, from *Kovyma* eastward, was explored in the year 1723 by *Feodot Amosoff*, who informed Mr Muller that its direction was easterly. Since that time it has been surveyed with some accuracy by *Shalauoff*, whose chart makes it trend north-east-by-east as far as *Shelatkoï Nofs*, which he places at the distance of about 43 leagues east of the *Kovyma*. The space therefore between the *Nofs* and *Cape North*, somewhat more than 80 leagues, is the only part of the Russian dominions now remaining unexplored. But if the *Kovyma* be erroneously laid down in point of longitude as well as latitude, a supposition far from being improbable, the extent of the undiscovered coast will be con-

siderably diminished. The following are the reasons why it may be supposed that the mouth of the *Kovyma* is placed too far to the westward in the Russian charts: 1. Because the accounts that have been given of the navigation of the Frozen Ocean from that river round the north-eastern extremity of Asia to the Gulf of *Anadyr*, do not agree with the supposed distance between those places. 2. Because the distance from the *Anadyr* to the *Kovyma* over land is by some Russian travellers represented as a journey of no very great length, and easily performed. 3. Because the coast from the *Shelatkoï Nofs* of *Shalauoff* appears to trend directly south-east towards the East Cape. From all which it may be inferred, with some degree of probability, that only 60 miles of the northern Asiatic coast remain to be explored.

With regard to a north-west passage from the Atlantic into the Pacific Ocean, it is highly probable that no such thing exists to the southward of the 56th degree of latitude. If, in reality, it exists any where, it must certainly be either through *Baffin's Bay*, or by the north of *Greenland* in the western hemisphere, or in the eastern through the frozen sea to the north of *Siberia*; so that in whichever continent it is seated the navigator must pass through *Beering's Straits*. All that remains now to be considered therefore is, the impracticability of penetrating into the Atlantic Ocean through these Straits. From the voyages of our navigators it appears, that the sea to the northward of *Beering's Straits* is more free from ice in August than in July, and perhaps may be still more so in some part of September. But after the autumnal equinox, the length of the day diminishes so fast that no farther thaw can be expected; and it would be unreasonable to attribute so great an effect to the warmth of the last fortnight of September as to imagine it capable of dispersing the ice from the most northern parts of the American coast. Even admitting this to be possible, it must at least be allowed that it would be highly imprudent to endeavour to avoid the *Icy Cape*, by running to the known parts of *Baffin's Bay*, a distance of about 1260 miles, in so short a time as that passage can be supposed to be open. On the side of Asia there appears still less probability of success, as appears from the testimony of the Russian as well as the English navigators. The voyage of *Deshneff* indeed proves the possibility of circumnavigating the north-eastern extremity of Asia; but even this affords a very slender foundation to hope for any great benefit, as no person besides himself appears to have succeeded in the attempt, though more than a century and an half has now elapsed since the time of his voyage. But even supposing that, in some very favourable season, this cape might be doubled, still the *Cape of Taimura* remains, extending as far as the 78th degree of latitude, and round which none pretend ever to have sailed.

These arguments seem conclusive against any expectation of a north-west or north-east passage to the East Indies, unless on the supposition of an open sea very near the polar regions. The probability of getting into the polar seas is considered under the article *POLE*; and indeed from what has already been advanced must appear very little. Waving this subject therefore at present, we shall return to the remarks made by our navigators during their second voyage.

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Remarks
during the
voyage of
Captain
Clerke to-
wards the
Icy Sea.

In this they did little more than confirm what had been observed during the first; for it never was in their power to approach the continent of Asia in any higher latitude than 67° , nor that of America in any part, excepting a few leagues, between 68° and $68^{\circ} 20'$, which they had not seen before. In both years the ice was met with sooner on the Asiatic than the American coast; but in 1779 they met with it in lower latitudes than in 1778. As they proceeded northward, the ice was found universally more compact and solid, though they were ascertained at the same time that the greatest part of what they met with was moveable. Its height on a medium was estimated at eight or ten feet; though some of the highest might be about 16 or 18. The currents were generally at the rate of one mile in the hour, and more generally set from the south-west than from any other quarter. Their force, however, was so inconsiderable, whatever their direction might be, that no conclusion could possibly be drawn from them concerning the existence or non-existence of a northern passage. With regard to the temperature of the weather, July was found much colder than August. In the former, the thermometer was once at 28° , and very frequently at 30° ; whereas during the last year it was very uncommon in August to have it as low as the freezing point. High winds were experienced in both seasons, all of which blew from the south-west. The air was foggy whenever the weather became calm; but the fogs were observed to accompany southerly winds much more than others.

The straits, in the nearest approach of the continents to each other, in the latitude of 66° , are about 13 leagues over; beyond which they diverge to N. E. by E. and W. N. W.; so that in the latitude of 69° , their distance from each other is about 300 miles. A great resemblance is observed betwixt the continents on both sides of the straits. Both are destitute of wood; the shores are low, with mountains further inland, rising to a great height. The soundings in the mid way between them were from 29 to 30 fathoms, gradually decreasing as either continent was approached; with this difference, however, that the water was somewhat shallower on the coast of America than that of Asia, at an equal distance from land. The bottom, towards the middle, was a soft slimy mud; and near either shore was a brownish sand intermixed with a few shells and small fragments of bones. There was but little tide or current, and what there was came from the west.

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Death of
Captain
Clerke.
See Clerke.

Before the ships could reach the peninsula of Kamtschatka, Captain Clerke expired; in consequence of which the command devolved upon Mr King, Captain Gore being now the superior officer. On the return to Kamtschatka, Captain Clerke was buried in the spot on which a church was to be erected; it having been his own desire to be interred in the church.

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Return to
Kamtschat-
ka, with a
description
of the Bay
of Awat-
ska.

By the time they arrived at this peninsula, the face of the country was greatly improved; the fields being covered with the most lively verdure, and every plant in the most flourishing state. The eruption of the volcano which they had observed on their last departure from Kamtschatka, had done little or no damage notwithstanding its violence. Several stones had fallen about the size of a goose's egg, but none larger. At this visit it was observed by our navigators, that the

complexions of the Russians seemed to be much more unhealthy and fallow than when they saw them formerly; and the Russians made the same observation upon the complexions of their guests. As no certain cause for this alteration could be perceived, the blame was by both parties laid on the verdure of the country; which, by contrasting itself with the colour of the people, made the latter appear to disadvantage.

Having repaired as well as they could the damages sustained by the ships among the ice, our navigators now began to proceed on their voyage southward; but the shattered condition of their vessels, with the little time they had now to spare on voyages of discovery, after having been so long at sea, now rendered them much less successful than formerly. Before leaving the peninsula, however, they took care to give such a description of the bay of Awatska as must be of great service to future navigators. This bay lies in $52. 51. N. Lat.$ and $158. 48. E. Long.$ in the bight of another bay formed by Cape Gavareea to the south, and Cheeponskoi Nofs to the north. The latter of these bears from the former N. E. by N. and is 32 leagues distant. From Cape Gavareea to the entrance of Awatska bay the coast takes a northerly direction, and extends about 11 leagues. It consists of a chain of ragged cliffs and rocks, and in many parts presents an appearance of bays or inlets; but on a nearer view, low grounds were perceived by which the headlands were connected. From the entrance of Awatska bay, Cheeponskoi Nofs bears E. N. E. distant 17 leagues. The shore on this side is flat and low, with hills behind gradually rising to a considerable height. The latitude of Cape Gavareea is $52. 21.$ By this remarkable difference of the land on both sides the Cape, navigators may be directed in their course towards it from the southward. When they approach it from the northward, Cheeponskoi Nofs becomes very conspicuous; it being a high projecting headland, and united to the continent by a large extent of level ground lower than the Nofs; and presents the same appearance whether viewed from the north or south. Should the weather happen to be sufficiently clear to admit a view of the mountains both on the sea coast and in the neighbourhood, the situation of Awatska bay may be known by the two high ones to the south of it. That nearest the bay is in the form of a sugar loaf, the other flat at top and not quite so high. Three very conspicuous mountains appear on the north side of the bay; of which that to the west appears to be the highest; the next, being a volcano, is readily known by the smoke which it emits; the third is the most northerly, and might properly be called a cluster of mountains, as it presents several flat tops to view. When got within the capes, the entrance of the bay of Awatska to the north is pointed out by a light-house on a perpendicular head-land. Many sunken rocks lie to the eastward of this head-land, stretching two or three miles into the sea; and which with a moderate sea or swell will always show themselves. A small round island lies four miles to the south of the entrance, principally composed of high pointed rocks, one of which is very remarkable. The entrance into the bay is at first about three miles wide, and one and an half in the narrowest part; the length is four miles in a north-west direction. Within the mouth is a noble

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noble

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noble basin about 25 miles in circumference; in which are the harbours of Rakoweera to the east, Tarcinska to the west, and St Peter and St Paul to the north.

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Account of
the voyage
from the
time of leav-
ing Kamt-
schatka.

On leaving Kamtschaka, it was unanimously judged improper to make any attempt to navigate the seas between the continent of Asia and Japan. Instead of this, it was proposed to steer to the eastward of that island, and in the way thither to sail along the Kuriles; examining particularly those that are situated nearest to the northern coast of Japan, which are said to be considerable, and neither subject to the Russians nor Japanese. In case they should have the good fortune to meet with some secure and commodious harbours in any of these islands, it was supposed that they might prove of considerable importance, as convenient places of shelter for subsequent navigators, who might be employed in exploring the seas as the means of producing a commercial intercourse among the adjacent dominions of the two above mentioned empires. The next object was to take a survey of the coasts of the islands of Japan; after which they designed to sail for the coast of China as far north as possible, and then sail along it southward to Macao.

In pursuance of this plan, they sailed along the coast of Kamtschatka, till they came to the southern point called *Cape Lopatka*, whose situation they determined to be in Lat. 51. 0. E. Long. 156. 45. To the north-west they observed a very lofty mountain whose summit was lost in the clouds; and the same instant the first of the Kurile islands, named *Shoomska*, made its appearance in the direction of west, half south. The passage betwixt the southern extremity of *Cape Lopatka* and the island of *Shoomska*, though only one league in breadth, is extremely dangerous, both on account of the rapidity of the tides, and of the funk rocks which lie off the Cape. In the course of this voyage, they had occasion to observe, that a violent swell from the north-east frequently took place, though the wind had been for some time in the western quarter; a circumstance for which they seem to have been altogether unable to account.

The tempestuous weather which now occurred, prevented any discoveries from being made among the Kurile Isles; however, they again sailed over the space assigned to the land of De Gama, without being able to find it; and from comparing several accounts of the Russian navigators with one another, it was judged extremely probable, that the land of *Jeso*, so frequently laid down in former maps, is no other than the most southerly of the Kurile Isles. On coming in view of the coast of Japan, they had the mortification to find that they could not approach the land by reason of the tempestuous weather and bad state of the ships; the coasts of these islands being extremely dangerous. Passing from thence in quest of the *Bashee* Islands, they found amazing quantities of pumice-stone floating in the sea; so that they seemed inclined to believe, with Mr Muller, that if there had formerly been any part of the continent, or large island, called the *Land of Jeso*, it must have disappeared in a volcanic convulsion; which also must have been the case with that called the *Company's Land* and *Staten Island*. Though they had not the good fortune to find the *Bashee* Islands, they discovered one in 24. 48. N. Lat. 141. 20. E. Long. which from its appearance, and the sulphureous smell

emitted by it, they named *Sulphur Island*. After this nothing remarkable occurred till their arrival at Canton in China, where having staid for some time in order to put their ships in repair, they at last set sail for Britain; but through stress of weather were driven as far north as Stromness in Orkney. From thence Captain Gore sent a dispatch to the Lords of the Admiralty to inform them of his arrival; and on the 4th of October 1780 the ships reached the Nore, after an absence of 4 years 2 months and 22 days.

COOKERY, the art of preparing and dressing victuals for the table: An art, in its simplest and ordinary modes, sufficiently familiar to every housekeeper; and, in its luxurious refinements, too copiously detailed in manuals and directories published for the purpose to require any enlargement here, were it even a topic that at all deserved consideration in a work of this nature.

COOLERS, in medicine, those remedies which produce an immediate sense of cold, being such as have their parts in less motion than those of the organs of feeling; as fruits and all acid liquors. Or they are such as, by a particular viscosity or grossness of parts, give the animal fluids a greater consistency than they had before, and consequently retard their motion, having less of that intestine force on which their heat depends: of this sort are cucumbers and all substances producing viscosity.

COOM, a term applied to the soot that gathers over an oven's mouth; also for that black, greasy substance, which works out of the wheels of carriages.

COOMB, or COMB, of *Corn*, a dry measure containing 4 bushels, or half a quarter.

COOP, in husbandry, a tumbrel or cart inclosed with boards, and used to carry dung, grains, &c.

COOP is also the name of a pen, or enclosed place, where lambs, poultry, &c. are shut up in order to be fed.

COOPER, a tradesman who makes casks, tubs, and barrels, for holding liquors or other commodities. Every custom-house and excise office has an officer called *King's-cooper*; and every ship of burden has a cooper on board.

COOPER (Anthony-Ashley), first earl of Shaftesbury, a most able statesman, was the son of Sir John Cooper, Bart. of Rockborn in Hampshire, and was born in 1621. He was elected member for Tewkesbury at 19 years of age, in the short parliament that met April 13. 1640. He seems to have been well affected to the king's service at the beginning of the civil wars; for he repaired to the king at Oxford with offers of assistance: but prince Maurice breaking articles to a town in Dorsetshire that he had got to receive him, furnished him with a pretence for going over to the parliament, from which he accepted a commission. When Richard Cromwell was deposed, and the Rump come again into power, they nominated Sir Anthony one of their council of state, and a commissioner for managing the army. At that very time he had engaged in a secret correspondence for restoring Charles II. and, upon the king's coming over, was sworn of his privy council. He was one of the commissioners for the trial of the regicides; was soon after made chancellor of the exchequer, then a commissioner of the treasury; in 1672 was created earl of Shaftesbury; and soon after was raised to the post of lord chancellor.

Cookery
||
Cooper.

Cooper. lor. He filled this office with great ability and integrity; and though the short time he was at the helm was in a tempestuous season, it is doing him justice to say, nothing could either distract or affright him. The great seal was taken from him in 1673, 12 months after his receiving it; but, though out of office, he still made a distinguished figure in parliament, for it was not in his nature to remain inactive. He drew upon himself the implacable hatred of the duke of York, by steadily promoting, if not originally inventing, the famous project of an exclusion-bill. When his enemies came into power, he found it necessary to consult his safety by retiring into Holland, where he died six weeks after his arrival, in 1683. While his great abilities are confessed by all, it has been his misfortune to have his history recorded by his enemies, who studied to render him odious. Butler has given a very severe character of him in his *Hudibras*.

COOPER (Anthony Ashley), earl of Shaftesbury, was son of Anthony earl of Shaftesbury, and grandson of Anthony first earl of Shaftesbury, lord high chancellor of England. He was born in 1671, at Exeter-house in London, where his grandfather lived, who from the time of his birth conceived so great an affection for him, that he undertook the care of his education; and he made so good a progress in learning, that he could read with ease both the Latin and Greek languages when only 11 years old. In 1683, his father carried him to the school at Winchester, where he was often insulted on his grandfather's account, whose memory was odious to the zealots for despotic power: he therefore prevailed with his father to consent to his desire of going abroad. After three years stay abroad, he returned to England in 1689, and was offered a seat in parliament in some of those boroughs where his family had an interest. But this offer he did not now accept, that he might not be interrupted in the course of his studies, which he prosecuted five years more with great vigour and success; till, on Sir John Trenchard's death, he was elected burghers for Pool. Soon after his coming into parliament, he had an opportunity given him of expressing that spirit of liberty by which he uniformly directed his conduct on all occasions. It was the bringing in and promoting "the act for regulating trials in cases of high treason." But the fatigues of attending the house of commons, in a few years so impaired his health, that he was obliged to decline coming again into parliament after the dissolution in 1698. He then went to Holland, where the conversation of Mr Bayle, Mr le Clerc, and several other learned and ingenious men, induced him to reside a twelvemonth. During this time, there was printed at London, in 8vo. an imperfect edition of lord Ashley's *Inquiry concerning Virtue*. It had been surreptitiously taken from a rough draught, sketched when he was no more than 20 years of age. His lordship, who was greatly chagrined at this event, immediately bought up the impression before many books were sold, and set about completing the treatise, as it afterwards appeared in the second volume of the *Characteristics*. Soon after lord Ashley's return to England, he became, by the decease of his father, earl of Shaftesbury. But his own private affairs hindered him from attending the house of lords till the second year of his peerage, when he was very earnest

to support king William's measures, who was at that time projecting the grand alliance. So much was he in favour with king William, that he had the offer of secretary of state; but his declining constitution would not allow him to accept it. Though he was disabled from engaging in business, the king consulted him on matters of very high importance; and it is pretty well known that he had the greatest share in composing that celebrated last speech of king William, December 31. 1701. On Queen Anne's accession to the throne, he returned to his retired manner of life, being no longer advised with concerning the public; and was then removed from the vice-admiralty of Dorset, which had been in the family for three generations. In 1703, he made a second journey to Holland, and returned to England the year following. The French prophets, soon after this, having by their enthusiastic extravagancies made a great noise throughout the nation, and, among different opinions, some advising a prosecution, the lord Shaftesbury apprehended that such measures tended rather to inflame than to cure the disease. This was the origin of his *Letter concerning Enthusiasm*, which he sent to lord Somers, then president of the council; and which, being approved of by that nobleman and other gentlemen to whom it was shown, was published in 1708, tho' without the name of the author, or that of the person to whom it was addressed. His *Moralist*, a philosophical Rhapsody, being a recital of certain conversations on natural and moral subjects, appeared in Jan. 1709; and in the May following his *Sensus Communis*, an Essay upon the Freedom of Wit and Humour, in a Letter to a Friend. It was in the same year that he entered into the marriage state with Mrs Jane Ewer, the youngest daughter of Thomas Ewer, Esq; of Lee in Hertfordshire. By this lady, to whom his lordship was related, he had an only son, Anthony the late Earl of Shaftesbury. In 1710, his *Soliloquy, or Advice to an Author*, was published at London in 8vo. While he was thus employing himself in literary composition, his health declined so fast, that it was recommended to him to seek assistance from a warmer climate. Accordingly, in July 1711, he set out for Naples, and pursuing his journey by way of France, was obliged to pass through the Duke of Berwick's army, which at that time lay encamped near the borders of Piedmont. Here he was entertained by that famous general in the most friendly manner, and every assistance was given him to conduct him in safety to the Duke of Savoy's dominions. Our noble author's removal to Italy was of no service to the re-establishment of his health; for after having resided at Naples about a year and a half, he departed this life on the 4th of February, O. S. 1712-13, in the 42d year of his age. The only pieces which he finished after he came to this city, were the *Judgment of Hercules*, and the *Letter concerning Design*, which last was added to that impression of the *Characteristics* which appeared in 1732. It was in 1711 that the first edition was published of all the *Characteristics* together, and in the order in which they now stand. But this publication not being entirely to his lordship's satisfaction, he chiefly employed the latter part of his life in preparing his writings for a more elegant edition; which was given to the world in 1713, soon after his decease. The several prints that were then first

Cooper. interspersed through the volumes were all invented by himself, and designed under his immediate inspection; and for this purpose he was at the pains of drawing up a most accurate set of instructions, the manuscript of which is still preserved in the family. That no mistakes might be committed, the Earl did not leave to any other hands so much as the drudgery of correcting the press. In the three volumes of the *Characteristics of Men, Manners, Opinions, and Times*, he completed the whole of his works which he intended for the public eye. Not long before his death he had formed a scheme of writing a discourse on painting, sculpture, and the other arts of design, which, if he had lived to have finished it, might have proved a very pleasing and useful work, as he had a fine taste in subjects of that kind: but his premature decease prevented his making any great progress in the undertaking. The Earl of Shaftesbury had an esteem for the works of the best English divines; one remarkable instance of which was displayed in his writing a Preface to a volume of Dr Whichcot's Sermons, published in 1698. Copies of these sermons had been taken in short-hand, as they were delivered from the pulpit; and the Earl had so high an opinion of them, that he not only introduced them to the world by his Preface, but had them printed under his own particular inspection. In his Letters to a Young Man at the University, he speaks of Bishop Burnet and Dr Hoadly in terms of great applause, and has done justice to the merits of Tillotson, Barrow, Chillingworth, and Hammond, as the chief pillars of the church against fanaticism. But whatever regard his lordship might have for some of our divines, it was to the writings of antiquity that his admiration was principally directed. These were the constant objects of his study, and from them he formed his system of philology, which was of the civil, social, and theistic kind.

Of Lord Shaftesbury's character as a writer, different representations have been given. As one of his greatest admirers, may be mentioned Lord Monboddo; who, speaking of his Rhapsodist in particular, does not hesitate to pronounce it not only the best dialogue in English, out of all degree of comparison, but the sublimest philology; and, if we will join with it the Inquiry, the completest system both of morality and theology that we have in our language, and, at the same time, of the greatest beauty and elegance for the style and composition.

Even several of the authors who have distinguished themselves by their direct opposition to many of the sentiments which occur in the *Characteristics*, have nevertheless mixed no small degree of applause with their censures. "I have again perused, with fresh pleasure and fresh concern (says Mr Balguy, in his Letter to a Deist), the volumes of *Characteristics*—I heartily wish the noble author had been as unprejudiced in writing as I was in reading. If he had, I am persuaded his readers would have found double pleasure and double instruction. It seems to me, that his lordship had little or no temptation to pursue any singularities of opinion by way of distinction. His fine genius would sufficiently have distinguished him from vulgar authors in the high road of truth and good sense; on which account his deviations seem the more to be lamented. The purity and politeness of his style, and the delicacy of his sentiments,

are and must be acknowledged by all readers of taste and sincerity. But nevertheless, as his beauties are not easy to be overlooked, so neither are his blemishes. His works appear to be stained with so many gross errors, and his fine thoughts are so often mingled with absurdities, that however we may be charmed with the one, we are forced to condemn the other." Mr Balguy hath farther observed, with regard to the Inquiry concerning Virtue, which is the immediate object of his animadversion, that though he cannot agree in every particular contained in it, he finds little more to do than to tell how much he admires it; and that he thinks it indeed, in the main, a performance so just and exact as to deserve higher praises than he is able to give it.

Dr Brown, in his *Essay on the Characteristics*, observes, that the Earl of Shaftesbury hath in that performance mingled beauties and blots, faults and excellencies, with a liberal and unsparring hand. At the same time, the Doctor applauds that generous spirit of freedom which shines throughout the whole. Another direct antagonist of the Earl of Shaftesbury, Dr Leland, has observed, that no impartial man will deny him the praise of a fine genius. "The quality of the writer (continues the Doctor), his lively and beautiful imagination, the delicacy of taste he hath shown in many instances, and the graces and embellishments of his style, though perhaps sometimes too affected, have procured him many admirers. To which may be added his refined sentiments on the beauty and excellency of virtue, and that he hath often spoken honourably of a just and good Providence, which ministers and governs the whole in the best manner; and hath strongly asserted, in opposition to Mr Hobbes, the natural difference between good and evil; and that man was originally formed for society, and the exercise of mutual kindness and benevolence; and not only so, but for religion and piety too. These things have very much prejudiced many persons in his favour, and prepared them for receiving, almost implicitly, whatever he hath advanced." Dr Johnson, as we are informed by Sir John Hawkins, bore no good-will to Lord Shaftesbury; "neither did he seem at all to relish the cant of the Shaftesburian school, nor inclined to admit the pretensions of those who professed it, to tastes and perceptions which are not common to all men; a taste in morals, in poetry, and prose writing, in painting, in sculpture, in music, in architecture, and in government! A taste that censured every production, and induced them to reprobate every effort of genius that fell short of their own capricious standard."

The grand point in which our noble author has ren- *Biog. Brit.*
 dered himself justly obnoxious to the friends of reli- *vol. iv.*
 gion, is his having interspersed through the *Characteristics* a number of insinuations that appear to be unfavourable to the cause of revelation. There have not, however, been wanting many among his admirers, who have thought that he ought not to be reckoned among the deistical writers. The author of *Animadversions* upon Dr Brown's three *Essays on the Characteristics* observes, that it is "imprudent, to say no worse, in some sincere advocates for Christianity, to reject the friendly advice and assistance of so masterly a writer as the Lord Shaftesbury, and to give him up to the deists as a patron of infidelity." But it is matter of fact, and not considerations of prudence or imprudence, that
 must

Cooper. must determine the question. In support of his Lordship's having been a believer in our holy religion, may be alleged, his Preface to Whichcot's Sermons, and his Letters to a Student at the University: in both which works he constantly expresses himself in such language as seems to indicate that he was really a Christian. And with regard to the Letters it may be remarked, that they were written in 1707, 1708, and 1709, not many years before his lordship's death. Nevertheless, there are in the Characteristics to many sceptical passages, that he must be considered as having been a doubter at least, if not an absolute disbeliever, with respect to revelation. But if he must be ranked amongst the deists, we agree with the observation of one of his biographers, that he is a very different deist from numbers who have appeared in that character; his general principles being much less exceptionable.

The style of Lord Shaftesbury's compositions is also a point upon which various and contradictory sentiments have been entertained. But for the fullest and most judicious criticism that has appeared upon that subject, we may refer the reader to Dr Blair's Lectures on Rhetoric and Belles Lettres, Vol. I. p. 192, 193, 207, 208, 234, 263, and 396—398.

COOPER (Samuel), a very eminent English miniature painter, born in 1609, and bred under the care of his uncle John Hoskins. He derived, however, his principal excellence from a study of the works of Van Dyck, in whose time he lived; inasmuch that he was commonly styled "Van Dyck in little." His pencil was chiefly confined to the head, in which, with all its dependences, especially the hair, he was inimitable; but if he descended lower, his incorrectness was notorious. He died in 1672; and his pieces are universally admired all over Europe, selling for incredible prices.—He had a brother, Alexander, likewise a good miniature painter, who became limner to Christina queen of Sweden.

COOPER (Thomas), a pious and learned prelate in the reign of queen Elizabeth, was born at Oxford about the year 1517. He was educated in the school adjoining to Magdalene college, of which he was a chorister; where also, in 1539, he was elected probationer, and fellow in the following year. About the year 1546, quitting his fellowship, he applied himself to the study of physic, in 1556 took the degree of bachelor in that faculty, and practised as physician at Oxford. Being inclined to the Protestant religion, probably this was only a prudent suspension of his final intentions during the Popish reign of queen Mary: for, on the accession of Elizabeth, he resumed the study of divinity; became a celebrated preacher, was made dean of Christchurch and vice chancellor of the university, having accumulated the degrees of bachelor and doctor in divinity. In 1569 he was made dean of Gloucester; and, the year following, bishop of Lincoln: whence, in 1584, he was translated to the see of Winchester; in which city he died on the 29th of April 1594, and was buried in the cathedral there, on the south side of the choir. The several writers who have mentioned Dr Cooper, unanimously give him the character of an eloquent preacher, a learned divine, and a good man. He had the misfortune while at Oxford to marry a lady whose gallantries became notorious: nevertheless he would not be divorced from her; knowing that he

could not live without a wife, he did not choose "to charge his conscience with the scandal of a second marriage."—He wrote, 1. The Epitome of Chronicles from the 17th year after Christ to 1540, and thence after to 1560. 2. The *Thesaurus linguæ Romanæ et Britannicæ*. This dictionary, which is an improvement upon Elyot's, was much admired by queen Elizabeth, who thence forward determined to promote the author. 3. A brief exposition of such chapters of the Old Testament as usually are read in the church, at common prayer, on Sundays throughout the year. 4. An admonition to the people of England. 5. Sermons.

COOPER (John-Gilbert), a polite writer of the present age, was born in 1723; and was descended from an ancient family in the county of Nottingham, whose fortune was injured in the last century by their attachment to the principles of monarchy. He resided at Thurgarton priory in Nottinghamshire, which was granted by King Henry VIII. to William Cooper, one of his ancestors. This mansion Mr Cooper inherited from his father, who in 1739 was high-sheriff of the county; and transmitted it to his son, who filled the same respectable office in 1783. After passing through Westminster school under Dr John Nicoll, along with the late Lord Albemarle, Lord Buckinghamshire, Major Johnson, Mr George Ashby, and many other eminent and ingenious men, he became in 1743 a Fellow-Commoner of Trinity-college, Cambridge, and resided there two or three years; but quitted the university on his marriage with Susanna the daughter of William Wrighte, Esq; son to the Lord Keeper of that name, and Recorder of Leicester 1729—1763. In the year 1745 he commenced author by the publication of *The Power of Harmony*, a poem in 4to; and in 1746 and 1747 he produced several Essays and Poems under the signature of Philaethes, in a periodical work called *The Museum*, published by Mr Doddsley. In the same year he came forward as an author, with his name, by a work which received much assistance from his friend the Reverend John Jackson of Leicester, who communicated several learned notes, in which he contrived to manifest his dislike to his formidable antagonist Mr Warburton. It was intitled *The Life of Socrates*, collected from the *Memorabilia* of Xenophon and the *Dialogues* of Plato, and illustrated farther by Aristotle, Diodorus Siculus, Cicero, Proclus, Apuleius, Maximus Tyrius, Boëthius, Diogenes Laërtius, Aulus Gellius, and others, 1749, 8vo. In this work Mr Cooper gave evident marks of superior genius; warm, impetuous, and impatient of restraint. In 1754, Mr Cooper published his *Letters on Taste*, 8vo; an elegant little volume, on which no small share of his reputation is founded; and in 1755, *The Tomb of Shakespeare*, a Vision, 4to; a decent performance, but in which there is more of wit and application than of nature or genius. In 1756 he assisted Mr Moore, by writing some numbers of *The World*; and attempted to rouse the indignation of his countrymen against the Hessians, at that juncture brought over to defend the nation, in a poem called *The Genius of Britain*, addressed to Mr Pitt. In 1758, he published *Epistles to the Great*, from Aristippus in Retirement, 4to; and *The Call of Aristippus*, Epistle IV. to Mark Aken-side, M.D. Also, *A Father's Advice to his Son*, in 4to.

Co-ordi-
nate
||
Copaiba.

In the Annual Register of the same year is his Translation of An Epistle from the King of Prussia to Monsieur Voltaire. In 1759, he published Ver Vert; or, the Nun- nery Parrot; an Heroic Poem, in four cantos; inscribed to the Abbés of D***; translated from the French of Monsieur Greffet, 4to; reprinted in the first vo- lume of Dilly's Repository, 1777; and, in 1764, Poems on several Subjects, by the Author of the Life of Socrates; with a prefatory Advertisement by Mr Doddsley. In this little volume were included all the separate poetical pieces which have been already men- tioned, excepting Ver Vert, which is a sprightly com- position. Mr Cooper died at his father's house in May- Fair, after a long and excruciating illness arising from the stone, April 14. 1769.

CO-ORDINATE, something of equal order, rank, or degree, with another.

COOT, in ornithology. See FULICA.

COOTWICH (John), doctor of laws, was born at Utrecht, and spent great part of his life in travelling. He published in Latin, in 1619, an account of his jour- ney from Jerusalem and from Syria; which is very scarce and in high esteem. Time of his death uncertain.

COPAIBA, or *Balsam of COPAIBA*, a liquid resinous juice, flowing from incisions made in the trunk of the copaifera balsamum. See the following article. This juice is clear and transparent, of a whitish or pale yellowish colour, an agreeable smell, and a bitterish pungent taste. It is usually about the consistence of oil, or a little thicker: when long kept, it becomes nearly as thick as honey, retaining its clearness; but has not been observed to grow dry or solid, as most of the other resinous juices do. We sometimes meet with a thick sort of balsam of copaiba, which is not at all transparent, or much less so than the foregoing, and generally has a portion of turbid watery liquor at the bottom. This sort is probably either adulterated by the mixture of other substances, or has been extracted by coction from the bark and branches of the tree: its smell and taste are much less pleasant than those of the genuine balsam. Pure balsam of copaiba dissolves en- tirely in rectified spirit, especially if the menstruum be previously alkalinized: the solution has a very fragrant smell. Distilled with water, it yields a large quantity of a limpid essential oil; and in a strong heat, without addition, a blue oil.

The balsam of copaiba is an useful corroborating de- tergent medicine, accompanied with a degree of irri- tation. It strengthens the nervous system, tends to loosen the belly, in large doses proves purgative, pro- motes urine, and cleanses and heals exulcerations in the urinary passages, which it is supposed to perform more effectually than any of the other balsams. Fuller observes, that it gives the urine an intensely bitter taste, but not a violet smell as the turpentine does.

This balsam has been principally celebrated in gleets and the fluor albus, and externally as a vulnerary. The author above mentioned recommends it likewise in dy- senteries, in scorbutic cachexies, in diseases of the breast and lungs, and in an acrimonious or putrescent state of the juices: he says, he has known very danger- ous coughs, which manifestly threatened a consump- tion, cured by the use of this balsam alone; and that, notwithstanding its being hot and bitter, it has good

effects even in hectic cases. Most physicians seem now, however, to consider balsams and resins too sti- mulant to be ventured on in phthical affections.

The dose of this medicine rarely exceeds 20 or 30 drops, though some direct 60 or more. It may be conveniently taken in the form of an elæosaccharum, or in that of an emulsion, into which it may be reduced by triturating it with almonds, or rather with a thick mu- cilage of gum-arabic, till they are well incorporated, and then gradually adding a proper quantity of water.

COPAIFERA, in botany: A genus of the mono- gnyia order, belonging to the decandria class of plants; and in the natural method ranking under those of which the order is doubtful. There is no calyx; there are four petals; the legumen ovate; one seed with an arillus or coat resembling a berry. We know but of one species, the balsamum, being that which yields the copaiba balsam mentioned in the preceding article. This tree grows near a village called *Ayapel*, in the province of Antiochi, in the Spanish West Indies, about ten days journey from Carthagea. There are great numbers of these trees in the woods about this village, which grow to the height of 50 or 60 feet. Some of these trees do not yield any of the balsam; those which do, are distinguished by a ridge which runs along their trunks. These trees are wounded in the centre, and they place calabash shells, or some o- ther vessels, to the wounded part to receive the balsam, which will all flow out in a short time. One of these trees will yield five or six gallons of balsam: but tho' they will thrive well after being tapped, yet they ne- ver afford any more balsam.

COPAL, improperly called *gum copal*, is a gum of the resinous kind brought from New Spain, being the concrete juice of a tree * which grows in these parts. * *Rhus Co- pallinum*. It comes to us in irregular masses, some of which are transparent, and of different shades as to colour, from a light yellow to a deep brown. Some pieces are whitish and semitransparent. To the smell it is more agreeable than frankincense; but hath nei- ther the solubility in water common to gums, nor in spirit of wine common to resins, at least in any con- siderable degree. By these properties it resembles amber; which has induced some to think it a mineral bitumen resembling that substance. In distillation it yields an oil, which like mineral petrolea is indissolu- ble in spirit of wine. Copal itself is soluble in the essen- tial oils, particularly in that of lavender, but not easily in the expressed ones. It may, however, be dissolved in linseed oil by digestion, with a heat very little less than is sufficient to boil or decompose the oil. This solution, diluted with spirit of turpentine, forms a beautiful transparent varnish, which when properly applied, and slowly dried, is very hard and durable. This varnish is applied to snuff-boxes, tea-boards, and other utensils. It preserves and gives lustre to paintings, and greatly restores the decayed colours of old pictures, by filling up the cracks and rendering the surfaces capable of reflecting light more uniformly.

COPARCENARY, the share or quota of a co- parcener.

COPARCENERS, (from *con* and *particeps*, "part- ner;"), or PARCENERS; such as have equal portions in the inheritance of their ancestor.

Copaifera
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Coparcen-
ers.

Cope
||
Copenha-
gen.

Coparceners are so either by law or custom. Coparceners by law, are the issue female; which, in default of a male heir, come equally to the lands of their ancestor. Coparceners by custom, are those who, by some peculiar custom of the country, challenge equal parts in such lands; as in Kent, by the custom of gavelkind. The crown of England is not subject to coparcenary.

COPE, an ecclesiastical ornament, usually worn by chanters and subchanters, when they officiate in solemnity. It reaches from the shoulders to the feet. The ancients called it *pluviale*.—The word is also used for the roof or covering of a house, &c.

COPE is also the name of an ancient custom or tribute due to the king or lord of the soil, out of the lead-mines in some part of Derbyshire; of which Manlove saith thus:

Egrefs and regrefs to the king's highway,
The miners have; and *lot* and *cope* they pay:
The thirteenth dish of ore within their mine,
To the lord, for *lot*, they pay at measuring time;
Sixpence a load for *cope* the lord demands,
And that is paid to the *burghmister's* hands.

This word by doom-day-book, as Mr Hagar hath interpreted it, signifies a hill: and *cope* is taken for the supreme cover, as the *cope* of *heaven*.

COPEL. See CUPEL.

COPENHAGEN, the capital of the kingdom of Denmark, situated on the eastern shore of the island of Zealand, upon a fine bay of the Baltic sea, not far from the strait called the *Sound*. E. Long. 13. 0. N. Lat. 55. 30.

The precise date of the foundation of this city is disputed; but the most probable account is, that it took its rise from a castle built on the spot in the year 1168, as a protection against the pirates which at that time swarmed in the Baltic. The conveniency of the situation, and the security afforded by the castle, soon induced a number of the inhabitants of Zealand to resort thither: but it was not distinguished by the royal residence until 1443, during the reign of Christopher of Bavaria; since which period it has been gradually enlarged and beautified, and is become the capital of Denmark.

Copenhagen is the best built city of the north; for although Petersburg excels it in superb edifices, yet, as it contains no wooden houses, it does not display that striking contrast of meanness and magnificence, but in general exhibits a more equable and uniform appearance. The town is surrounded towards the land with regular ramparts and bastions, a broad ditch full of water, and a few outworks: its circumference measures between four and five miles. The streets are well paved, with a foot-way on each side, but too narrow and inconvenient for general use. The greatest part of the buildings are of brick; and a few are of free-stone brought from Germany. The houses of the nobility are in general splendid, and constructed in the Italian style of architecture: the palace, which was erected by Christian VI. is a large pile of building; the front is of stone, and the wings of brick stuccoed; the suite of apartments is princely; but the external appearance is more grand than elegant.

The busy spirit of commerce is visible in this city, which contains about 80,000 inhabitants. The haven is always crowded with merchant ships; and the streets are intersected by broad canals, which bring the mer-

N^o 91.

chandize close to the warehouses that line the quays. This city owes its principal beauty to a dreadful fire in 1728, that destroyed five churches and 67 streets, which have been since rebuilt in the modern style. The new part of the town, raised by the late King Frederic V. is extremely beautiful, scarcely inferior to Bath. It consists of an octagon, containing four uniform and elegant buildings of hewn stone, and of four broad streets leading to it in opposite directions. In the middle of the area stands an equestrian statue of Frederic V. in bronze, as big as life, which cost 80,000 l. The Royal Museum, or Cabinet of Rarities, merits the attention of travellers. This collection, which was begun by Frederic III. is deposited in eight apartments, and ranged in the following order: animals, shells, minerals, paintings, antiquities, medals, dresses, arms and implements of the Laplanders.

Part of Copenhagen, which is called *Christianshafen*, is built upon the Isle of Amak, which generally attracts the curiosity of foreigners; (see AMAK). From this place, to which the main city is joined by a bridge, the markets are supplied with fowl, beef, mutton, venison, corn, and culinary vegetables, which are produced here in the greatest abundance.

COPERNICAN, in general, something belonging to COPERNICUS. Hence,

COPERNICAN System or *Hypothesis*, that system of the world, wherein the sun is supposed to rest in the centre, and the planets, with the earth, to move in ellipses round him. See COPERNICUS.

COPERNICUS (Nicolaus), an eminent astronomer, was born at Thorn in Prussia, Jan. 10. 1472. He was taught the Latin and Greek languages at home; and afterwards sent to Cracovia, where he studied philosophy and physic. His genius in the mean time was naturally turned to mathematics, which he pursued through all its various branches. He set out for Italy when he was 23 years of age; but staid at Bonaonia some time, for the sake of being with the celebrated astronomer of that place, Dominicus Maria; whose conversation, however, and company, he affected, not so much as a learner, as an assitant to him in making his observations. From thence he passed to Rome, where he was no sooner arrived than he was considered as not inferior to the famous Regiomontanus; and acquired in short so great a reputation, that he was chosen professor of mathematics, which he taught for a long time with great applause. He also made some astronomical observations there about the year 1500. Returning to his own country some years after, he began to apply his vast knowledge in mathematics to correct the system of astronomy which then prevailed. He set himself to collect all the books which had been written by philosophers and astronomers, and to examine all the various hypotheses they had invented for the solution of the celestial phenomena; to try if a more symmetrical order and constitution of the parts of the world could not be discovered, and a more just and exquisite harmony in its motions established, than what the astronomers of those times so easily admitted. But of all their hypotheses none pleased him so well as the Pythagorean, which made the sun to be the centre of the system, and supposed the earth to move not only round the sun, but round its own axis also. He thought he discerned much beautiful

Coperni-
can,
Coperni-
cus.

Copernicus beautiful order and proportion in this; and that all **Cophti.** that embarrassment and perplexity from epicycles and excentrics, which attended the Ptolemaic hypotheses, would here be entirely removed.

This system, then, he began to consider, and to write upon, when he was about 35 years of age. He employed himself in contemplating the phenomena carefully; in making mathematical calculations; in examining the observations of the ancients, and in making new ones of his own; and after more than 20 years chiefly spent in this manner, he brought his scheme to perfection, and established that system of the world which goes by his name, and is now universally received, (see *ASTRONOMY*, n^o 22.) His system, however, was then looked upon as a most dangerous heresy: for which he was thrown into prison by Pope Urban VIII. and not suffered to come out till he had recanted his opinion; that is, till he had renounced the testimony of his senses. He died the 24th of May 1543, in the 70th year of his age.

This extraordinary man had been made canon of Worms by his mother's brother, Lucas Wazlerodius, who was bishop of that place. He was not only the greatest of astronomers, but a perfect master of the Greek and Latin tongues; to all which he joined the greatest piety and innocence of manners.

COPERNICUS, the name of an astronomical instrument, invented by Mr Whiston, to exhibit the motion and phenomena of the planets, both primary and secondary. It is built upon the Copernican system, and for that reason called by his name.

COPHTI, **COPIHTS**, or **COPTI**, a name given to the Christians of Egypt, who are of the sect of Jacobites.

The critics are extremely divided about the origin and orthography of the word; some write it Cophti, others Cophites, Cophitæ, Copts, &c. Scaliger derives the name from Coptos, an anciently celebrated town of Egypt, the metropolis of the Thebaid. Kircher refutes this opinion, and maintains, that the word originally signifies "cut" and "circumscribed;" and was given these people by the Mahometans, by way of reproach, because of their practice of circumcising: but P. Sollier, another Jesuit, refutes this opinion. Scaliger afterwards changed his opinion, and derived the word from *ΑΙΥΠΤΩ*, the ancient name of Egypt, by retrenching the first syllable: but this opinion, too, P. Sollier disputes. John de Leo and others say, that the Egyptians anciently called their country *Elchibib*, or *Cibib*, from Cibth their first king, whence Cophite, &c. others say from Cobtim second king of Egypt. Vaufler derives the word Copht from Copt son of Misraim, grandson of Noah. All these etymologies P. Sollier rejects, on this principle, that were they true, the Egyptians ought all equally to be called *Cophti*; whereas, in effect, none but the Christians, and among those none but the Jacobites, bear the name, the Melchites not being comprehended under it. Hence he chooses to derive the word from the name *Jacobi*, retrenching the first syllable; whence, Cobite, Cobeia, Copta, and Cophta.

The Cophts have a patriarch who resides at Cairo, but he takes his title from Alexandria: he has no archbishop under him, but 11 or 12 bishops. The sect of the clergy, whether secular or regular, is com-

posed of the orders of St Antony, St Paul, and St Macarius, who have each their monasteries. Besides the orders of priests, deacons, and subdeacons, the Cophts have likewise archimandrites, the dignity whereof they confer with all the prayers and ceremonies of a strict ordination. This makes a considerable difference among the priests; and besides the rank and authority it gives them with regard to the religious, it comprehends the degree and functions of archpriests. By a custom of 600 years standing, if a priest elected bishop be not already archimandrite, that dignity must be conferred on him before episcopal ordination. The second person among the clergy, after the patriarch, is the titular patriarch of Jerusalem, who also resides at Cairo, because of the few Cophts at Jerusalem; he is, in effect, little more than the bishop of Cairo: only he goes to Jerusalem every Easter, and visits some other places in Palestine near Egypt, which own his jurisdiction. To him belongs the government of the Cophtic church, during the vacancy of the patriarchal see.

To be elected patriarch, it is necessary the person have lived all his life in continence: it is he confers the bishoprics. To be elected bishop, the person must be in the celibate; or, if he have been married, it must not be above once. The priests and inferior ministers are allowed to be married before ordination; but are not obliged to it, as Ludolphus erroneously observes. They have a great number of deacons, and even confer the dignity frequently on children. None but the lowest rank among the people commence ecclesiastics; whence arises that excessive ignorance found among them: yet the respect of the laity towards the clergy is very extraordinary. Their office is longer than the Roman office, and never changes in any thing: they have three liturgies, which they vary occasionally.

The monastic life is in great esteem among the Cophts: to be admitted into it, there is always required the consent of the bishop. The religious Cophts make a vow of perpetual chastity; renounce the world, and live with great austerity in deserts: they are obliged to sleep in their clothes and their girdle, on a mat stretched on the ground; and to prostrate themselves every evening 150 times, with their face and breast on the ground. They are all, both men and women, of the lowest class of the people; and live on alms. The nunneries are properly hospitals; and few enter but widows reduced to beggary.

F. Roderic reduces the errors and opinions of the Cophts to the following heads: 1. That they put away their wives, and espouse others while the first are living. 2. That they have seven sacraments; viz. baptism, the eucharist, confirmation, ordination, faith, fasting, and prayer. 3. That they deny the Holy Spirit to proceed from the Son. 4. That they only allow of three oecumenical councils; that of Nice, Constantinople, and Ephesus. 5. That they only allow of one nature, will, and operation, in Jesus Christ, after the union of the humanity with the divinity. For their errors in discipline, they may be reduced, 1. To the practice of circumcising their children before baptism, which has obtained among them from the 12th century. 2. To their ordaining deacons at five years of age.

Cophti.

Copti,
Coptic.

3. To their allowing of marriage in the second degree.
4. To their forbearing to eat blood: to which some add their belief of a baptism by fire, which they confer by applying a hot iron to their forehead or cheeks.—Others palliate these errors, and show that many of them are rather abuses of particular persons than doctrines of the sect. This seems to be the case with regard to their polygamy, eating of blood, marrying in the second degree, and the baptism of fire: for circumcision, it is not practised as a ceremony of religion, nor as of any divine appointment, but merely as a custom which they derive from the Ishmaelites; and which, perhaps, may have had its origin from a view to health and decency in those hot countries.

The Coptits, at different times, have made several reunions with the Latins; but always in appearance only, and under some necessity of their affairs. In the time of pope Paul IV. a Syrian was dispatched to Rome from the patriarch of Alexandria, with letters to that pope; wherein he acknowledged his authority, and promised obedience; desiring a person might be dispatched to Alexandria, to treat about a re-union of his church to that of Rome: pursuant to which, Pius IV. successor to Paul, chose F. Roderic, a Jesuit, whom he dispatched in 1561, in quality of apostolical nuncio. But the Jesuit, upon a conference with two Coptits deputed for that purpose by the patriarch, was made to know, that the titles of father of fathers, pastor of pastors, and master of all churches, which the patriarch had bestowed on the pope in his letters, were no more than mere matters of civility and compliment; and that it was in this manner the patriarch used to write to his friends: they added, that since the council of Chalcedon, and the establishment of several patriarchs independent of one another, each was chief and master of his own church. This was the answer the patriarch gave the pope, after he had received a sum of money remitted to him from Rome, by the hands of the Venetian consul.

COPHTIC, or COPTIC, the language of the Coptits, the ancient language of the Egyptians, mixed with a great deal of Greek, the characters it is written in being all Greek. It has a form and construction peculiar to itself: it has no inflections of the nouns or verbs; but expresses number, case, gender, person, mood, tense, and possessive pronouns, by letters and particles prefixed.

F. Kircher is the first who published a grammar and vocabulary of the Coptic. There is not known any book extant in the Coptic, except translations of the Holy Scriptures, or of ecclesiastical offices; or others that have relation thereto, as dictionaries, &c.

The ancient Coptic is now no longer found but in books; the language now used throughout the country is Arabic. The old Coptic, which Kircher maintains to be a mother-tongue, and independent of all others, had been much altered by the Greek: for besides that it has borrowed all its characters from the Greek, with a very little variation, a great number of the words are pure Greek. Vossius, indeed, asserts, that there was no Coptic language till after Egypt became subject to the Arabs. The language, according to him, is a mixture of Greek and Arabic: the very name thereof not being in the world till after the Arabs

were masters of the country. But this, M. Simon observes, proves nothing; except that what was anciently called *Egyptian*, has since by the Arabs been called *Coptic*, by a corruption of speech. There are, it is true, Arabic words in the Coptic; yet this by no means proves but that there was a language before that time, either Coptic or Egyptian. Pietro de la Valle observes, that the Coptits have entirely lost their ancient tongue; that it is now no longer understood among them; that they have nothing extant therein but some sacred books; and that they still say mass in it.

All their other books have been translated into Arabic, which is their vulgar tongue; and this has occasioned the originals to be lost: it is added, that they rehearse the epistles and gospels in the mass twice; once in Arabic and once in Coptic. Indeed, if we believe F. Vansleb, the Coptits say the mass in Arabic, all but the epistles and gospels, which they rehearse both in that and Coptic.

COPHTIC Bible. See BIBLE.

COPHTIC Liturgies are three; one attributed to Basil, another to St Gregory, and the third to Cyril: they are translated into Arabic for the use of the priests and people.

COPIATA, under the western empire, a grave-digger. In the first ages of the church there were clerks destined for this employment. In the year 357, Constantine made a law in favour of the priests copiatæ, i. e. of those who had the care of interments; whereby he exempts them from the lustral contribution which all other traders paid. It was under him also that they first began to be called *copiatæ*, q. d. clerks destined for bodily labour, from *κοπος*, or *κοποω*, *scindo*, *cado*, *ferio*, "I cut, beat," &c. Before that time they were called *decani* and *leſſicarii*; perhaps because they were divided by decads or tens, each whereof had a bier or litter for the carriage of the dead bodies. Their place among the clerks was the next in order before the chantors.

COPING of a wall, the top or cover of a wall, made sloping to carry off the water.

COPING over, in carpentry, a sort of hanging over, not square to its upright, but bevelling on its under side till it end in an edge.

COPIST, in diplomatic science, signifies a transcriber or copier of deeds, books, &c.

COPPA, in law, a cop or cock of grafs, hay, or corn, divided into titheable portions; as the tenth cock, &c. This word in strictness denotes the gathering or laying up the corn in cops or heaps, as the method is for barley or oats, &c. not bound up, that it may be the more fairly and justly tithed: and in Kent they still retain the word, a *cop* or *cap* of hay, straw, &c.

COPPEL. See CUPEL.

COPPER, the finest of the imperfect metals, called by the alchemists *Venus*, on account of its facility of uniting with a great number of different metallic substances. Its colour, when pure, is pale red, and its specific gravity from 8.7 to 9.3, which depends not only on its degree of purity, but also on its condensation by hammering. The specific gravity of Japan copper is to water as 9000 to 1000; but that of the Swedish kinds only as 8784 or 8843.—The colour, when

Coptic
Copper.

Copper. when clean, is very brilliant, but it is extremely liable to tarnish. It has a disagreeable smell, very perceptible on friction or on being heated: its taste is styp- tic and nauseous, but less perceptible than that of iron. Its tenacity, ductility, and hardness, are very considerable, and its elasticity superior to that of any other metal except steel. From this last quality masses of the metal emit a loud and lasting sound when struck; and this more especially when cast into a proper form, viz. such an one as may make the metal vibrate in the most simple manner possible. Thus, if cast into the hollow form of a bell, without any cracks or imperfections, an uniform tone will be produced by it; or at least the tones produced by the stroke will consist of a single predominant one, and of others that have an agreement with it. When broken by often bending backward and forward, it appears internally of a dull red colour, without any brightness, and of a fine granulated texture; not ill resembling, as Cramer observes, some kinds of earthen ware. It continues malleable in a red heat, and in this state extends much more easily than when cold; but has not that valuable quality of iron, by which two pieces cohere together when heated to a great degree. In a heat far below ignition, the surface of a piece of polished copper becomes covered with various ranges of prismatic colours; the red of each order being nearest to the end which has been most heated. Reduced to a fine powder, or even to filings, and thrown across a flame, it produces blue or green colours, whence its use in fireworks. It requires a fierce heat to melt it; less, according to Mr Wedgwood, than gold or silver*, but more according to some other metallurgists.—It is remarkably impatient of moisture when in a state of fusion; and the contact even of a very small quantity of water will cause a vast mass of melted metal to be thrown about with incredible violence, to the imminent danger not only of the bystanders but even of the strongest furnaces and buildings. Effects of this kind are said to have been produced by so slight a cause as the workmen spitting in a furnace full of melted copper.

Copper is found in the bowels of the earth in the following states.

I. Native copper, having the red colour, the malleability, and all the other properties of the metal. It is distinguished, says Mr Fourcroy, into two kinds; copper of the first formation and copper of the second formation or cementation. The copper of the first formation is dispersed in laminæ or fibres, in gangue almost always quartzose; some of its crystals resemble a kind of vegetation, but other specimens are in masses or grains. Copper of cementation is commonly in grains or superficial laminæ, on stones or on iron: this last appears to have been deposited in waters containing vitriol of copper which has been precipitated by iron. Native copper is found in many places of Europe; particularly in various parts of Scotland, England, and Wales; at St Bell in Lyons; at Norberg in Sweden, and Newfol in Hungary. It is also to be met with in several parts of America.—Mr Kirwan says, it is met with either of its own peculiar colour or blackish or grey; and that either in grains or in large shapeless solid lumps; in a foliated, capillary, or arborefcnt form, or crystallized in quadrangular pyramids, in or on clay, chert, quartz, fluors,

zeolytes, &c. He accounts for its origin by supposing it to have been originally precipitated by iron from waters which held it in solution, which is the purest sort: but in many cases it could not have been produced in that manner; and then this sort is never very pure, but mixed with gold, silver, or iron, or with sulphur; which last combination is called *black copper*.

Native copper is found in very considerable quantities at Cape Lizard in Cornwall: it is formed into threads or branches, and lies in veins of some thickness, contained in blackish serpentine mixed with brownish red, and covered externally with a greenish nephrites, partly adherent to it and partly loose. Native copper, in large lumps, has also been found in the same rocks: but a more considerable quantity is found at Huel Virgin in the same county. Here it shoots into various branches and in various directions: the pieces seem to be formed of small rhomboidal crystals interspersed with quartz, the impressions of which are to be seen in the copper itself; from whence we might conclude that the quartz existed before the metal. Some of these lumps of native copper have been found in this spot that weighed from 20 to 30 pounds; and in the month of March 1785 there were no less than 28 millions of pounds of rich copper ore extracted from this mine. At a place called *Catar-rach*, contiguous to Huel Virgin, some crystallized native copper has been found, with the transparent vitreous copper ore, to be afterwards mentioned, crystallized in octahedrons of a ruby colour; though the latter now begins to be very scarce. Near this place also a compact native copper is found in lumps of a spherical form; the copper either still in its metallic form, or beginning to be transformed into red copper-glass, imbedded in decayed granite. Native copper of a tender and moss-like form, united to vitreous ruby copper-ore, crystallized in rhombs, is found in the clefts of the mountains composed of killas, near Pol-dry.—An indurated iron-clay has lately been found under the surface of the sea in the Faro isles, in which there is scattered a zeolite with native copper.

II. Mineralized by fixed air; of which there are several varieties. 1. Red copper, or hepatic ore of copper. This is known by its red dusky colour, similar to that of the scales beat off from copper by hammering. It is seldom met with, and then is generally mixed with native copper and mountain green. Sometimes it is crystallized in octahedrons or silky fibres, and is called *flowers of copper*. Mr Kirwan says, that it is sometimes met with in a loose form, and generally called *copper ochre*; but is usually of a moderate hardness, though brittle; sometimes crystallized and transparent, either in a capillary form, or in cubes, prisms, or pyramids: it effervesces with acids, and is found in Scotland, England, and Germany. According to Mr Fontana, 100 parts of it contain 73 of copper, 26 of fixed air, and one of water. Mr Kirwan distinguishes the hepatic ore as being of a brown colour. It "contains a variable proportion of iron or pyrites, and sometimes sulphurated copper; and hence affords from 20 to 50 per cent. of copper. It is often *iridescent*" (we suppose showing the colours of the rainbow). 2. Earthy copper, mountain-green, green chryfocolla or malachite. The last, according to Mr Kirwan, looks like

* See *Chemistry*, n° 104.

I Native copper.

2 Where found.

3 Different ores mineralized with fixed air.

Copper. green jasper, but less hard, and does not strike fire with steel, is of a radiated or equable texture, generally of an oval form, and the size of an egg, but sometimes forming capillary filaments. Muschenbrook fixes its specific gravity from 3.5 to 3.994. It is sometimes mixed with calcareous earth and gypsum. According to Mr Fontana, 100 parts of the purest fort contain 75 of copper and 25 of aerial acid and water. ⁴ Mountain green is generally found in a loose and friable slate, rarely crystallized and indurated, often mixed with calcareous earth, iron, and some arsenic. An hundred parts of the purest kind contain 72 of copper, 22 of aerial acid, and 6 of water.

⁴
Mountain
green.

A compact green copper ore, like malachite, mixed with grey copper ore, and likewise green velvet-like copper in the form of bunches, are found at Huel Virgin in Cornwall. At Carrarach, in the same county, is found also an amorphous green copper ore, on a decayed granite; and at St Menan, the same is found stratified betwixt quartz, and covered with a brownish iron. Cronstedt informs us, that both the green and blue colours of copper ores depend on a menstruum, and therefore may be oftenedulcorated or washed away. In Saalfeld they find also a sort of green, somewhat indurated, calcareous substance, containing copper: this, when broken, looks fat, and somewhat shining; but, upon the whole, it resembles a jasper. It is there very improperly called a *green copper glass-ore*. Good copper is made of it; and, with a phlogistic substance, without being ustulated, it forms a kind of bell-metal fit for being employed for that purpose.

⁵
Malachite.

The malachite, according to Mr Fourcroy, is frequently found in Siberia, composing beds, some of which represent nipples of various magnitudes. Some specimens are composed of needles, converging towards a common centre. The grain of malachite is sufficiently hard to take a fine polish, and is therefore formed into toys of different kinds; but as it is frequently porous and full of unequal cavities, the solid pieces of a certain size are reckoned valuable. The strata in which it is found are often of different shades of green. The mountain green is a true ochre of copper, of a more or less deep green, not heavy, and unequally distributed on its gangue: it appears to be combined with the cretaceous acid. There are two varieties besides the malachite, *viz.* the simple mountain green, and that which is crystallized, or the silky copper ore of China. It is common in the Hartz, and likewise in China. It is very pure, and crystallized in long silky bundles of considerable solidity. To these three states, says Mr Fourcroy, we may add a beautiful green sand, brought by M. Dombey from Peru, which appears to be a calx of this metal mixed with sand, and containing a small quantity of muriatic acid.

⁶
Mountain
blue, or
blue chry-
socola.

3. The third variety of this species is the mountain-blue, or blue chrysocola. This, according to M. Fourcroy, is a calx of copper of a deep blue colour, sometimes regularly formed in rhomboidal prismatic crystals of a fine blue, in which case it is called azure of copper. "All these calces of copper (says he) appear to have been precipitated from vitriolic solutions of copper, by the intermedium of calcareous earths through which the waters have transfused. M. Sage considers these blue copper ores as combinations

of copper with the volatile alkali; from which he affirms that they differ only in their degree of solubility; he likewise thinks that the malachites is produced from this blue, which he calls transparent azure copper ore; but most mineralogists are of a different opinion." Mr Kirwan tells us, that 100 parts of this ore contain about 69 of copper, 29 of aerial acid, and 2 of water. Mr Morveau, in the Memoirs of the Academy of Dijon for 1782, has shown, that the calces of copper ore determined to a blue rather than a green colour, by a greater proportion of phlogiston.

III. Cupreous stones. These are the *turquoise* and *lapis armenus*. The former of these is improperly called a stone, being the tooth of an animal penetrated by the blue calx of copper. It loses its colour when heated; is opaque, of a lamellar texture, and susceptible of a fine polish; its specific gravity from 2.5 to 2.908; some are of a deep blue, some more white, and become deeper when heated. They are found in Persia and in Languedoc in France; the copper may be extracted from them by distilled vinegar. Reaumur informs us, Mem. Par. 1715, that nitrous acid will not dissolve the Persian turquoise, though it will that of France. The lapis armenus has calcareous earth or gypsum for its base; whence it sometimes effervesces with acids and sometimes not. It is used in painting, when ground to a fine powder, under the name of *BICE*. To these Mr Fourcroy adds "copper mineralized by the muriatic acid and united to clay." This ore has been confounded with talc; and it was exposed to sale at Paris, in the year 1784, under the name of green mica. It consists of small beautifully green crystals, or small brilliant scales. It was discovered by Mr Forster in the mines of John Georgenstadt; the green cupreous sand of Peru already mentioned, perhaps belongs to the same class.

⁷
Turquoise
and lapis
armenus.

IV. Copper mineralized by sulphur, with scarce any iron, improperly called vitreous copper ore. This is of a deep violet grey, greenish brown, or liver colour; melting with a very gentle heat, ponderous, sometimes flexible, and always yielding to the knife. When broken it appears of a bright golden colour. It is sometimes found in shapeless masses, sometimes regularly crystallized; is much more fusible than pure copper, and has a specific gravity from 4.81 to 5.338. It is found in mines of other copper ores, in limestone, spar, quartz, mica, and clay: it is the richest of all the copper ores; affording from 80 to 90 *per cent.* of copper, 10 or 12 of sulphur, and a small proportion of iron.

⁸
Copper mi-
neralized
by sulphur.

V. Copper mineralized by sulphur with a large proportion of iron, azure copper ore; does not differ from the preceding but in the quantity of iron it contains, which sometimes amounts to 50 *per cent.* It yields 50 or 60 pounds of copper *per hundred*, the rest being sulphur. The less iron this ore contains, the richer it is in copper; and it has by many been confounded with indurated mountain blue.

⁹
With a
large pro-
portion of
iron.

VI. Copper mineralized by sulphur, with much iron, the yellow copper ore, or yellow pyrites. The colour of this is yellow, or yellow mixed with red or green, or variegated like a pigeon's neck; it is inferior in hardness to the other pyrites, not readily giving fire with steel as they do. It is sometimes found crystallized, and sometimes in shapeless masses; its specific gravity

¹⁰
Yellow cop-
per ore, or
yellow py-
rites.

^{Copper.} gravity is about 4.16. It occurs both in separate masses and embodied in stones, being the most common of all the copper ores. The crystallized kind affords least metal, containing only from 4 to 8 *per cent.* the remainder being chiefly iron. It is generally reddish, and is in fact only a martial pyrites with a small portion of copper; the greenish yellow contains most sulphur, and from 15 to 20 *per cent.* of copper; the pure yellow contains most copper, viz. from 20 to 30 *per cent.* "The cupreous pyrites (says M. Fourcroy) often present very brilliant blue or violet colours at their surface, which are produced by the decomposition of their principles: they are then called *chatoyant* ores of copper, or ores resembling the peacock's tail: they commonly contain a large quantity of sulphur, a small quantity of iron, and are not rich in copper; such are the ores of Derbyshire in England, some of those of St Bell in Lyons, and many ores of Alfatia, such as those of Caulenbach and Feldens."

¹¹
Arsenical
or grey
copper ore.

VII. Copper united to sulphur, arsenic, iron, and a small quantity of silver. This is called arsenical or grey copper ore, and is of a white, grey, or brown colour; of moderate hardness, very brittle, sometimes crystallized, and often of an indeterminate figure. It is very difficult of fusion, and more ponderous than the former. It contains from 35 to 60 *per cent.* of copper; the brown is the richest in copper; the white or grey contains most arsenic; and if the silver it contains exceed 1 or 2 *per cent.* it is called grey silver ore. It is found embodied in all sorts of stones, and mixed with other copper ores, as well as with the ores of other metals.

A great variety of sulphurated copper ores is to be met with in the mines of Cornwall, viz. a whitish-grey ore crystallized in small triangular and quadrangular pyramids, with truncated points, is found along with the solid copper ore at Poldice and Dolcoth: but the richest are the solid grey ones found in various places; some of which may be cut with a knife like the soft vitreous silver ore. The most remarkable of the yellow ores is the stalactitical ore, of an hemispherical form, called *run yellow-copper*, often variegated with different colours. A compact red glassy copper ore, covered with mountain green, or green copper, and with calciform copper of a vermilion red colour, is found in crystallized quartz, mixed with tender green mica. We also meet with an *olive-green-coloured* copper ore which is arsenical, and crystallized into tender spiculæ of about three lines long, standing up straight, either single or fasciculated, or radiated, found on the granitical mountain at Carrarach. These crystals melt before the blow-pipe with an arsenical fnoke, and afterwards melt, forming a button of a grey colour, which, on being melted again with borax, soon produces a very pure copper. Another kind of arsenical cupreous crystals are likewise met with in the form of green cubes run together, with smooth and shining surfaces, upon grey copper-ore, in a mass of crystallized compact quartz, with various crystals in itself; and greatly resembling small cubes of fluor.

VIII. Copper mineralized by sulphur and arsenic with zinc and iron; brown or blendose copper ore. Mr Monnet found this ore only at Catherineberg in Bohemia; it is brown, granulated, and very hard, and contains from 18 to 30 *per cent.* of copper.

¹²
Brown or
blend. se
copper ore.

This kind of ore may be analysed in the liquid way by solution in nitrous acid, and precipitation of the copper by iron. The iron and zinc are precipitated by the Prussian alkali; the precipitate is then calcined and redissolved in nitrous acid, and the solution evaporated to dryness. The iron being thus dephlogisticated, becomes insoluble in the nitrous acid, but the calx of zinc is redissolved, and again precipitated by the Prussian alkali. An hundred grains of this precipitate are equivalent to 20 of zinc in its metallic state; and 100 grains of dephlogisticated iron are equivalent to 73½ of iron in its metallic state.

^{Copper.}

IX. Argillaceous schistose, or slaty copper ore, seems to consist of the vitreous copper ore intimately combined with schistus, and not barely dispersed through it in visible particles: it is of a brown or black colour, lamellar texture, and very heavy; affording from 6 to 10 *per cent.* of copper, and is of difficult fusion, unless limestone be added. It contains a little bitumen, calcareous earth, and iron.

¹³

X. Bituminous copper ore is a kind of pitcoal found in Sweden. It burns with little or no flame, but leaves ashes from which copper is extracted.

¹⁴

XI. Black copper ore, of the colour of pitch. Mr Gellert denominates it copper ore in scorix: it is a residuum of the decomposition of the yellow and grey copper ores which contain neither sulphur nor arsenic, and approaches to the state of malachite; it has a black shining appearance like pitch.

¹⁵

XII. Copper united to sulphur and arsenic containing antimony, or antimonial copper ore, is mentioned by Mr Sage in his Elements of Mineralogy. It is grey, and bright in its fracture like antimony, and contains from 14 to 20 *per cent.* of metal.

¹⁶

XIII. Copper dissolved by the vitriolic acid. In the year 1673, our countryman Dr Brown visited a famous copper-mine at Hern-grundt, about seven English miles from Newfol in the Upper Hungary; and he informs us, that there he saw two springs, called the *Old and New Zimerit*, which turned iron to copper, as it is vulgarly said. But the case is, that the iron is dissolved by the vitriolic acid of this spring-water, and the copper is precipitated in its metallic form in the place of the iron. It has been the custom in Germany for some centuries to collect the copper contained in these waters, by filling with them some pits made purposely for this operation. Old iron is thrown in, and being dissolved by the acid, is suspended in the water, whilst the copper is precipitated: the mud being raked out, is melted afterwards in a furnace, and a very fine copper is produced: from 100 tons of iron, 84 and sometimes 90 tons of fine copper is thus produced.

But although this method of obtaining copper has been long practised in Germany, yet it is but of late years, says Bishop Watson (p. 238. of the first volume of his Essays), that any successful attempts of this kind have been made either in England or Ireland. In this last, at least, it was quite owing to an accident. There are the very celebrated copper-mines at Arklow, in the county of Wicklow in Ireland; and from these mines issues a great quantity of water, strongly impregnated with vitriol of copper. One of the workmen having accidentally left an iron shovel in this water, he found it some weeks after so incrustated with a coat

off

Copper.

of copper, that it was thought to be changed into copper.

The proprietors of the mines, in pursuance of this hint, made proper pits and receptacles for the water; and have obtained, by means of soft iron bars put into them, such quantities of copper, that these streams are now of as much consequence as the mines themselves. One ton of iron produces near two tons of copper mud; and each ton of mud produces, when melted, 16 hundred weight of copper, which sells for L. 10 Sterling a ton more than the copper which is fluxed from the ore.

There is in the isle of Anglesey, on the coast of North Wales, a mountain called *Paris*, which abounds in copper-ore, the bed of ore being above 40 feet in thickness. The lessees of this mine annually raise from six to seven thousand tons of merchantable ore, and daily employ above 40 furnaces in smelting it. This ore contains a great quantity of sulphur, which must be separated by roasting before it can be fluxed into copper. The phlogiston, with part of the vitriolic acid, is dispersed into the air by the force of the fire; another part of the acid attacks and dissolves such a quantity of the copper, that the water in which the roasted ore is washed (by means of old iron immersed in it according to the German method) produces great quantities of fine copper, so that the proprietors have there obtained in one year near 100 tons of the copper precipitated from this water.

If this water was afterwards evaporated, it would yield green vitriol or vitriolated iron, at nearly the rate of 200 tons of vitriol for each hundred ton of iron at least; which, at the rate of L. 3 Sterling *per* ton, might perhaps produce very good profit to the undertakers, if any should settle such a manufacture there.

Besides the celebrated copper-mines at Arklow in the county of Wicklow in Ireland, there are no less than seventeen different places in Britain in which copper-mines are found, as mentioned by Dr Campbell in the 2d vol. p. 44. of his *Political Survey of Britain*. These are Cardiganshire, Cheshire, Cornwall, Cumberland, Derbyshire, Devonshire, Lancashire, Isle of Man, Northumberland, Shropshire, Somersetshire, Staffordshire, Yorkshire, Wales, Warwickshire, Westmoreland, and North Britain: some that are worked at this time give such large products of this metal, that the opening more copper-mines in this island would probably affect the copper-trade of Europe in a very considerable manner. The Ecton mine, in the estate of the Duke of Devonshire, on the frontiers of Derbyshire, but properly situated in the county of Staffordshire, produces at least 300 tons of copper *per annum*. That of the mountain called *Paris*, in the island of Anglesey, whose bed of ore is about 40 feet in thickness, produces about 1500 tons of copper in the year; and the copper-mines of Cornwall produce no less than 4000 tons in the same period. Mr Jars, who visited these mines in the year 1770, found, upon calculation, that the annual produce of these mines amounted to L. 140,000 Sterling; and M. H. Klaproth, in his *Observations on the Fossils of Cornwall*, just published (in 1787), asserts that this account is not an exaggerated one.

Copper is purified with less difficulty than iron; and

its goodness is judged of by the bright redness of its colour.

The impurity of copper proceeds from the mixture of heterogeneous substances that are alloyed with it, on account of being naturally contained in the copper-ores. Iron and arsenic are the chief of these natural mixtures. The copper-ores of variegated colours, the white copper-ores, and generally those mineralized by sulphur, contain a greater proportion of iron; whilst the blue and green copper-ores commonly produce a purer metal, being free, for the most part, of any considerable ferruginous mixture. The great aim, therefore, of the metallurgist must be directed to separate these mixtures from the copper, beginning by the proper examination of the ore, and by ascertaining the proportion of sulphur that may be required to scorify the quantity of iron there contained. The ore should always be roasted by a slow fire, in a close furnace, which contributes the best towards scorifying the ferruginous and heterogeneous mixtures; and the same operation must be repeated after the second and third fusion of the metal, till its grain becomes of an homogeneous fine texture. The mixture of sulphureous pyrites in the fusion of the metal contributes towards obtaining this object; if their quality be chosen according to the quantity of sulphur wanting. But in the second, third, and following operations, only pure sulphur should be added, to scorify the remainder of the iron that is still intermixed with the copper. This should be done when the metal is already well fused; covering it immediately with a proper quantity of charcoal, and separating the scoria or dross formed on the surface of the fused metal.

The copper extracted from those mines near Newfol, in Upper Hungary, is said to be usually melted 14 times before it is fit for use. These are the greatest copper-mines in all Hungary. There are, however, other mines, whose copper requires far less fusions to be well purified. The above was the process of Mr Delius, director of the mines of Bannat near Temesware in Hungary, proposed by him to the imperial board of the Austrian mines.

Pure copper allowed to cool slowly will form itself into regular crystallizations, which the Abbe Mongaz describes as quadrangular pyramids, sometimes solid, and sometimes composed of other similar small pyramids laterally adhering. When heated it becomes coloured on its surface, nearly in the same manner as steel; the colours are blue, yellow, and lastly violet; it does not melt but by a violent white heat, though much inferior to that which melts iron. When in a state of fusion it appears covered with a green flame, which the filings of the metal likewise produce when projected through flame; and hence are used in fireworks, as has been already remarked. The crystallization of the metal above mentioned is best perceived by suffering the metal to cool slowly; and after the surface is become congealed, the fluid portion being poured off, the remaining solid part is found to be crystallized in pyramids, which are more regular and large in proportion as the fusion has been more complete and cooling more gradual. The pyramids, according to Fourcroy, are quadrangular, and appear to be formed of a great number of octahedrons inserted into one another.

Copper.

17
Copper crys-
tallizes
when cool-
ing.

18
Burns with
a green
flame when
melted.

19
Particular
description
of the crys-
tals.

Copper. another. When heated with excess of air, this metal burns at its surface, and is converted into a calx of a dark red colour, in proportion as it absorbs the base of the dephlogisticated part of the atmosphere. The calx may be easily obtained by heating a ball of copper red-hot, the form of which causes the calx to scale off; and the same effect takes place when red-hot copper is quenched in cold water; the separation of the calx being promoted by the sudden contraction of the metal. This calx is called the scales of copper, and may be further calcined till it becomes of a deep brown; after which, by violent heat, it may be melted into a blackish or deep reddish brown mass. The scorix may partly be reduced without any additional phlogiston; for the founders, who buy them of the coppermiths, take no other trouble with them than that of throwing them into large crucibles on the melted copper, with which they incorporate by fusion; and the same method is made use of to melt the filings. The calx of copper appears to possess some saline properties, but its nature has not yet been ascertained.

20
How the calx is obtained.

21
The scorix partly reduced without addition.

22
Copper rusts by exposure to the air, but without any corrosion of its internal parts.

23
Patina, a name for the rust of copper on medals.

24
Qualities of this metal when taken into the human body.

25
The tinning of copper.

It is, however, justly complained, that the tinning of copper-vessels is not sufficient to defend them from the action of the air, moisture, and saline substances; because these vessels, even when well tinned, are observed to be subject to rust. This might possibly be remedied by a thicker covering of tin; and a manufacture of this kind was some time ago established at Edinburgh, though it does not appear to have much attracted the notice of the public; which, however, is no objection to the usefulness of the invention. The method employed was to make the surface of the copper very rough, with a machine contrived for that purpose, and the tin put upon it in this situation; after which the copper was hammered smooth as before. Mr Fourcroy objects to this thicker covering of tin, that there "is reason to fear that a degree of heat superior to that of boiling water, to which these vessels are often exposed, would melt the tin and leave the surface of the copper uncovered." This objection is surely void of foundation: for as long as there remains any liquid in the vessel, the tin will not melt though the heat were applied to it directly without any intervention of copper; and if a dry heat were applied, a thin covering of tin would be still less able to resist it than a thick one. Our author, however, observes, that to prevent this accident the tin may be alloyed with iron, silver, or platina, to diminish its fusibility, and render it capable of being applied in thicker strata on the copper. Alloys of this kind, he tells us, are already used in several manufactures.

Copper.

The very small quantity of tin required to cover the surface of the copper is surprising; a vessel of 9 inches in diameter and $3\frac{1}{2}$ inches in depth, being found to gain no more than 21 grains by this operation. This small quantity is nevertheless sufficient to prevent the dangers which might arise from the use of copper-vessels, provided care be taken not to allow substances capable of dissolving the tin to remain too long in them; but more especially that the tin be frequently renewed, as the friction, heat, and action of spoons, with which the included substances are stirred, very soon destroy it.

26

Very small quantity of tin required for this purpose.

There is likewise another cause of apprehension, according to our author, viz. that the tin is often alloyed with lead, even to the quantity of one-fourth of its weight; in which case the latter may exert its mischievous influence, especially as it is known that lead is easily soluble in fatty substances. To prevent this sophistication, he is of opinion that government should take sufficient care that the braziers be not deceived in the tin they purchase, and that they may not employ any but the Malacca or Banca tin, in the state it is received from the East Indies, without having been alloyed or melted by the pewterers. A better method, however, seems to be that proposed by M. Folie of Rouen, to use vessels of forged iron covered over on the inside with zinc, which, he says, have already been used with advantage by certain persons; and it were to be wished that its use might become more general.

27

Best kind of tin ought to be employed.

Copper is also used in mixture with other metals, particularly tin and zinc, in enamel-painting, dyeing, &c. Mixed with tin in considerable quantity, it produces BELL-METAL; with a smaller proportion BRONZE; with zinc it forms BRASS, PINCHBECK, or SIMILOR, MANHEIM GOLD, &c. according to the proportion; it

28

Zinc recommended instead of tin.

29

Various mixtures of copper with other metals.

Copperas
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Copy.

³⁰
Of its ef-
fects as a
poison.

being always observable, that the compounds most nearly resembling gold in colour have the least ductility and are most brittle. See these articles, and CHEMISTRY-Index.

With regard to the poisonous qualities of copper when taken into the body, much less danger seems to arise than from those of arsenic, on account of its easy solubility; nor indeed have we met with any well authenticated instance of a person who has died in consequence of swallowing even verdigrease itself. In one case, where an unlucky boy had swallowed some bits of this substance thrown out of a chemist's laboratory, the symptoms were only violent sickness and vomiting, from which he recovered by drinking warm water largely; and probably nothing else would be requisite in any case, though Mr Fourcroy advises *emetics*, abundance of water, liver of sulphur, alkalis, &c. The use of emetics in such a case, however, seems altogether superfluous; since verdigrease, in the quantity of a grain or a grain and a half, has been ordered by some medical writers in the case of poison swallowed otherwise, as the emetic most quick in its operation that could be thought of.

COPPERAS, a name given to the factitious green vitriol. See CHEMISTRY-Index.

COPPERPLATE. See ENGRAVING.

COPPICE, or COPSE, a little wood, consisting of under-woods, or such as may be raised either by sowing or planting.

COPTOS (anc. geog.), a famous trading town of the Thebais, inhabited by Egyptians and Arabs, some distance from the Nile; others place it in a small island in the Nile, on which, however, it had a port. Here Isis, on hearing of the death of Osiris, cut one of her locks and put on mourning; and hence the name *Coptos*, signifying privation. A proof this of the antiquity of the place. And for this reason the Isiaci, or priests of Isis, were bald, according to Juvenal.

COPULATION, the act of generation, or the congress of the male and female, otherwise called *coition*. See GENERATION.

COPY, in a law sense, a transcript of a writing or instrument, made for the use and satisfaction of some of the parties concerned, or in order to preserve the memory thereof.

COPY is also used for an imitation of any original work; particularly a painting, draught, figure, &c.

COPY, among printers, denotes the manuscript or original of a book given to print from.

Copr-Hold, a tenure for which a tenant has nothing to show but the copy of the rolls made by the steward of the lord's court.

It is called a base tenure; because the tenant holds the land at the will of the lord. However, it is not simply at the will of the lord, but according to the custom of the manor by which such estate is descendible, and the tenant's heirs may inherit it; and a copy-holder, so long as he does his services, and does not break the custom, cannot be ejected by the lord; and if he be, he shall have trespass against him. See the articles TENURE and VILLENAGE.

Copr-Holder, one who is admitted tenant of lands or tenements within a manor, which time out of mind, by use and custom of the manor, have been demisable, and demised to such as will take them in fee-simple
N^o 91.

or fee-tail, for life, years, or at will, according to the custom of the manor by copy of court-roll; but is generally where the tenant has such estate either in fee or for three lives.

Copy.

Copy-Right, the right which an author may be supposed to have in his own original literary compositions; so that no other person, without his leave, may publish or make profit of the copies. When a man by the exertion of his rational powers has produced an original work, he has clearly a right to dispose of that identical work as he pleases; and any attempt to take it from him, or vary the disposition he has made of it, is an invasion of his right of property. Now the identity of a literary composition consists entirely in the sentiment and the language; the same conceptions, clothed in the same words, must necessarily be the same composition: and whatever method be taken of conveying that composition to the ear, or to the eye of another, by recital, by writing, or by printing, in any number of copies, or at any period of time, it is always the identical work of the author which is so conveyed; and no other man (it hath been thought) can have a right to convey or transfer it without his consent, either tacitly or expressly given. This consent may perhaps be tacitly given when an author permits his work to be published without any reserve of right, and without stamping on it any marks of ownership; it is then a present to the public, like the building of a church, or the laying out a new highway; but in case of a bargain for a single impression, or a total sale or gift of the copy-right; in the one case the reversion hath been thought to continue in the original proprietor; in the other the whole property, with its exclusive rights, to be perpetually transferred to the grantee. On the other hand, it is urged, that though the exclusive right of the manuscript, and all which it contains, belongs undoubtedly to the owner before it is printed or published; yet from the instant of publication, the exclusive right of an author or his assigns to the sole communication of his ideas immediately vanishes and evaporates; as being a right of too subtle and unsubstantial a nature to become the subject of property at the common law, and only capable of being guarded by positive statute and special provisions of the magistrate.

The Roman law adjudged, that if one man wrote any thing, though ever so elegantly, on the paper or parchment of another, the writing should belong to the original owner of the materials on which it was written: meaning certainly nothing more thereby than the mere mechanical operation of writing, for which it directed the scribe to receive a satisfaction; especially as, in works of genius and invention, such as a picture painted on another man's canvas, the same law gave the canvas to the painter. We find no other mention in the law of any property in the works of the understanding, though the sale of literary copies, for the purposes of recital or multiplication, is certainly as ancient as the times of Terence, Martial, and Statius. Neither with us in Britain hath there been (till very lately) any final determination upon the right of authors at the common law. It was determined in the case of *Miller v. Taylor* in B. R. Pasch. 9 Geo. III. 1769, that an exclusive copy-right

in

Coques in authors subsisted by the common law. But afterwards, in the case of *Donaldson v. Becket*, before the house of lords, which was finally determined 22 February 1774, it was held that no copy-right subsists in authors, after the expiration of the several terms created by the statute 8 Ann c. 19. This statute declares, that the author and his assigns shall have the whole liberty of printing and reprinting his works for the term of 14 years, and no longer; and also protects that property by additional penalties and forfeitures; directing farther, that if at the end of that term the author himself be living, the right shall then return to him for another term of the same duration.

COQUES (Gonzalo), an esteemed painter of portraits and conversations, was born at Antwerp in 1618, and was a disciple of the old David Ryckaert; under whose direction he applied himself diligently to cultivate those promising talents which he possessed; not only by practising the best rules administered to him by his instructor, but also by studying nature with singular attention.—He was a great admirer of Vandyck; and fixing on the manner of that great artist as his model, had the happiness of so far succeeding, that next to him he was esteemed equal to any other painter of his time.—In the school of Ryckaert he had been accustomed to paint conversations, and he frequently composed subjects of fancy like Teniers, Ostade, and his master; and by that habit, he introduced a very agreeable style of portrait painting, in a kind of historical conversations, which seemed much more acceptable to persons of taste than the general manner of painting portraits, and procured him great reputation and riches. In that way he composed several fine pictures for king Charles I. and likewise several for the archduke Leopold, and the prince of Orange; which latter prince, as a mark of respect, presented Coques with a rich gold chain, and a gold medal on which the bust of that prince was impressed. He died in 1684.—He had an excellent pencil; his portraits were well designed, with easy natural attitudes; he disposed the figures in his composition so as to avoid confusion or embarrassment; he gave an extraordinary clearness of colour to his heads and hands; and his touch was free, firm, and broad, a circumstance very uncommon in works of a small size.

COQUIMBO, a port-town of Chili, in South America, situated at the mouth of a river of the same name, which discharges itself into the Pacific ocean. W. Long. 75. 10. N. Lat. 30. 0.

COR CAROLI, in astronomy, an extraconstellated star in the northern hemisphere, situated between the *coma Berenices*, and *ursa major*; so called by Dr Halley in honour of king Charles.

COR Hydra, a fixed star of the first magnitude, in the constellation of hydra.

COR Leonis, in astronomy, a fixed star of the first magnitude, in the constellation Leo.

COR-meille, a noted plant, common in the Highlands of Scotland. Its roots dried are the support of the highlanders in long journeys, amidst the barren hills destitute of supports of life; and a small quantity, like the alimentary powders, will for a long time repel the attacks of hunger. Infused in liquor it is an

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agreeable beverage, and like the Nephenthe of the Greeks, exhilarates the mind. From the similitude of found in the name, it seems to be the same with chara, the root discovered by the soldiers of Cæsar at Dyrrhachium, which steeped in milk was such a relief to the famished army. Or we may reasonably believe it to have been the Caledonian food described by Dio, of which the quantity of a bean would prevent both hunger and thirst: and this, says the historian, they have ready for all occasions.

CORACIAS, the *ROLLER*, in ornithology; a genus of birds of the order of picæ, the characters of which are: The bill is straight, bending towards the tip, with the edges cultrated: the nostrils are narrow and naked; the legs for the most part short; the toes placed three before and one behind, and divided to their origin. This genus is not confined to one spot of the globe, as one or other of the different species may be met with in all the four quarters of it.

1. The garrula, or garrulous roller, is about the size of a jay; the bill black, and at the base beset with bristles, but do not cover the nostrils: the head, neck, breast, and belly, are of a light bluish green; back and scapulars, reddish brown; coverts on the ridge of the wing rich blue, beneath them pale green; upper part and tips of the quills dusky; the lower parts of a fine deep blue; rump, of this last colour: tail forked, of a light blue; the outer feather tipped with black above, and beneath with deep blue, as is the case with such part of the quill feathers as is black above; the other tail feathers are dull green: the legs are short, and of a dirty yellow. Mr Pennant observes that these birds are frequent in several parts of Europe, in most parts of which it is a bird of passage. Mention is made of them in Sweden and Denmark on the one hand, and as far as Africa on the other; not that they are found in all the parts between, nor in the same plenty. Willoughby tells us, that in Germany, Sicily, and Malta, they are so common as to be sold in the markets, and in poulterers shops. Adanson says, that it "comes to reside for some months of the summer in the southern parts of Europe, and goes back to spend the remainder of the year in Senegal," having shot one on board the ship, on its passage, in April. Frisch observes, that it makes its nest in woods, where there is birch; that it does not come to its colour till the second year; flies in troops in autumn; often seen in tilled grounds, with rooks and other birds, searching for worms, small seeds, and roots. Its flesh tastes like that of a turtle. It is said also sometimes to make the nest in holes in the ground, in one of which nests two eggs were found. The nest is generally filthy, from the young evacuating their excrements therein; whence by some it was said to make the nest of excrements. We are told in the British Zoology, that it has been twice shot in England, and is remarkable for making a chattering noise, whence its name.

2. The blue-striped roller is in length eight inches; the bill three quarters of an inch long, bent at the tip, and of a black colour: the irides are red: the general colour of the plumage deep blue-black, dashed with streaks of greenish blue: the tail and legs are black. It inhabits New Caledonia.

Plate
CXLIX.

3 K

3. The

Caraco
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Corallina.

3. The Chinese roller is of the size of a jay: The bill and irides are red: the head, hind part of the neck, back, rump, and upper tail coverts, are green: through the eyes on each side is a black stripe: the under parts of the body, from chin to vent, are yellowish white, tinged with green; but the thighs are grey: the wing coverts are olive brown; quills the same, with a mixture of chestnut in some; and others, nearest the body, tipped with white: the tail is five inches in length, and wedge-shaped, the outer feathers shortening by degrees like that of a magpie; all of them are more or less green, verging to black near the ends; the tips of all are white: the legs and claws are of a pale red, and longer than in other rollers. It inhabits China, and is called at Canton *Sau-ta-boang*. It is not very common.

There are 13 other species enumerated by ornithologists; though many of them doubtful, and supposed to be only varieties.

CORACO-BRACHIALIS, in anatomy, the name of a muscle in the arm, serving to raise it upwards.

CORACOIDES, in anatomy, a small sharp process of the scapula. See ANATOMY, n^o 47.

CORACOMANTES, in antiquity, persons who foretold events from their observations on crows.

CORALLINA, or CORAL, in zoology, a genus belonging to the order of vermes zoophyta. The trunk is radicated, jointed, and calcareous. The species are eight, distinguished by the form of their branches, and are found in the ocean adhering to stones, bones, shells, &c. The corals were formerly believed to be vegetable substances hardened by the air; but are now known to be composed of congeries of animals, which are even endued with the faculty of moving spontaneously.

The islands in the South-sea are mostly coral rocks covered over with earth. The little creatures, which have scarce sensation enough to distinguish them from plants, build up a rocky structure from the bottom of that sea, too deep to be measured by human art, till it reaches the surface. Some of these coralline islands appear to be of a much older date than others; particularly the Friendly islands: and it is probable that as these submarine works are continually going on, new islands may by that means frequently be produced.

M. de Peyssonnel of Marseilles, in consequence of a series of experiments and observations from about the year 1720 to 1750, seems to have been the first who threw a proper light upon the nature and production of coral and similar marine substances. Those bodies, which the count de Marfigli imagined to be flowers, this ingenious naturalist discovered to be insects inhabiting the coral; for upon taking branches of it out of the water, the flowers, which proceeded from a number of white points answering to the holes that pierced the bark, and the radiation of which resembled the flower of the olive-tree, entered into the bark and disappeared; but upon being again restored to the water, they were some hours after perceptible. These flowers spread on white paper lost their transparency, and became red as they dried. The holes in the bark correspond to small cavities upon the substance of the coral; and when the bark is removed, there may be seen an infinite quantity of little tubes connecting the bark with the inner substance, besides a great number

of small glands adhering to them; and from these tubes and glands the milky juice of coral issues forth: the holes in the bark are the openings through which the insects that form these substances for their habitation come forth; and those cavities which are partly in the bark and partly in the substance, are the cells which they inhabit. The organs of the animal are contained in the tubes, and the glandules are the extremities of its feet, and the milky liquor is the blood and juice of the animal, which are more or less abundant in proportion to its health and vigour. When the insects are dead, they corrupt, and communicate to the water the smell of putrid fish. This juice or liquor runs along the furrows perceived upon the proper substance or body of coral, and stopping by little and little becomes fixed and hard, and is changed into stone; and being stopped in the bark, causes the coral to increase proportionably and in every direction. In forming coral, and other marine productions of this class, the animal labours like those of the testaceous kind, each according to his species; and their productions vary according to their several forms, magnitudes, and colours.

The coral insect, or polype, M. Peyssonnel observes, expands itself in water, and contracts itself in air, or when it is touched with the hand in water, or acid liquors are poured upon it: and he actually saw these insects move their claws or legs, and expand themselves, when the sea-water containing coral was placed near the fire, and keep them in their expanded state when separated from the coral in boiling water. Broken branches of coral have been observed to fasten themselves to other branches, and have continued to grow; and this is the case when they are connected with detached pieces of rock and other substances, from which no nourishment could be derived. The coral insects in their cells, not having been injured, continue their operations; and as they draw no nourishment from the stone of the coral, they are able to increase in a detached and separate state. Coral was found to be equally red in the sea as out of it; and it was more shining when just taken out of the water than even when it is polished; and the bark by being dried becomes somewhat pale. M. Peyssonnel found that it grows in different directions, sometimes perpendicularly downwards, sometimes horizontally, and sometimes upwards; and in the caverns of the sea, open to every exposure.

This system was little regarded, though first communicated to the Academy of Sciences at Paris in 1727, till Mr Trembley's discovery of the fresh-water polype; but since that time, it has been confirmed by the observations of M. Bernard de Jussieu on the sea-coasts of Normandy, and those of M. de Reaumur near Rochelle. M. Donati of Turin has also adopted the same hypothesis, viz. that coral is a mass of animals of the polype kind; and instead of representing the polype beds and cells which they contain as the work of polypes, he thinks it more just to say, that coral and other coralline bodies have the same relation to the polypes united to them, that there is between the shell of a snail and the snail itself, or the bones of an animal and the animal itself.

The same system has also been excellently illustrated and established by Mr Ellis, in answer to the objections

Corallina.

Corallina, tions of Dr Baster of Zealand, and Dr Pallas of Berlin, who still refer corallines to the vegetable kingdom.

There are properly but three kinds of coral; red, white, and black: the black is the rarest, and most esteemed; but the red was formerly used in medicine. It must be chosen thick, smooth, and shining, and of a beautiful red, not covered with any tartareous matter. However, this substance is now scarce ever prescribed by any intelligent practitioner.

When coral is newly taken up out of the sea, the small protuberances on its surface are soft, and yield, on being pressed, a milky juice which effervesces with acids. The cortical part with which the coral is all over covered is not near so compact as the internal, and may easily be taken off whilst fresh; and from this part it is usually freed before it comes to the market. The greatest coral trade is in Genoa and Leghorn. The small sprigs unfit for ornamental uses are in the shops levigated into a subtile powder; which, however, has no medicinal virtues superior to the common testacea. Coral is not unfrequently imitated by artificial compositions, some of which are made to resemble it exactly; but the abuse may be discovered by fire, the counterfeit not affording the alkaline earth which is afforded by the genuine coral. The colouring ingredients in the artificial coral are cinnabar and minium, both of which are easily discovered. The natural coral seems to receive its colour from iron; for spirit of vitriol acquires from it a ferruginous taste; and on calcining the coral, some particles are found among the ashes that are attracted by the magnet. Sixteen ounces of coral, according to Neumann, when distilled in an open fire, yield about six scruples and an half of volatile alkaline spirit, with two or three grains of an empyreumatic oil: from the caput mortuum calcined, five scruples and a half of fixed salt may be extracted. In former times, many extraordinary virtues were expected from this substance, on account of its fine red colour; and therefore a great number of methods were tried to extract this colour by means of spirit of wine. None of these, however, succeeded. A red colour was indeed sometimes obtained, but it turned out the same whether any coral was used in the operation or not. In some of these processes, however, the coral loses its colour. One method of making the tincture is by dissolving a pound of sugar in a little water, and then adding half a pound of wax. A pound of coral boiled in this mixture loses its redness, but is found to be unaltered in other respects. In order to prepare the tincture, the wax and sugar must be dissolved in spirit of wine.

CORAL FISHERY. Red coral is found in the Mediterranean, on the shores of Provence, from Cap de la Couronne to that of St Tropez; about the isles of Majorca and Minorca; on the south of Sicily; on the coasts of Africa; and, lastly, in the Ethiopic ocean, about cape Negro. The divers say, that the little branches are found only in the caverns whose situation is parallel to the earth's surface, and open to the south. The manner of fishing being nearly the same where ever coral is found, it will suffice to instance the method used at the bastion of France, under the direction of the company established at Marseilles for that fishery. Seven or eight men go in a boat commanded by the

patron or proprietor; and when the net is thrown by the cafter, the rest work the vessel, and help to draw the net in. The net is composed of two rafters of wood tied cross-wise, with leads fixed to them: to these they fasten a quantity of hemp twisted loosely round, and intermingled with some large netting. This instrument is let down where they think there is coral, and pulled up again when the coral is strongly intangled in the hemp and netting. For this purpose, six boats are sometimes required; and if in hauling in, the rope happens to break, the fishermen run the hazard of being lost. Before the fishers go to sea, they agree for the price of the coral, which is sometimes more, sometimes less, a pound; and they engage, on pain of corporal punishment, that neither they nor their crew shall embezzle any, but deliver the whole to the proprietors. When the fishery is ended, which amounts one year with another to twenty-five quintals for each boat, it is divided into thirteen parts; of which the proprietor hath four, the casters two, and the other six men one each, the thirteenth belongs to the company for payment of the boat furnished them.

CORAL-Stone, a name for a kind of red and white agate which breaks in veins, and is found in Italy and some parts of Saxony. That of Rochlitz in Saxony is the most celebrated, and is found in globules which have a kind of crust about them.

CORALLINES, in natural history, were formerly reckoned a genus of plants, and Mr Tournefort enumerates 36 species of them; but in the Linnæan system they belong to the class of zoophytes, and are defined by modern naturalists to be submarine plant-like bodies, that consist of many slender finely divided and jointed branches, resembling some species of moss; or animals growing in the form of plants, having their stems fixed to other bodies: these stems are composed of capillary tubes, whose extremities pass through a calcareous crust, and open into pores on the surface. The branches are often jointed, and always subdivided into smaller branches, which are either loose and unconnected, or joined as if they were glued together. They are distinguished from plants by their texture and hardness: they also yield in distillation a considerable quantity of volatile salt; and their smell, in burning, resembles that of burnt horns and other animal substances. Many of the corallines seem to consist of a single tube, containing a single parent animal. Every branch emitted contains an offspring of this parent dependent upon it, and yet capable of producing its like in the emission of a new branch. Others consist of many such tubes united, rising up together, and encircling the deserted tubes of their progenitors, whose exuvie become the substratum of a rising generation. Mr Ellis distributes corallines into the *vesiculated*, *tubular*, *celliferous*, and *articulated* kinds.

Vesiculated corallines are distinguished by their horny hollow ramifications: most of them are furnished with little denticles on their branches, like leaves on mosses; and at certain seasons of the year they are furnished with small bodies like bladders, proceeding from their stems and branches, and differing in form according to the different species. Their colour, when dry, is of a yellowish or pale brown, and their nature is elastic. They are found adhering to rocks, shells, and

Corallines. fucuses, by small root-like tubes: they recover their form in water, after having been dried; and when put into vinegar, they cause no effervescence. See Plate CXLVII. fig. 1. where *a* represents the sea-tamarisk in its natural size, and *A* in which the denticles are magnified. Fig. 2. *b*, *B*, is the sea-cypress; fig. 3. *c*, *d*, *CD*, the small climbing coralline with well shaped cups.

Tubular corallines are composed of a number of simple tubes, growing up nearly together; or of such branched ones as have neither denticles nor vesicles. These are horny and elastic like the former, and recover their original form in water. Some of them appear wrinkled like the wind-pipe, and others like the intestines of small animals. See fig. 4, *E*.

Celliferous corallines are those which appear, when magnified, to be fine thin cells, the habitations of small animals connected together, and disposed in a variety of elegant forms like branches. These effervesce with acids. See fig. 5, *F*, *f*, with part (*G* *H*) magnified.

Articulated corallines consist of short pieces of a stony or cretaceous brittle matter, whose surface is covered with pores or cells, which are joined by a tough, membranous, flexile substance, composed of many small tubes of the like nature compacted together. The stony part is soluble in vinegar, and the other part remains entire. *a*, *A*, (fig. 6.) is the coralline of the shops. It is fixed to rocks and shells by stony joints, which, as they rise, are united to others by extremely fine and slender tubes: These may be discovered by a good eye, or a common magnifier. As the stems extend themselves, they become pennated by side-branches which come out opposite to each other, and are jointed in the same manner; the joints of this species are like the upper part of an inverted cone, but a little compressed: The whole surface is covered over with very minute circular-shaped cells like pores; see *B*, and *B* 1, where they are higher magnified. *B* 2, shows a cross section highly magnified. If a branch of this coralline is put into vinegar, these cells are dissolved with the whole cretaceous surface; instead of which there appear rows of minute ramifications, which seem to have communicated with each of these cells. Upon some specimens of this coralline, we may observe little small figures like seed-vessels, with which the branches frequently terminate: They are also found on the sides, as may be seen at *A*, where they are magnified.—When a branch is rendered soft by being steeped in vinegar, there may be squeezed out from the little knobs at the ends and sides, small twisted figures, like those at *A* 1, which are magnified higher at *A* 2.—We frequently find this coralline of different colours, as red, green, ash, and white; but all of it, by being exposed to the sun and air on the shore, becomes white.

The ancients have said great things of the virtues of the common coralline. Dioscorides prescribes it for mitigating the pain of the gout, and for preventing stagnations of the humours in any part; he says nothing of its virtues against worms, which are what we alone esteem it for. We give it in powder from 10 grains to a scruple or half a dram twice a day in these cases, and that with a considerable good effect.

Besides the above, Mr Ellis enumerates other genera of marine productions; as the keratophyta, eschara, sponges, and alcyonium; all which are the nests or matrices of sea-animals. See POLYPE. The last class of marine bodies is formed like funguses of various figures, and with different sorts of covering: some having a gritty, and some a callous skin, with a spongy substance in the inside: other species are of a fleshy substance.

CORALLODENDRON, in botany. See ERYTHRINA.

CORALLOIDES (FRUTICES.) See ESCHARA and KERATOPHYTA.

CORAM (Captain Thomas), a gentleman remarkably distinguished by his humanity, was born about the year 1668, and spent the early part of his life in the station of master of a vessel trading to our colonies. Afterwards residing in the eastern part of the metropolis, among seafaring people, where business often obliged him to come early into the city and return late, he frequently saw young children exposed in the streets through the indigence or cruelty of their parents. This excited his compassion, and induced him to project the foundation of an hospital for foundlings. In this humane design he laboured with indefatigable diligence for seventeen years; and by his application procured a number of the nobility and gentry to patronize and carry the scheme into execution, and at length obtained the royal charter for it. He was also highly instrumental in promoting the trade of America, by procuring a bounty upon naval stores imported from our colonies. He was likewise eminently concerned in setting on foot the colonies of Georgia and Nova Scotia. His last charitable design, in which he lived to make some progress, was a scheme for uniting the North American Indians more closely to the British interest, by an establishment for the education of Indian girls. In short, he spent the greatest part of life in labouring for the public, and experienced a fate too common in those who devote their talents to such laudable purposes; being at last indebted for subsistence to the voluntary subscriptions of some public-spirited persons, at the head of whom was the late Frederic Prince of Wales. Captain Coram died in 1751: and was interred, at his own desire, in a vault under the chapel of the Foundling Hospital.

CORAN, or **ALCORAN**. See **ALCORAN**.

CORAX, in ornithology, the trivial name of a species of **CORVUS**.

CORANICH, among the Scotch and Irish, the custom of singing at funerals, anciently prevalent in those countries, and still practised in several parts. Of this custom Mr Pennant gives the following account. "I had not the fortune to be present at any in North Britain; but formerly assisted at one in the south of Ireland, where it was performed in the fulness of horror. The cries are called by the Irish the *ulogobne* and *hullulu*; two words very expressive of the sound uttered on these occasions; and being of Celtic stock, etymologists would swear to be the origin of the *ολογηων* of the Greeks and *ululatus* of the Latins. Virgil is very fond of using the last whenever any of his females are distressed; as are others of the Roman poets, and generally on occasions similar to this. It was my fortune

Corallo-
dron
Coranich.

VE SICULATED.

Fig. 1.



Fig. 2.



Fig. 3.



Fig. 4.
TUBULAR

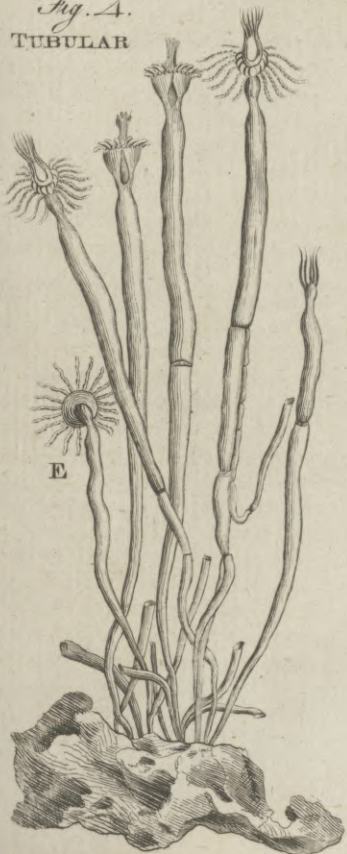


Fig. 5.

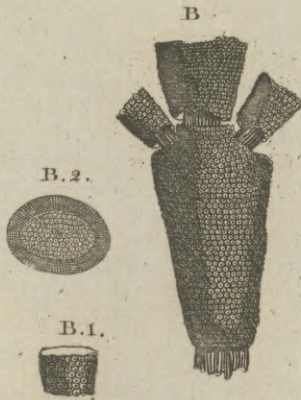


CELLIFEROUS

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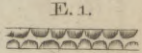
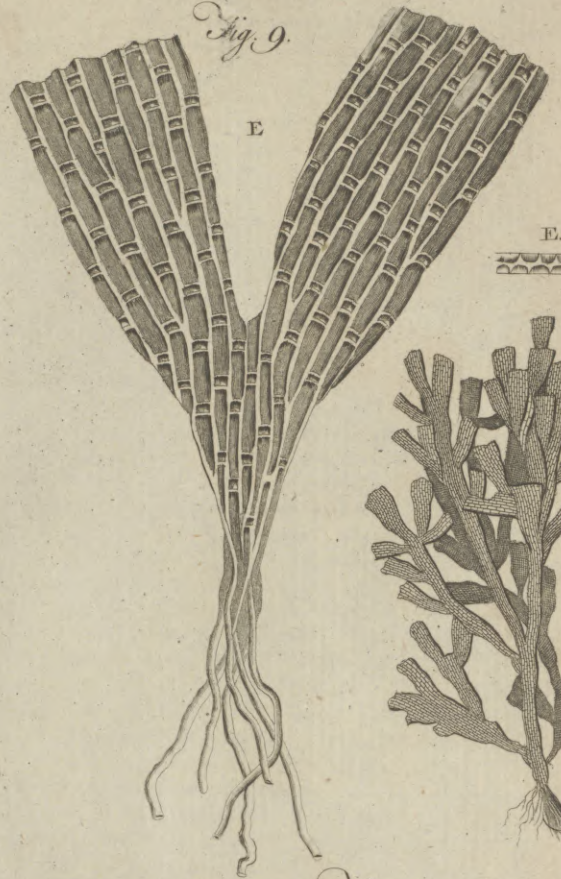


Fig. 6.
ARTICULATED.



ESCHARA.

Fig. 9.



KERATOPHYTA.

Fig. 7.

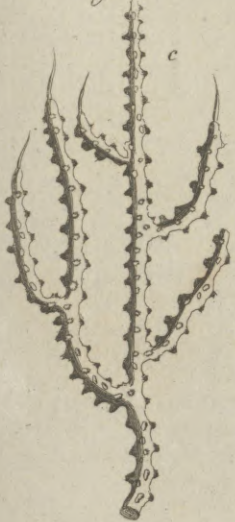


Fig. 8.

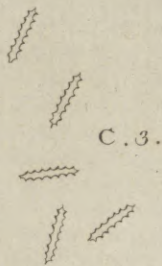
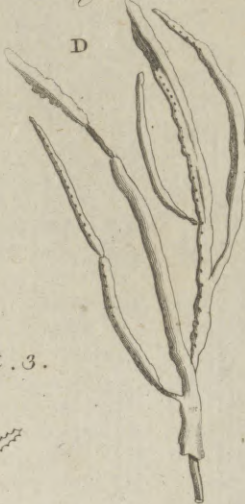


Fig. 10.



F.2.



F.1.



Coranich
||
Corbel.

to arrive at a certain town in Kerry at the time that a person of some distinction departed this life: my curiosity led me to the house, where the funeral seemed conducted in the purest classical form.

*Quodcumque aspiceret luctus, gemitusque sonabant,
Formaque non taciti funeris intus erat.*

In short, the *conclamatio* was set up by the friends in the same manner as Virgil describes that consequential of Dido's death;

*Lamentis, gemituque, & femineo ululatu
Teſta fremunt.*

Immediately after this followed another ceremony, fully described by Camden in his account of the manners of the ancient Irish; the earnest expostulations and reproaches given to the deceased for quitting this world, where she enjoyed so many blessings, so good a husband, and such fine children. This custom is also of great antiquity, for Euryalus's mother makes the same address to her dead son.

*Tunc illa senescit
Sera mea requies? potuisti relinquere solum,
Crudelis?*

But when the time approached for carrying out the corps, the cry was redoubled,

Tremulis ululatus æthera complent;

a numerous band of females waiting in the outer court to attend the hearse, and to pay in chorus the last tribute of their voices. The habit of this sorrowing train, and the neglect of their persons, were admirably suited to the occasion; their robes were black and flowing, resembling the ancient Palla; their feet naked, their hair long and dishevelled: I might truly say,

*Ut qui conducti plorent in funera, dicunt
Et faciunt prope plura dolentibus exanimos.*

The corpse was carried slowly along the verge of a most beautiful lake, the ululatus was continued, and the whole procession ended among the venerable ruins of an old abbey."

CORBAN, in Jewish antiquity, were those offerings which had life, in opposition to the *minchab*, or those which had not. It is derived from the word *karab*, which signifies "to approach;" because the victims were brought to the door of the tabernacle. The corban were always looked upon as the most sacred offerings. The Jews are reproached with defeating, by means of the corban, the precept of the fifth commandment, which enjoins the respect due to parents. For when a child had no mind to relieve the wants of his father or mother, he would say to them, "It is a gift (*corban*) by whatsoever thou mightest be profited by me;" *i. e.* "I have devoted that to God which you ask of me, and it is no longer mine to give."

CORBAN is also a ceremony which the Mahometans perform at the foot of mount Arrarat in Arabia, near Mecca. It consists in killing a great number of sheep, and distributing them among the poor.

CORBELLS, in fortification, little baskets, about a foot and a half high, eight inches wide at the bottom and twelve at the top; which being filled with earth, are frequently set one against another upon the parapet or elsewhere; leaving certain port-holes, from whence to fire upon the enemy under covert without being seen by them.

CORBEL, in architecture, the representation of a

basket, sometimes seen on the heads of caryatides. The word is also used for the vase, or tambour, of the Corinthian column; so called from its resemblance of a basket, or because it was first formed on the model of a basket.

CORBEL, or *Corbil*, is also used, in building, for a short piece of timber placed in a wall, with its end sticking out six or eight inches, as occasion serves, in manner of a shouldering-piece. The under part of the end thus sticking out is sometimes cut into the form of a bouldin; sometimes of an ogee, and sometimes of a face, &c. according to the workman's fancy; the upper side being plain and flat.

CORBEL is also used by some architects for a niche or hollow left in walls for images, figures, or statues to stand in.

CORBET (Richard), bishop of Norwich, and an eminent poet, was born at Ewell in Surry, toward the latter end of the 16th century; and educated at Oxford, where he was esteemed one of the most celebrated wits of the university. Entering into holy orders, he became a popular preacher, and was made chaplain to King James I.: when, after several preferments in the church, he was, in 1629, made bishop of Oxford; and, in 1632, was translated to the see of Norwich. He was very hospitable, and always a generous encourager of public designs. He died in 1635. There have been several editions of his poems published under the title of *Poemata Stromata*.

CORBEY, a town of Picardy in France, with a famous abbey of Benedictine monks. It is seated on the river Somme, 10 miles east of Amiens, and 75 north of Paris. E. Long. 2. 35. N. Lat. 49. 55.

CORCELET, in natural history, that part of the fly-class which is analogous in its situation to the breast in other animals. Many have called it the breast in these also, but improperly; because the breast of other animals is the place of the lungs and trachea, but these organs are in the fly-class distributed through the whole body. The wings are affixed to this part of the fly-class; and there are some distinctions of great consequence in regard to the arrangement and distribution of those animals into genera. Some flies have a double corcelet, or one divided into two parts; and this is the case of the fly produced from the formica leo, which therefore does not carry its only distinction in the figure of its antennæ. One pair of the legs of this fly are attached to the first or anterior corcelet, which is also capable of moving on the other.

The corcelets of some flies are also much more elevated than those of others; and in some this elevation is carried so far, that the head is forced by it to be bent downward, and the creature is plainly made hump-backed by it. The great kind, and the *tipula*, furnish instances of this elevated and hump-backed corcelet.

A series of flies of two wings are known by a very particular armament which they carry on the corcelet, usually called their *breast*. This consists of two long, slender, sharp-pointed prickles, which are immoveable in their insertions, and seem meant as offensive or defensive weapons; but in what manner they are used it is not easily to be determined.

All these flies are produced from long water-worms with

Corbel
||
Corcelet.

Corcelet
||
Corculum.

with open and funnel-fashioned tails, or furnished with their aperture for respiration at the hinder extremity.

There are three known species of this sort of fly, with armed corcelets, which differ much in size, but are all produced of worms of this kind. The largest of these flies are produced from the largest and longest worm, and are something longer than the bee. The smallest are produced of worms very small and slender, and are themselves extremely minute: and the third kind is of a middle size between these, and produced from a proportionably smaller worm than that of the first, and proportionably larger than that of the second species.

All these species have their wings but little distinguishable at their first production from the shell; they appear indeed only like two slender filaments laid across their bodies: but they quickly show, that in this state they were only very nicely folded together; and soon expand, and show their full extent and proportion.

When first produced from the shell, these flies are of a pale green colour. The under part of their belly in many continues green, but in the greater number it becomes of a pale dead brown. Some of them have the outside of their bodies of a deep brown, approaching to black, with lines of a dead brown between the commissures of the rings. The back of some others has only a blackish brown band, which runs straight down from the corcelet to the end of the body, the whole body beside being of a dead brown. The corcelet in these flies is brown, and the prickles are yellowish near their insertions, but nearly black at their points. They have three of the small glossy eyes disposed in the shape of a triangle on the back part of their head; and their reticular eyes are brown, and at some distance from one another.

CORCHORUS, in botany: A genus of the monogynia order, belonging to the polyandria class of plants; and in the natural method ranking under the 37th order, *Columnææ*. The corolla is pentapetalous; the calyx pentaphyllous and deciduous; and the capsule many-valved and many-celled.

There are eight species; of which the most remarkable is the olitorius, an annual, and a native of Asia, Africa, and America. It rises with a round, striated, upright, branched stalk, to near two feet, which is furnished with leaves differing in shape; some being oval, some cut off straight at their base, and others almost heart-shaped. They are of a deep green colour, and have a few teeth on the margins of their base, that end in bristly, reflexed, purplish filaments. The flowers come out at the sides of the branches opposite to the leaves. They stand singly on very short peduncles; are composed of five small yellow petals, and a great number of stamina surrounding an oblong germen, which becomes a long, rough, sharp-pointed capsule, opening in four parts, each filled with greenish angular seeds.—This plant is sown by the Jews about Aleppo, and is therefore called *Jews mallow*. The leaves are a favourite salad among these people, and they boil and eat them with their meat.

CORCULUM, a diminutive from *cor*, "the heart," little heart; the essence of a seed, and principle of life of the future plant, attached to and contained within the lobes. It consists of two parts, termed by Linnæus *PLUMULA* and *ROSTELLUM*. The former is the *radicula* of Grew and other naturalists. The

corculum is in fact the embryo of the future vegetable; and is attached by two trunks of vessels to the lobes at their union. The first of its two parts mounts upward, and becomes the trunk. The other strikes into the ground, and is the rudiment of the root. The lobes and heart of the seed are distinctly visible in the bean, and other seeds of that class, especially after remaining some time in water or earth.

The principle of life is seated either at the summit or base of the seed. From this circumstance are constructed the two first classes in Cæsalpinus's method, containing trees and shrubs only.

CORCYRA (anc. geog.), an island in the Ionian Sea, opposite to Theoprotia, a district of Epirus, called *Scheria* and *Pheacia* by Homer. In Callimachus it is called *Drepane*; its most ancient name, according to the Scholiast, from the curvity of its figure. Famous for the shipwreck of Ulysses and the gardens of Alcinoüs. Now *Corfu*.

CORCYRA, a cognominal town of the island; formerly powerful, and capable of coping with mighty states; situated about the middle of the east side of the island, called *The Town of the Pheacians* by Homer. Now *Corfu*, from the *Κορυφή* of the middle age, the name of the citadel. It was a colony of Corinthians; *Corcyraï*, the people. E. Long. 19. 48. Lat. 39. 50.

CORCYRA *Nigra*, an island in the Adriatic, on the coast of Dalmatia (Pliuy); called *Melena* by the Greeks, to distinguish it from the island in the Ionian Sea. The epithet *Nigra* was added, from its woods of tall trees with which it is almost covered. Now *Curzola*.

CORD, or CHORD, an assemblage of several threads of hemp, cabled or twisted together by means of a wheel. See CORDAGE. The word comes from the Greek *χορδή*, which properly signifies an intestine or gut, of which cords may be made. See CHORD.

Magical CORD, an instrument in great use among the Laplanders, and by them supposed to be endued with a number of virtues. It is a cord or rope with three knots tied in it. They use many magical rites and ceremonies in the tying of this cord; and, when thus prepared, it is supposed to have power over the winds; and they will sell, by means of it, a good wind, or at least the promise of one, to a ship. If they untie only one of these knots, a moderate gale succeeds; if two, it is much stronger; and if three, a storm is sure to follow.

CORD of Wood, a certain quantity of wood for burning, so called because formerly measured with a cord. The dimensions of a statute cord of wood are eight feet long, four feet high, and four feet broad.

CORD-Wood, is new wood, and such as, when brought by water, comes on board a vessel, in opposition to that which is floated.

CORDAGE, a term used in general for all sorts of cord, whether small, middling, or great. See ROPE.

The naval cordage of the earlier ages was in all probability only thongs of leather. These primitive ropes were retained by the Cælonians in the third century. The nations to the north of the Baltic had them in the ninth or tenth centuries: and the inhabitants of the western isles of Scotland make use of them at present; cutting the skin of a seal, or the raw and salted hide of a cow, into long pieces, and fastening the plough to their horses with them, or even twilling them into strong ropes of 20 or 30 fathoms length.

Corcyra
||
Cordage.

Cordage
||
Cordelier.

But these, in the south of our island, and on the continent, were early superseded by the use of iron chains. The very maritime and commercial nation of the Veneti, that were so intimately connected with the Belgæ of Britain, used iron chains for their cables in the days of Cæsar. But in the more distant and refined countries of the south, both thongs and these had long given place to the use of vegetable threads, and the arts of combining them into strength. In this manner the Greeks appear to have used the common rushes of their country, and the Carthaginians the spartum or broom of Spain. And as all the cordage of the Romans was made of these materials at their last descent on our island, so the art of manufacturing them would necessarily be introduced with the Roman settlements among the Britons. Under the direction of Roman artists their thongs of leather would naturally be laid aside, and the junci, or rushes of the plains, worked up into cordage. And what remarkably coincides with this opinion is, that the remains of old cables and ropes are still distinguished among the British sailors by the name of *old junk*.

The nations of Roman Britain, and the tribes of Caledonia and Ireland, had inherited, from their earliest ancestors, many of the ruder arts of navigation. Their ships were large open boats, framed of light timbers ribbed with hurdles and lined with hides. These were furnished with masts and sails. The latter were formed of hides, as the tackle was of thongs. They were actually of hides among the Veneti as late as the days of Cæsar; and they were never furled, but only bound to the mast. But these slight sea-boats, and their rude furniture, would soon be dismissed by the provincials for the more substantial vessels and more artificial sails of the Romans. The Roman sails, which were composed of flax in the days of Agricola, were afterwards made of hemp; and our own are therefore denominated *cannabis* or *canvas* by our mariners at present. And about the same period assuredly did the junk of the British cordage give way to the same materials; the use of hempen ropes upon land, and of hempen nets for hunting, being very common among the Romans in the first century.

CORDATED, an appellation frequently given by naturalists to things somewhat resembling a heart.

CORDED, in heraldry. A cross corded, some authors take for a cross wound or wrenched about with cords: others, with more probability, take it for a cross made of two pieces of cord.

CORDELERAS, mountains of South America, otherwise called ANDES.

CORDELIER, a Franciscan, or religious of the order of St Francis. The Cordeliers are clothed in thick grey cloth, with a little cowl, a chaperon, and cloak, of the same; having a girdle of rope or cord tied with three knots: whence the name.—They are otherwise called *Minor Friars*, their original name. The denomination *Cordelier* is said to have been first given them in the war of St Louis against the infidels; wherein the Friars Minor having repulsed the barbarians, and that king having inquired their name, it was answered, they were people *cordeliez*, “tied with ropes.” The Cordeliers are to a man professed Scotts.

Corde moi
||
Cordon.

CORDEMOI (Géral de), a learned philosopher and historian, born at Paris, made himself known to M. Boffuet, who placed him about the dauphin in the quality of reader. He instructed that young prince with great assiduity; and in 1675 was received into the French academy. He wrote a general history of France during the first races of the French kings, in 2 vols; and six discourses on the Distinction between Body and Soul, which were printed together in 1702 in quarto. He died in 1684. M. Cordemoi followed the principles of Descartes.

CORDIA, in botany: A genus of the monogynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 41st order, *Asperifolia*. The corolla is funnel-shaped; the style dichotomous or divided into two threads, and each of these divided into other two.

There are five species, of which the principal are the myxa and sebescena. 1. The myxa, or Assyrian plum, grows wild in Assyria and Egypt, and also on the coast of Malabar. It rises to the height of a middling plum-tree; and its branches are furnished with oval, woolly leaves, standing without order. The flowers are produced in bunches; are white, and consist of one tubular petal, and a like calyx, nearly of an equal length, and both are cut into five parts at their brims. In their centre are five very small stamina, and one slender style crowned with an obtuse stigma. The germen is roundish, and swells to a plum of the same form, and about the size of a damson, of a dark brown colour, a sweet taste, and very glutinous. These plums were formerly kept in the shops; and were accounted good for obtunding acrimony, and thereby stopping defluxions of rheum upon the lungs: but at present they are little used for these purposes. In some parts of Turkey they cultivate this tree in great abundance, not only for the sake of the fruit to eat, but to make birdlime of, which is a vast article of trade in a town called *Seid*.—2. The sebescena, or rough-leaved sebesten, grows naturally in both the Indies, and sends forth several shrubby stalks eight or ten feet high. The young leaves are serrated, but the full grown ones are not. They are of an oblong-oval form, rough, of a deep green on the upper side, and stand alternately on short footstalks. The flowers terminate the branches in large clusters, are nearly of the shape and colour of those of the marvel of Peru, and make a most beautiful appearance. Each has five stamina and one bifid style. The plums are much of the shape of those of the myxa, and are eaten in the same manner. The fruit of this tree is less valuable than the wood, a small piece of which thrown upon a clear fire will perfume a room with a most agreeable odour.

CORDIAL, in medicine, whatever raises the spirits, and gives them a sudden strength and cheerfulness; as wine, spirits, the effluvia of flowers, fruit, and many other substances.

CORDON, in fortification, a row of stones, made round on the outside, and set between the wall of the fortrefs which lies aslope, and the parapet which stands perpendicular, after such a manner, that this difference may not be offensive to the eye; whence the cordons serve only as an ornament, ranging round about the place,

Corduba,
Cordova.

place, being only used in fortifications of stone-work : for in those made with earth the void space is filled up with pointed stakes.

CORDUBA (anc. geog.), an illustrious city of Bætica, on the right or north side of the Bætis. Built by Marcellus, according to Strabo ; but which Marcellus, is not so clear. It was the first colony sent into those parts by the Romans ; and furnished *Patricia*, because at first inhabited by principal men, both of the Romans and natives. It is mentioned by Sil. Italicus in the second Punic war ; and hence it is probable the first Marcellus was the founder, and not the Marcellus engaged in the civil war between Cæsar and Pompey. It was famous for the birth of the two Senecas and of Lucan (Martial), and for its rich produce in oil (Stattius, Martial). Still retaining its name a little altered. W. Long. 5. Lat. 37. 45.

CORDOUA, or CORDOVA, a city of Andalusia in Spain, situated on the river Guadelquiver, in a very extensive plain. The circumference is large ; but it is not peopled in proportion to its extent, for there are a great many orchards and gardens within the walls. There are many superb structures, palaces, churches, and religious houses ; particularly the cathedral, which is very magnificent : it was formerly a mosque when the Moors possessed the town ; for which reason it still retains the name of *Mezquita*, which has the same meaning. This cathedral is very rich in plate ; four of the silver candlesticks cost L. 850 a-piece. The revenue of the see amounts to L. 3500 *per annum* ; but as the bishops cannot devise by will, all they die possessed of cheats to the crown. The square called the *Plaza Major* is surrounded with very fine houses, under which are piazzas. The trade is flourishing on account of the river ; and consists of wine, silk, and Cordovian leather. In the neighbourhood of this place are a vast number of orange and lemon trees, which renders their fruits exceeding cheap. The best horses in Spain come from hence.

Cordova was the ancient *Corduba* mentioned in the preceding article. After the fall of the Roman empire, it was subjected to the dominion of the Goths ; but in the eighth century it was raised by the Moorish princes to a state of splendor unequalled in any other part of the world. In the year 755, Abdoulrahman, only heir-male of the Ommiad line, having passed over from Africa at the head of a few desperate followers, found means to raise a rebellion in Spain ; when, after a battle fought on the banks of the Guadelquiver, in which he overthrew the lieutenant of the Abassid Caliph of Damascus, he became king of all the Moorish possessions in the south of Spain, and in 759 fixed his royal residence at Cordova. Then began those flourishing ages of Arabian gallantry and magnificence which rendered the Moors of Spain superior to all their contemporaries in arts and arms, and made Cordova one of the most splendid cities of the world. Agriculture and commerce prospered under the happy sway of this hero ; and the face of the country was changed from a scene of desolation, which the long wars and harsh government of the viceroys had brought on, into a most populous flourishing state, exceeding in riches, number of inhabitants, activity, and industry, any prior or subsequent era of the Spanish history. He added new fortifications to the town, built himself a

magnificent palace with delicious gardens, laid causeways through the marshes, made excellent roads to open ready communication between the great towns, and in 786 began the great mosque, which he did not live to finish.

Cordova.

During the course of two centuries, this court continued to be the resort of all professors of the polite arts, and of such as valued themselves upon their military and knightly accomplishments ; while the rest of Europe was buried in ignorance, debased by brutality of manners, or distracted by superstitious disputes. England, weakened by its heptarchy, was too inconsiderable even to be mentioned in the political history of the times : France, though it had a gleam of reputation under Charlemagne, was still a barbarous unpolished nation : and Italy was in utter confusion ; the frequent revolutions and change of masters rendering it impossible for learning, or any thing good, to acquire a permanent footing in so unstable a soil : Greece, though still in possession of the arts and luxury of ancient Rome, had lost all vigour, and seemed absorbed in the most futile of all pursuits ; *viz.* that of scholastic argument and religious subtleties.

The residence of the Ommiad Caliphs was long conspicuous for its supreme magnificence, and the crowds of learned men who were allured to it by the protection offered by its sovereigns, the beauty of the country, the wholesomeness of the climate, and the variety of pleasures that returned incessantly in one enchanting round.

Cordova became the centre of politeness, industry, and genius. Tilts and tournaments, with other costly shows, were long the darling pastimes of a wealthy happy people ; and this was the only kingdom in the west where geometry, astronomy, and physic, were regularly studied and practised. Music was no less honoured ; for we find, that in 844 a famous musician called *Ali Zeriab* came to settle at Cordova, and formed several pupils, who were supposed to equal the most celebrated performers that were ever known even in the East. That architecture was greatly encouraged, we need no other proof than the great and expensive fabrics undertaken and completed by many of these Spanish monarchs. Whatever faults may be justly condemned in their manner by the connoisseur, accustomed to the chaste noble graces of the Grecian proportions, certainly nobody can behold what remains of these Moorish edifices, without being strongly impressed with a high idea of the genius of the artists, as well as the grandeur of the prince who carried their plans into execution.

These sultans not only gave the most distinguished protection to arts and sciences, and to the persons learned in any of them, but were themselves eminently versed in various branches of knowledge. Alchem II. collected so immense a quantity of manuscripts, that before the end of his reign the royal library contained no less than 600,000 volumes, of which the very catalogue filled 40 huge folios. The university of Cordova was founded by him, and under such favourable auspices rose to the highest pitch of celebrity.

Abdoulrahman was succeeded by his son Hiffem, whose passion for glory and architecture was not in the least inferior to that of his father. He put the finishing hand to the mosque, which the plunder of the

^{Cordoua} southern provinces of France enabled him to complete in the course of a few years. The bridge over the Guadelquiver was a work of Hiffem's after his own plan.

Alkahem succeeded Hiffem.

Abdoulrahman II. was also passionately fond of building. He was the first that brought the supplies of water to Cordova by means of leaden pipes laid upon aqueducts of stone. The quantity was so considerable, that every part of the palace, the mosques, baths, squares, and public edifices, had all of them their fountains constantly playing. A great many of these works still subsist. He paved the whole city, and erected several mosques.

After him reigned Mahomet Almundar, Abdallah, and Abdoulrahman III. who surpassed all his predecessors in splendor, riches, and expence. His subjects vied with each other in profusion and magnificence. This monarch was succeeded by his son Alkahem II. who left a minor to succeed him, and the kingdom to be governed by the famous visir Mahomet Abenamir, surnamed *Almanzor* or "the defender," from his great victories and wise conduct. His descendents inherited from him the visirship, and a power as absolute as if they had been caliphs, until the weakness of the sovereigns encouraged, and the insolence of the ministers provoked, the grandees to disturb the state with their jealousies and dissensions. These broils occasioned such a series of civil wars and anarchy, as overthrew the throne of Cordova, and destroyed the whole race of Abdoulrahman. Thus the glorious edifice, founded by the valour and prudence of that conqueror, and cemented by similar virtues in many of his successors, sunk into nothing as soon as the sceptre devolved upon weak enervated princes, whose indolence and incapacity transferred the management of every thing to a visir. Many petty kingdoms sprang up out of the ruins of this mighty empire; and the Christians soon found opportunities of destroying, by separate attacks, that tremendous power, which when united had proved an overmatch for their utmost force.

New CORDUA, a considerable town of South America, in the province of Tucuman, with a bishop's see, 175 miles from St Jago. W. Long. 62. 5. S. Lat. 32. 10.

CORDUAN, a famous pharos or light-house of France, in Guienne, at the mouth of the river Girond. The architecture is extremely fine; and is placed there to hinder vessels from running on the sand-banks at the mouth of the river. W. Long. 1. 9. N. Lat. 45. 36.

CORDUS (Valerius), a learned botanist, was the son of Ericius Cordus, a physician and poet of Germany. Having learnt the languages, he applied himself to the study of botany; in the prosecution of which he examined the mountains of Germany, and travelled into Italy; but being wounded in the leg by the kick of a horse, died at Rome in 1544. He wrote Remarks on Dioscorides, and other works.

C·RDWAINERS, or **CORDINERS**, the term whereby the statutes denominate *shoemakers*. The word is formed from the French *cordonnier*, which Menage derives from *cordouin*, a kind of leather brought from Cordoua, whereof they formerly made the upper-

leathers of their shoes. Others derive it from *corde*, "rope," because anciently shoes were made of cords; as they still are in some parts of Spain, under the name of *alpargates*. But the former etymology is better warranted: for, in effect, the French workmen who prepare the corduas are still called *cordouanniers*.

In Paris they have two pious societies under the titles of *freres cordonniers*, "brothers shoemakers," established by authority towards the middle of the 17th century; the one under the protection of St Crispin*, the other of St Crispianus, two saints who had formerly honoured the profession. They live in community, and under fixed statutes and officers; by which they are directed both in their spiritual and secular concerns. The produce of their shoes goes into a common stock, to furnish necessaries for their support; the rest to be distributed among the poor.

COREA, a peninsula lying to the north-east of China, between 99 and 109 degrees of E. Long. and between 32 and 46 of N. Lat. It is divided into 8 provinces, which contain 40 cities of the 1st rank, 51 of the 2d, and 70 of the 3d. The capital of the whole is Hanching, where the king resides. The Jesuits say, the people are well-made, of a sweet and tractable disposition, and fond of learning, music, and dancing, and in general resemble the Chinese. Their houses are mean, being covered with thatch; and they have no beds, but lie on the floor. They have little silk, and therefore make use of linen-cloth in its room. Their trade consists in white paper, pencils, gingseng, gold, silver, iron, yellow varnish, fowls whose tails are three feet long, horses no more than three feet in height, sable-skins, castor, and mineral salt. In general it is a fertile country, tho' abounding in mountains. It is tributary to China.

Mr Grofier relates an observation concerning the natural history of Corea, which, in his opinion, furnishes a new proof of the revolutions which the surface of our globe has undergone. An ancient Chinese book asserts, that the city where Kipe, the king of Corea, established his court, was built in a place which forms at present a part of the territories of *Yong-ping-fou*, a city of the first class in the province of Petcheli. "If this (says he) be admitted as a fact, we may from thence conclude that these territories formerly belonged to Corea; and that the gulf of Lax-tong, which at present separates this kingdom from the province of Petcheli, did not then exist, and that it has been formed since; for it is not probable that a sovereign would have fixed his residence without the boundaries of his kingdom, or in a place where he was separated from it by a wide and extensive sea. This conjecture is confirmed by certain facts admitted by the Chinese. Thus when *Tu*, surnamed the *Great*, undertook to drain and carry off the waters which had inundated the low grounds of several provinces, he began by the river Hoang-ho, the overflowing of which caused the greatest devastation. He went in search of its source to the bosom of Tartary, from whence he directed its course across the provinces of Chan-si, Chen si, Honan, and Petcheli. Towards its mouth, in order to weaken the rapidity of its waters, he divided them into nine channels, through which he caused this river discharge itself into the eastern sea

Corea.

* See Crispin.

Corea.

near the mountain of *Kie-che-chan*, which then formed a promontory. Since that time to the present, that is about 3950 years, the river Hoang-ho has departed so much from its ancient course, that its mouth at present is about six degrees farther south. We must also remark, that the mountain *Kie-che-chan*, which was formerly united to the main land of *Yong-ping-fou*, stands at present in the sea at the distance of about 50 leagues to the south of that city. If the sea has been able to cover with its waters that extent of territory which at present forms part of the gulph of *Leatong*, may we not be allowed to suppose that like inundations may have formed successively the whole of that gulph, the ancient existence of which seems so ill to agree with the residence of the kings of Corea in the territories of *Yong-ping-fou*? It is true, the Chinese history makes no mention of so considerable a physical revolution; but it is equally silent with regard to the 500 *lys* (50 leagues) extent of ground which is at present covered by the sea beyond the mountains of *Kie-che-chan*. Besides, of all the changes which the surface of our globe experiences, those only are mentioned in history which happen suddenly, and which consequently make more impression on the minds of men.

Corea chiefly produces wheat, rice, and ginseng, with a kind of palm-tree which yields a gum capable of producing a yellow varnish little inferior to gilding. Hence also are exported castor and sable skins; also gold, silver, iron, and fossil salt; a kind of small brushes for painting, made of the hair of a wolf's tail, are likewise manufactured here, which are exported to China and highly esteemed there. The sea-coasts abound in fish, and great numbers of whales are found there every year towards the north-east. Several of these, it is said, have in their bodies the harpoons of the French and Dutch, from whom they have escaped in the northern extremities of Europe; which seems to indicate a passage from the European into the Asiatic seas round the continents of Europe and Asia.

A considerable quantity of the paper of Corea is annually imported into China; indeed the tribute due to the emperor is partly paid with it every year. It is made of cotton, and is as strong as cloth, being written upon with a small hair-brush or pencil; but must be done over with alum-water before it can be written upon in the European manner. It is not purchased by the Chinese for writing, but for filling up the squares of their sash-windows; because, when oiled, it resists the wind and rain better than that of China. It is used likewise as wrapping paper; and is serviceable to the taylor, who rubs it between their hands until it becomes as soft and flexible as the finest cotton cloth, instead of which it is often employed in lining clothes. It has also this singular property, that if it be too thick for the purpose intended, it may be easily split into two or three leaves, each of which are even stronger than the best paper of China.

The Coreans are well made, ingenious, brave, and tractable; are fond of dancing, and show great docility in acquiring the sciences, to which they apply with great ardour, and honour in a particular manner. The northern Coreans are larger sized and more robust than those of the south; have a taste for arms,

and become excellent soldiers. Their arms are cross-bows and long sabres. Men of learning are distinguished from other classes of people by two plumes of feathers in their caps; and when merchants present the Coreans with any books for sale, they dress themselves in their richest attire, and burn perfumes before they treat concerning the price.

The Coreans mourn three years, as in China, for a father or mother; but the time of mourning for a brother is confined to three months. Their dead are not interred until three years after their decease; and when the ceremony of interment is performed, they place around the tomb the clothes, chariot, and horses of the deceased, with whatever else he showed the greatest fondness for while alive; all which they leave to be carried off by the assistants. Their houses, as in China, consist only of one story, and are very ill built; in the country being composed of earth, and in cities generally of brick, but all thatched with straw; the walls of their cities are constructed after the Chinese manner, with square turrets, battlements, and arched gates. Their writing, dress, religious ceremonies, and creed, as well as the greater part of their customs, are borrowed from the Chinese. Their women, however, are less confined, and have the liberty of appearing in public with the other sex, for which they are often ridiculed by their neighbours. They differ from the Chinese also in their ceremonies of marriage, and in the manner of contracting it; the parties in this country taking the liberty to choose for themselves, without consulting the inclinations of their parents, or suffering them to throw any obstacles in their way.

COREIA, in antiquity, a festival in honour of Proserpine, named *Corez*, *Корн*, which in the Molossian dialect signifies a beautiful woman.

CORELLI (Arcangelo), the famous Italian musician and composer, a native of Fusignano, in the territory of Bologna, was born in 1653. He entertained an early propensity to the violin; and as he advanced in years, laboured incessantly in the practice of that instrument. About the year 1672, his curiosity led him to visit Paris, probably with a view to attend the improvements which were making in music under the influence of cardinal Mazarine, and in consequence of the establishment of a royal academy; but, notwithstanding the character which he brought with him, he was driven back to Rome by Lully, whose jealous temper could not brook so formidable a rival as this illustrious Italian. In the year 1680 he visited Germany, and met with a reception suitable to his merit from most of the German princes, particularly the elector of Bavaria; in whose service he was retained, and continued for some time. After about five years stay abroad, he returned again to Rome, and there pursued his studies with great assiduity.

The proficiency of Corelli on his favourite instrument the violin was so great, that the fame of it reached throughout Europe. The style of his performance was learned, elegant, and pathetic; and his tone firm and even. Mr Geminiani, who was well acquainted with, and had studied it, was used to resemble it to a sweet trumpet. A person who had heard him perform says, that, whilst he was playing on the violin, it was usual for his countenance to be distorted, his eyes

Corea
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Corelli.

Corelli. eyes to become as red as fire, and his eye-balls to roll as in an agony.

Corelli was highly favoured by that great patron of poetry and music, cardinal Ottoboni. Crescembini says, that he regulated the musical academy held at the palace of his eminence every Monday afternoon. Here it was that Mr Handel became acquainted with him; and in this academy a serenata of Mr Handel, entitled, *Il Trionfo del Tempo*, was performed, the overture to which was in a style so new and singular, that Corelli was confounded in his first attempt to play it.

During the residence of Corelli at Rome, besides those of his own country, many persons were ambitious of becoming his disciples, and learning the practice on the violin from the greatest master of that instrument the world had then heard of. Of these it is said the late lord Edgcombe was one; and that the fine mezzotinto print of Corelli by Smith was scraped from a picture painted by Mr Hugh Howard at Rome for that nobleman.

Corelli died at Rome in 1713; and was buried in the church of the Rotunda, otherwise called the Pantheon, in the first chapel, on the left hand of the entrance. Over the place of his interment is a sepulchral monument to his honour, with a marble bust thereon, erected at the expence of Philip-William, count palatine of the Rhine, under the care and direction of cardinal Ottoboni.

For many years after his decease, this excellent musician was commemorated by a solemn musical performance in the Pantheon, on the anniversary of his death. In the year 1730 an eminent master, now living, was present at that solemnity, who relates that at it the third and eighth of his concertos were performed by a numerous band, among whom were many who had been the pupils of the author. He adds, that these two pieces were performed in a slow, distinct, and firm manner, without graces, and just as they are wrote; and from hence concludes, that this was the manner in which they were played by the author himself.

He died possessed of about 6000 l. sterling. He was a passionate admirer of pictures, and lived in an uninterrupted friendship with Carlo Cignani and Carlo Marat: these two eminent painters were rivals for his favour; and for a series of years presented him at times with pictures, as well of other masters as of their own painting. The consequence was, that Corelli became possessed of a large and valuable collection of original paintings; all which, together with the sum above mentioned, he bequeathed to his dear friend and patron cardinal Ottoboni, who, reserving the pictures to himself, generously distributed the rest of the effects among the relations of the testator.

Corelli is said to have been remarkable for the mildness of his temper and the modesty of his deportment: nevertheless, he was not insensible of the respect due to his skill and exquisite performance. Cibber, in the Apology for his Life, p. 340. relates, that when he was playing a solo at cardinal Ottoboni's, he discovered the cardinal and another person engaged in discourse, upon which he laid down his instrument; and being asked the reason, gave for answer, that he feared the music interrupted their conversation.

The compositions of Corelli are celebrated for the harmony resulting from the union of all the parts; but the fineness of the airs is another distinguishing characteristic of them: the allemand in the 10th solo is as remarkable for spirit and force, as that in the 11th is for its enchanting delicacy: his jigs are in a style peculiarly his own; and that in the 5th solo was never equalled. In the gavot-movements in the 2d and 4th operas, the melody is distributed with great judgment among the several parts. In his minuets alone he seems to fail; Bononcini, Mr Handel, and Giuseppe Martini, have excelled him in this kind of airs.

It is said there is in every nation a style both in speaking and writing, which never becomes obsolete; a certain mode of phraseology, so consonant and congenial to the analogy and principles of its respective language, as to remain settled and unaltered. This, but with much greater latitude, may be said of music; and accordingly it may be observed of the compositions of Corelli, not only that they are equally intelligible to the learned and unlearned, but that the impressions made by them have been found to be as durable in general. His music is the language of nature; and, for a series of years, all that heard it became sensible of its effects: of this there cannot be a stronger proof than that, amidst all the innovations which the love of change had introduced, it continued to be performed, and was heard with delight in churches, in theatres, at public solemnities and festivities, in all the cities of Europe for near 40 years. Men remembered, and would refer to passages in it as to a classic author; and even at this day, the masters of the science do not hesitate to pronounce of the compositions of Corelli, that, of fine harmony and elegant modulation, they are the most perfect exemplars.

COREOPSIS, TICKSEEDED SUNFLOWER: A genus of the polygamia frustanea order, belonging to the syn-genesia class of plants; and in the natural method ranking under the 49th order, *Composita*. The receptacle is paleaceous; the pappus two-horned; the calyx erect and polyphyllous, surrounded with patent radiated leaflets at the base. There are 11 species, most of them herbaceous perennials. They are very showery, and rise from three to eight feet stature; terminated by clusters of compound radiated flowers of a yellow colour. They have all perennial fibrous roots, and annual stalks, which rise in the spring, flower from July to October, and decay to the root in November. The flowers are all shaped like sun-flowers, but smaller, and are very ornamental. They are easily propagated by slipping or dividing the roots in autumn, when the stalks decay; planting the slips at once where they are to remain; after which they will require no farther trouble than to be kept free from weeds, and have the decayed stalks cut annually in autumn.

CORFE-CASTLE, a borough-town in Dorsetshire in England. It takes its name from a strong castle, belonging to the crown, that stood there, but is now ruined. It sends two members to parliament. W. Long. 2. 8. N. Lat. 50. 33.

CORFU, an island in the Ionian sea, at the mouth of the gulph of Venice, formerly called *Gorceyra* and *Phœacia*, famous for the gardens of Alcinoüs. It be-

Corelli

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Corfu.

Corfu. longs at present to the Venetians; and forms the bulwark of Christendom against the Turks, who have often attempted to reduce it, but without success. It is well fortified, and has 50 castles; and the number of the inhabitants is said to be about 50,000. The inhabitants are of the Greek church; and the Venetians send them a governor and magistrates, which are changed every two years. The soil is very fruitful, and produces a great deal of wine, olives, and several other fruits, particularly figs, which are exceedingly good. The chief city is likewise called *Corfu*; see the following article.

CORFU, a city of the island of that name, belonging to the Venetians. It is a large place, strongly fortified and defended by a garrison of about 10,000 men; which, however, in the opinion of a late traveller, do not appear adequate to the extent of the fortifications. A number of very excellent brass and iron cannon are mounted on the different forts, which, he observes, are so divided, that it would take treble the number of their garrison to defend them. However, the republic of Venice is generally at peace with the different European nations, and the ancient power of the Turks being much decayed, they have little to apprehend; tho' to prevent any sudden surprise, the Venetians keep a formidable squadron in the harbour of Corfu, and the works have been much improved by Major General Paterfon.—In the late war they had with the Turks, this town was attacked by an army of 80,000 men, and attempted to be stormed several times by the enemy; but the garrison, which consisted of 12,000 men under the command of Count Schulenburg, made so brave and gallant a defence, that they always repulsed them, and obliged them to raise the siege, and abandon the place with considerable loss. For this piece of service the republic has caused a magnificent statue to be erected in memory of the Count, with an elegant Latin inscription, setting forth the many eminent services of his military achievements. The circumference of the city is about four miles; the number of inhabitants on the whole island are computed at about 50,000, the greatest part of whom are Greeks.

This island is the residence of the governor-general, whose jurisdiction extends over all the islands subject to the republic of Venice, in the Levant seas, and is considered as one of the greatest honours they can confer on a subject. He is always a nobleman of the first rank, and has his appointment for three years only, in which time he makes a tolerable addition to his fortune, and on his return to Venice is generally advanced to the honours of the senate. In the city are many handsome Greek churches, the principal of which is that of St Speridione, or the cathedral: It is embellished with some excellent paintings, and most superbly ornamented. The body of the saint from whom it was named, is preserved entire in a rich shrine within the church. The Greeks are most of them such fanatics as to be continually offering their devotions at this shrine, believing that through the intercession of the saint they will obtain all their wants; and that by offerings of money their sins will be forgiven them; by which means the church has amassed an immense treasure. The relic of the saint is deposited in a silver coffin, richly decorated with precious stones. It is in an amazing state of preservation; he having died in

the island of Cyprus upwards of 700 years ago; and after remaining 400 years there, was transported to this place. Besides the grand fleet, the Venetians have another of galleys, that are manned by convicts whose crimes are not of such a nature as to merit death. The chief diversions of this place in the winter are operas; they have always a company of comedians for the season from Naples. In the summer they pass their time in walking upon the ramparts: few except the governor and great officers of state are permitted to keep carriages. The Corfu people perfectly resemble the Zanteots in their manners (see *ZANTE*); though it must be observed in praise of the former, that assassinations are uncommon among them, their laws being too severe to permit such practices with impunity. E. Long. 19. 48. N. Lat. 39. 50.

CORIA, a town of Spain, in the kingdom of Leon and province of Estremadura, towards the confines of Portugal, with a bishop's see. It is seated on a little river called *Alagon*, in a very fertile plain. There is nothing remarkable but the cathedral church, except at a little distance a river without a bridge, and a bridge without a river. This was caused by an earthquake, which turned the river another way. W. Long. 6. 46. N. Lat. 39. 59.

CORIANDRUM, **CORIANDER**: A genus of the digynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 45th order, *Umbellatæ*. The corolla is radiated; the petals inflexed-emarginated; the involucre universal and monophyllous; the partial involucra halved; the fruit spherical. There are only two species, both of them herbaceous annuals, the leaves of which are useful for the kitchen, and the seeds for medicine. Both species have divided small leaves, somewhat resembling parsley: but there is but one species generally cultivated; namely, the *fativum*. This hath a small fibrous white root, crowned by many parted leaves, having broadish segments; and in the centre an upright, round, branchy stalk, two feet high, having all the branches terminated by umbels of flowers, which are succeeded by globular fruit. It is propagated by seed, which when a good crop is wanted, ought to be sown in March, either in drills a foot asunder, or by broadcast, and then raked in. When the plants are an inch or two high, they should be hoed to six or eight inches distance. The seeds when fresh have a strong disagreeable smell, which improves by drying, and becomes sufficiently grateful: they are recommended as carminative and stomachic. They are also much used by the brewers both in England and Holland, to give a flavour to their strongest beer. The ancients had a notion, that the juice of coriander would deprive people of their senses, and even of life. The leaves are sometimes used for culinary purposes in soups, and as an ingredient in salads; but as they are of a fetid smell, they are held in no great esteem in this country.

CORIARIA, the *Tanner's* or *myrtle-leaved* **SUMACH**: A genus of the diœcia class of plants; and in the natural method ranking under the 54th order, *Miscellaneæ*. The male calyx is pentaphyllous; the corolla pentapetalous, very like the calyx, and united with it; the antheræ bipartite. The female calyx is pentaphyllous; the corolla like that of the male; the styles five, seeds five, covered

Coridor
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Corinth.

ed with a like number of succulent petals, forming altogether the resemblance of a berry. There are two species, the myrtifolia and the foemina. They are both natives of the south of France, but the former is most commonly cultivated in this country. It is a pretty ornamental plant, with a shrubby pithy brown stem, closely branching from the bottom, and forms a bushy head three or four feet over, thickly garnished with oblong, pointed, bright green leaves, having small spikes of whitish flowers at the ends of the branches. It is easily propagated by suckers from the root, which it affords plentifully, and may be taken off with fibres every autumn or winter. It may be also propagated by layers in autumn, which will take root in a year. It is much used in the south of France, where it naturally grows, for tanning of leather, whence its name of *tanner's sumach*. It also dyes a beautiful black colour. The berries are dangerous, and when eaten generally occasion vertigoes and epilepsies. The old leaves have the same effect upon cattle that eat them, but the young leaves are innocent.

CORIDOR, or CORRIDOR, in fortification, a road or way along the edge of the ditch, without-side; encompassing the whole fortification. The word comes from the Italian *coridore*, or the Spanish *coridor*.

It is also called the *covert-way*; because covered with a glacis, or esplanade, serving it as a parapet. The coridor is about 20 yards broad.

CORIDOR is also used in architecture, for a gallery or long aisle around a building, leading to several chambers at a distance from each other, sometimes wholly inclosed, and sometimes open on one side.

CORINNA, a Grecian lady, celebrated for her beauty and poetic talents, was born at Theflu a city of Bœotia, and was the disciple of Myrtis another Grecian lady. Her verses were so esteemed by the Greeks, that they gave her the name of the *lyric muse*. She lived in the time of Pindar, about 495 years before Christ; and is said to have gained the prize of lyric poetry from that poet: but Pausanias observes that her beauty made the judges partial.

CORINTH, a celebrated city of antiquity, for some time the most illustrious of all the Greek cities. It is said to have been founded 1514 years before Christ, by Sisyphus the son of Eolus, and grandfather of Ulysses. Various reasons are given for its name, but most authors derive it from *Corinthus* the son of Pelops. It was situated in the south part of the Isthmus which joins the Peloponnesus, now the Morea, to the continent. It consisted of a citadel built upon an eminence, and thence named *Acrocorinthus*; besides which it had two maritime towns subject to it, named *Lecheum* and *Cenchrea*. The whole state extended scarce half a degree in length or breadth; but so advantageously were the above-mentioned ports situated, that they might have gained the Corinthians a superiority, not a command, over all Greece, had not their advantageous situation inclined them to commerce rather than war. For their citadel was almost impregnable; and, commanding both the Ionian and Ægean seas, they could easily cut off all communication from one half of Greece with the other; for which reason this city was called one of the fetters of Greece.

Corinth.

But as the genius of the Corinthians led them to commerce rather than martial exploits, their city became the finest in all Greece. It was adorned with the most sumptuous buildings, as temples, palaces, theatres, porticoes, &c. all of them enriched with a beautiful kind of column, which from the city were called *Corinthian*. But though the Corinthians seldom or never engaged in a war with a view of enlarging, but rather of defending, their little state, they did not forget to cultivate a good discipline both in time of peace and of war. Hence many brave and experienced generals have been furnished by Corinth to the other Grecian cities, and it was not uncommon for the latter to prefer a Corinthian general to any of their own.

This city continued to preserve its liberty till the year before Christ 146, when it was pillaged and burnt by the Romans. It was at that time the strongest place in the world; but the inhabitants were so disheartened by a preceding defeat, and the death of their general, that they had not presence of mind enough even to shut their gates. The Roman consul, Mummius, was so much surpris'd at this, that at first he could scarce believe it; but afterwards fearing an ambush, he advanced with all possible caution. As he met with no resistance, his soldiers had nothing to do but destroy the few inhabitants who had not fled, and plunder the city. Such of the men as had staid, were all put to the sword, and the women were sold for slaves. After this the city was ransacked by the greedy soldiers, and the spoils of it are said to have been immense. There were more vessels of all sorts of metal, more fine pictures, and statues done by the greatest masters, in Corinth, than in any other city in the world. All the princes of Europe and Asia, who had any taste in painting and sculpture, furnished themselves here with their richest moveables: here were cast the finest statues for temples and palaces, and all the liberal arts brought to their greatest perfection. Many inestimable pieces of the most famous painters and statuaries fell into the hands of the ignorant soldiers, who either destroyed them or parted with them for a trifle. Polybius the historian was an eye-witness to this barbarism of the Romans. He had the mortification to see two of them playing at dice on a famous picture of Aristides, which was accounted one of the wonders of the world. The piece was a Bacchus, so exquisitely done, that it was proverbially said of any extraordinary performance, "It is as well done as the *Bacchus of Aristides*." This masterly piece of painting, however, the soldiers willingly exchanged for a more convenient table to play upon: but when the spoils of Corinth were put up to sale, Attalus king of Pergamus offered for it 600,000 sesterces, near 5000*l.* of our money. Mummius was surpris'd at such a high price offered for a picture, and imagined there must be some magical virtue in it. He therefore interposed his authority, and carried it to Rome, notwithstanding the complaints of Attalus. Here this famous picture was lodged in the temple of Ceres, where it was at last destroyed by fire, together with the temple. Another extraordinary instance of the stupidity of Mummius is, that when the pictures were put on board the transports, he told the masters of the vessels very seriously, that if any of the things were
either

Corinth.

either lost or spoiled, he would oblige them to find others at their own cost; as if any other pieces could have supplied the loss of those inestimable originals, done by the greatest masters in Greece. When the city was thoroughly pillaged, fire was set to all the corners of it at the same time. The flames grew more violent as they drew near the centre, and at last uniting there made one prodigious conflagration. At this time the famous metalline mixture is said to have been made, which could never afterwards be imitated by art. The gold, silver, and brass, which the Corinthians had concealed, were melted, and ran down the streets in streams, and when the flames were extinguished, a new metal was found, composed of several different ones, and greatly esteemed in after ages.

The town lay desolate until Julius Cæsar settled there a Roman colony; when, in moving the rubbish and digging, many vases were found of brass or earth finely embossed. The price given for these curiosities excited industry in the new inhabitants. They left no burying-place unexamined; and Rome, it is said, was filled with the furniture of the sepulchres of Corinth.

Strabo was at Corinth soon after its restoration by the Romans. He describes the site as follows. "A lofty mountain, in perpendicular height as much as three stadia and a half (near half a mile), the ascent 30 stadia ($3\frac{1}{4}$ miles), ends in a pointed summit called *Acrocorinthus*." Of this the portion to the north is the most steep; beneath which lies the city on a level area, at the foot of the *Acrocorinthus*. The circuit of the city alone has been 40 stadia (5 miles), and as much of it as was unsheltered by the mountain has been walled about. Within the inclosure was comprehended also the *Acrocorinthus*, where the mountain was capable of receiving a wall; and as we ascended, the vestiges were plain; so that the whole circumference exceeded 85 stadia (near 11 miles). On the other sides, the mountain is less steep, but rises very high, and is visible all around. Upon the summit is a small temple of Venus; and below it the spring *Pirene*, which does not overflow, but is always full of pellucid and potable water. They say it unites with some other hidden veins, and forms the spring at the mountain foot, running into the city, and affording a sufficient supply for the use of the inhabitants. In the city is plenty of wells, and in the *Acrocorinthus*, as they say, for we did not see any. There they relate the winged horse *Pegasus* was taken as he was drinking, by *Bellerophon*. Below *Pirene* is the *Sisyphæum*, some temple or palace of white stone, the remains not inconsiderable. From the summit is beheld to the north *Parnassus* and *Helicon*, lofty mountains covered with snow; and below both, to the west, the *Crissæan* gulph bounded by *Phocis*, by *Bœotia* and the *Megaris*, and by *Corinthia* and *Sicyonia* opposite to *Phocis*. Beyond all these are the mountains called the *Oncian*, stretching as far as *Bœotia* and *Cithæron* from the *Scironian* rocks on the road to *Attica*." Strabo saw likewise *Cleonæ* from thence. *Cenchreæ* was then a village. *Lechæum* had some inhabitants.

New Corinth had flourished 217 years when it was visited by *Pausanias*. It had then a few antiquities, many temples and statues, especially about the *Agora* or market-place, and several baths. The Emperor *Hadrian* introduced water from a famous spring at

Stymphalus in *Arcadia*; and it had various fountains alike copious and ornamental. The stream of one issued from a dolphin, on which was a brazen *Neptune*; of another, from the hoof of *Pegasus*, on whom *Bellerophon* was mounted. On the right hand, coming along the road leading from the market-place toward *Sicyon*, was the *Odæum* and the theatre, by which was a temple of *Minerva*. The old *Gymnasium* was at a distance. Going from the market-place toward *Lechæum* was a gate, on which were placed *Phaeton* and the *Sun* in gilded chariots. *Pirene* entered a fountain of white marble, from which the current passed in an open channel. They supposed the metal called *Corinthian brass* to have been immersed while red hot in this water. On the way up to the *Acrocorinthus* were temples, statues, and altars; and the gate next *Tenea*, a village with a temple of *Apollo* sixty stadia, or seven miles and a half distant, on the road to *Mycenæ*. At *Lechæum* was a temple and a brazen image of *Neptune*. At *Cenchreæ* were temples; and by the way from the city a grove of cypress-trees, sepulchres, and monuments. Opposite was the *Bath of Helen*, water tepid and salt, flowing plentifully from a rock into the sea. *Mummius* had ruined the theatre of Corinth, and the munificence of the great Athenian *Atticus Herodes* was displayed in an edifice with a roof inferior to few of the most celebrated structures in Greece.

The Roman colony was reserved to suffer the same calamity as the Greek city, and from a conqueror more terrible than *Mummius*, *Alaric* the savage destroyer of *Athens* and universal Greece. In a country harassed with frequent wars, as the *Peloponnesus* has since been, the *Acrocorinthus* was a post too consequential to be neglected. It was besieged and taken in 1459 by *Mahomet II.*; the despots or lords of the *Morea*, brothers of the Greek emperor who was killed in defending *Constantinople*, refusing payment of the arrears of the tribute, which had been imposed by *Sultan Morat* in 1447. The country became subject to the *Turks*, except such maritime places as were in the possession of the *Venetians*; and many of the principal inhabitants were carried away to *Constantinople*. Corinth, with the *Morea*, was yielded to the republic at the conclusion of the war in 1698, and again by it to the *Turks* in 1715.

Corinth retains its old name, and is of considerable extent, standing on high ground, beneath the *Acrocorinthus*, with an easy descent toward the gulph of *Lepanto*; the houses scattered or in parcels, except in the *Bazar* or market-place. *Cypresses*, among which tower the domes of mosques, with corn-fields, and gardens of lemon and orange-trees, are interspersed. The air is reputed bad in summer, and in autumn exceedingly unhealthy. *Wheler* relates, that from the top of the *Acrocorinthus* or *Citadel*, he enjoyed one of the most agreeable prospects which this world can afford. He guessed the walls to be about two miles in compass, inclosing mosques, with houses and churches mostly in ruins. An hour was consumed in going up on horseback. It was a mile to the foot of the hill; and from thence the way was very steep, with many traverses. The families living below were much infested by corsairs, and on every alarm flocked up to the castle.

According

Corinth
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Coris.

According to Dr Chandler, Corinth has preserved but few monuments of its Greek or Roman citizens. The chief remains, he informs us, are at the south-west corner of the town, and above the bazar or market; 11 columns supporting their architraves, of the Doric order, fluted, and wanting in height near half the common proportion to the diameter. Within them, toward the western end, is one taller, though not entire, which it is likely contributed to sustain the roof. They have been found to be stone, not marble; and appear brown, perhaps from a crust formed on the outside. The ruin he judges to be of very remote antiquity, and a portion of a fabric erected not only before the Greek city was destroyed, but before the Doric order had attained to maturity. He suspects it to have been the Sisyphæum mentioned by Strabo. North of the Bazar stands a large mass of brick-work, a remnant, it may be conjectured, of a bath or of the Gymnasium.

The inhabitants are most of them Christians of the Greek church, who are allowed liberty of conscience by the Turks. E. Long. 28. 13. N. Lat. 38. 14.

CORINTH, (the isthmus of), in the Morea, is a neck of land which joins the Morea to Greece, and reaches from the gulph of Lepanto to that of Egina. Julius Cæsar, Caligula, and Nero, attempted to cut a channel through it, but in vain; and they therefore afterwards built a wall across it, which they called *Hexamilium*, because it was six miles in length. This was demolished by Amurat II. and afterwards rebuilt by the Venetians, but was levelled a second time by Mahomet II.

CORINTHIAN, in general, denotes something belonging to Corinth: thus we say, Corinthian brass, Corinthian order, &c.

CORINTHIAN Brass. See BRASS and CORINTH.

CORINTHIAN Order, in architecture, the fourth order of architecture, according to Scamozzi; but Mr Le Clerc makes it the fifth, being the most noble and delicate of all the other five. See ARCHITECTURE, n^o 47.

CORIO (Bernardine), an historian, born of an illustrious family at Milan, in the year 1460. He was secretary of state to that duchy; and the Duke of Lavis Storza appointed him to write the history of Milan. He died in 1500. The best edition of his history is that of 1503, in folio. It is printed in Italian, and is very scarce.

CORIOLANUS (C. Marcius), a famous Roman captain, took Corioli a town of the Volsci, whence he had his surname: at last, disgusting the people, he was banished Rome by the tribune Decius. He went to the Volsci, and, persuading them to take up arms against the Romans, they encamped within four miles of the city. He would not listen to proposals of peace till he was prevailed upon by his wife Veturia, and his mother Volumnia, who were followed by all the Roman ladies in tears. He was put to death by the Volsci as a traitor that had made them quit their conquest: upon which the Roman ladies went into mourning; and in the same place where his blood was spilled there was a temple consecrated to Feminine Virtue.

CORIS, in botany: A genus of the monogynia order, belonging to the pentandria class of plants; and in the

natural method ranking with those of which the order is doubtful. The corolla is monopetalous and irregular; the calyx prickly; the capsule quinquevalved superior. There is only one species, *viz.* the montpelienfis, or blue maritime coris. There are two varieties of this plant, one with a red, and the other with a white flower; but these are only accidental, and arise from the same seeds. They grow wild about Montpellier, and in most places in the south of France: they seldom grow above six inches high, and spread near the surface of the ground like heath; and in June, when they are full of flowers, make a very pretty appearance. They may be propagated by sowing their seeds in a bed of fresh earth, and afterwards removing the young plants, some into pots, and others into a warm border. They generally bear our winter colds well enough, but severe frosts will sometimes destroy them; for which reason it is proper to keep some of them in pots, which should be put under a hot-bed frame in winter. As they seldom produce good seeds in this country, they may, in want of these, be propagated by slips and cuttings, which will take root if planted on a very gentle hot-bed, shaded from the sun, and duly watered.

CORIS is also used in the East-Indies for a kind of shells which pass for money.

CORISPERMUM, TICKSEED: A genus of the digynia order, belonging to the monandria class of plants, and in the natural method ranking under the 12th order, *Holoracea*. There is no calyx; two petals, and one oval naked seed. There are two species; but none of them are remarkable for their beauty or any other quality.

CORITANI, (anc. geog.) a people of Britain, occupying widely the inland parts, as Northampton, Leicester, Rutland, Lincoln, Nottingham, and Derby shires, (Camden).

CORK, the bark of a tree of the same name, a species of *Quercus*. See QUERCUS.

To take off the bark they make an incision from the top to the bottom of the tree, and at each extremity another round the tree, perpendicular to the first. When stripped from the tree, which does not therefore die, the bark is piled up in a pond or ditch, and loaded with heavy stones to flatten it, and reduce it into tables: hence it is taken to be dried; and when sufficiently dry, put in bales for carriage. If care be not taken to strip the bark, it splits and peels off itself; being pushed up by another bark formed underneath.

The bark of cork, as well as the acorn, are of some use in medicine; being both reputed astringents, after being burnt and powdered when used externally; but the chief employ of the former is, to put in shoes, slippers, &c. and to stop bottles. The Spaniards burn it to make that kind of light black we call *Spanish black*, used by painters. Cups made of cork, are said by some to be good for hectic persons to drink out of. The Egyptians made coffins of cork; which being lined with a resinous composition, preserved dead bodies uncorrupted. The Spaniards line stone-walls with it, which not only renders them very warm, but corrects the moisture of the air.

Fossil-Cork, a name given to a kind of stone. It seems to be a species of amianthus, consisting of flexible

Coris
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Cork.

Cork.

ble fibres loosely interwoven, and somewhat resembling vegetable cork. It is the lightest of all stones; by fire it is fusible, and forms a black glass. It possesses the general qualities of amianthus. See that article.

CORK, in Latin *comitatus Corcagiensis*, a county of the province of Munster in Ireland. It is the most populous and considerable county of the kingdom next to that of Dublin; containing near a million of acres, and being divided into 15 baronies. It is bounded on the north-east by the county of Waterford; on the west by Kerry; by Limeric on the north; and by the sea on the south and south-east. Including Desmond it is 85 miles in length and 50 in breadth; but is very unequal both ways. Though a considerable part of the country is boggy, mountainous, and barren; yet by the industry of the inhabitants it is pretty well cultivated and improved, and contains several good towns and harbours.

CORK, a city of Ireland, and capital of the county of that name. It is an episcopal see; and is the largest and most populous of any in the kingdom, Dublin alone excepted. It is situated on the river Lee, 15 miles from its mouth. It is a place of great trade, the harbour here being one of the finest in the world. Though smaller vessels can come up to the key, yet the larger generally ride at a place called *Passage*. This city, together with its liberties, makes a county. It was built, or rather fortified, by the Danes, in the ninth century. The greatest part of it stands on a marshy island surrounded by the river Lee, which also runs through the city, and divides it into several canals. On this account some have thought the air very moist and unwholesome. Complaints have also been made against the water as impure; but, from comparing the bills of mortality with those of other cities, it appears that the city of Cork is far from being unhealthy. This hath been accounted for from the influx of the tide, by which a stagnation of air is prevented. The first charter of Cork was bestowed by Henry III. and afterwards ratified by Edward I. Edward II. and Edward III. Edward IV. granted a new charter; and the city received many favours from the succeeding monarchs. King James I. gave the citizens a new and ample charter; and king Charles I. what is called the Great Charter, by which, among others, a clause in king James's charter was enforced, making this city a county of itself. The see of Cork is reputed worth L. 2700 a-year. The chapter consists of a dean, chanter, chancellor, treasurer, archdeacon, and twelve prebendaries. The church is dedicated to St Barr or Finbarr; and the diocese is divided into five deaneries. There is very little to be found in ancient writers concerning the foundation of the Cathedral of Cork; yet it is generally ascribed to St Barr in the seventh century. Many of its bishops have been great benefactors to it. Through length of time, the church became quite ruinous; but it hath lately been completely rebuilt, and is now an elegant modern structure. To defray the expence, the parliament laid a tax on all coals consumed in the city of Cork. The deanery is reputed to be worth L. 400 a-year.

Cork is much improved and enlarged, several broad streets have been lately added, by filling up the canals that formerly ran through them, and are now built up with elegant houses; the parade is very spacious,

N^o 92.

and is adorned with an equestrian statue of king George II. It hath the largest export in the kingdom, particularly of beef, hides, tallow, butter, fish, and other provisions. It is partly situated on several islands, formed by the river Lee, which are banked and quayed in, somewhat like the towns in Holland; and partly on rising grounds, on the north and south sides of the river. The earl of Marlborough besieged and took it from king James's army in 1690; when the duke of Grafton, who served as a volunteer, was slain in an attack. It contains about 8600 houses, and upwards of 70,000 inhabitants. It hath twelve companies of foot quartered in the barracks. Besides a stately cathedral, built from the foundation, between 1725 and 1735, by the produce of a duty upon coals, as above noticed, it is adorned with several handsome parish churches. It has also an elegant exchange for the merchants, a new and beautiful custom-house, a town-hall, several fine hospitals, and various other public structures. The city possesses an annual revenue of about 1300l. out of which the mayor enjoys for his salary and the support of his dignity 500l. The wealth and grandeur of Cork arise from its capacious and commodious haven, where almost any number of ships may lie with ease and safety. According to some accounts, when there has been no war, 1200 vessels have resorted hither in a year. Ships from England, bound to all parts of the West Indies, take in here a great part of their provisions; and on the same account the haven of Cork is visited by those also of most other nations. The slaughtering season continues from the month of August to the latter end of January; in which space it has been computed, that they kill and cure seldom fewer than 100,000 head of black cattle. The rest of their exports consist of butter, candles, hides raw and tanned, linen cloth, pork, calves, lambs, and rabbit-skins, tallow, wool for England, linen and woollen yarn, and worsted. The merchants of Cork carry on a very extensive trade to almost all parts of the known world; so that their commerce is annually increasing. The produce of the customs some years since exceeded 60,000l. and the number of ships that they employ is double to what it was forty years ago. The only thing that seemed to be wanting to the security of the port of Cork was supplied in the earl of Chesterfield's memorable administration, by building a fort on the great island, to command the entrance of the haven. The outlets of Cork are cheerful and pleasant. The country around the city, on both sides of the river, is hilly and picturesque; and the harbour called the *Cove*, is one of the best in the world; the entrance is safe, and the whole navy of England might ride in it, secure from every wind that blows. Ships of burden, however, are obliged to unload at *Passage*, five miles and a half from Cork, the channel not admitting vessels of above 150 tons.

CORK Jacket, or *Waistcoat*, is an invention of one Mr Dubouig, a gentleman very fond of swimming, but subject to the cramp, which led him to consider of some method by which he might enjoy his favourite diversion with safety. The waistcoat is composed of four pieces of cork, two for the breasts and two for the back; each pretty near in length and breadth to the quarters of a waistcoat without flaps; the

Cork.

Cormandel the whole is covered with coarse canvas, with two holes to put the arms through: there is a space left between the two back-pieces, and the same betwixt each back and breast-piece, that they may fit the easier to the body. Thus the waistcoat is only open before, and may be fastened on the wearer with strings, or, if it should be thought more secure, with buckles and leather straps. This waistcoat does not weigh above 12 ounces, and may be made up for about 5 or 6 shillings expence. Mr Dubourg tried his waistcoat in the Thames, and found that it not only supported him on the water, but that two men could not sink him, tho' they used their utmost efforts for that purpose. If those who use the sea occasionally, and especially those who are obliged to be almost constantly there, were to have those waistcoats, it would be next to impossible that they should be drowned. It would also be of vast service to those that, for the sake of health, bathe in the sea; and even the most delicate and timorous young lady might by the help of one of these jackets venture into a rough sea. See *ATR-Jacket*, and *BAMBOO-Habit*.

CORMANDEL. See **COROMANDEL**.

COR-MASS, the name of a grand procession, said to have been established at Dunkirk during the dominion of Charles V. and renewed on St John's day, the twenty-fourth of June. After the celebration of high mass, the procession, consisting of the several tradesmen of the town, begins. Each person has a burning taper of wax in his hand; and after each company comes a pageant, followed by the patron-saint, usually of solid silver, richly wrought and adorned. The companies are followed by music; and after the musicians, the friars in the habits of their order, the secular priests, and then the abbot magnificently adorned, and preceded by the host. Machines likewise of various fantastical forms and devices, and as variously accoutred, form a part of the show on this occasion; which is described as one of the most superb and magnificent in the world, by an eye-witness, in 1755.

CORMORANT, a corruption of corvorant, in ornithology. See **PELICANUS**.

CORN, in country affairs, the grain or seeds of plants separated from the spica or ear, and used for making bread.

There are several species of corn, such as wheat, rye, and barely, millet and rice, oats, maize and lentils, pease, and a number of other kinds; each of which has its usefulness and propriety.

Europe, in every part of it; Egypt, and some other cantons of Africa, particularly the coasts of Barbary; and some parts of America cultivated by the Europeans, particularly New England, New France, and Acadia; are the places which produce corn. Other countries have maize and rice in lieu of it; and some parts of America, both in the islands and continents, simple roots, such as potatoes and manioc.—Egypt was anciently the most fertile of all other countries in corn; as appears both from sacred and profane history. It furnished a good part of the people subject to the Roman empire, and was called the *dry nurse of Rome and Italy*. Britain, France, and Poland, seem now in the place of Egypt, and with their superfluities support a good part of Europe.

For the first discovery and culture of corn, authors

are much divided: the common opinion is, that in the first ages men lived on the spontaneous fruits of the earth; as acorns, and the nut or mast produced by the beech; which, they say, took its name *fagus*, from the Greek *φάγω*, *I eat*. It is added, that they had not either the use of corn, nor the art of preparing or making it eatable.

Ceres has the credit of being the first that showed the use of corn, on which account she was placed among the gods; others give the honour to Triptolemus; others share it between the two, making Ceres the first discoverer, and Triptolemus the first planter and cultivator of corn. Diodorus Siculus ascribes the whole to Isis; on which Polydore Virgil observes, he does not differ from the rest; Isis and Ceres being, in reality, the same. The Athenians pretend it was among them the art began; and the Cretans or Candiots, Sicilians, and Egyptians, lay claim to the same. Some think the title of the Sicilians best supported, that being the country of Ceres: and authors add, she did not teach the secret to the Athenians, till she had first instructed her own countrymen. Others say, Ceres passed first into Attica, thence into Crete, and, last of all, into Sicily: many of the learned, however, maintain it was in Egypt the art of cultivating corn first began; and it is certain there was corn in Egypt and the East long before the time of Ceres.

Corn is very different from fruits, with respect to the manner of its preservation; and is capable of being preserved in public granaries, for pressing occasions, and of being kept for several centuries.—A little time after the siege of Metz, under Henry II. of France, in the year 1578, the duc d'Espernon laid up vast stores of corn in the citadel; which was preserved in good plight to the year 1707, when the French king and his retinue, passing that way, eat bread baked thereof.

The chief thing that contributes to the preservation of corn is, a crust which forms on its surface, by the germination of the grain next underneath, to the thickness of an inch and a half. On that at Metz people walked, without its giving the least way. At Sedan was a granary cut in a rock, wherein a heap of corn was preserved a hundred and ten years: it was covered with a crust a foot thick.

For the preservation of corn, the first method is to let it remain in the spike; the only expedient for conveying it to the islands and provinces of America. The inhabitants of those countries save it in the ear, and raise it to maturity by that precaution: but this method of preserving it is attended with several inconveniences among us; corn is apt to rot or sprout, if any the least moisture is in the heap; the rats likewise infest it, and our want of straw also obliges us to separate the grain from the ear. The second is to turn out and winnow it frequently; or to pour it through a trough or mill-hopper, from one floor to another; being thus moved and aired every 15 days, for the first 6 months, it will require less labour for the future, if lodged in a dry place: but if, through neglect, mites should be allowed to slide into the heap, they will soon reduce the corn to a heap of dust: this must be avoided by moving the corn anew, and rubbing the places adjacent with oils and herbs, whose strong odour may chase them away; for which garlic and dwarf-elder

Corn
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Cornarius.

are very effectual: they may likewise be exposed to the open sun, which immediately kills them. When the corn has been preserved from all impurities for the space of two years, and has exhaled all its fires, it may be kept for 50 or even 100 years, by lodging it in pits covered with strong planks, closely joined together: but the safer way is to cover the heap with quicklime, which should be dissolved by sprinkling it over with a small quantity of water; this causes the grains to shoot to the depth of two or three fingers; and incloses them with an incrustation, as above mentioned, through which neither air nor insects can penetrate.

Indian CORN or maize. See ZEA.

CORN-Butterfly, method of destroying it. See AGRICULTURE, n^o 80.

CORN-Crake. See RALLUS.

CORN-Mill, a water-engine for grinding of corn. See MECHANICS.

CORNS, in surgery, hard excrescences, consisting of indurations of the skin arising on the toes, and sometimes on the sides of the feet, where they are much exposed to the pressure of the shoes. By degrees they press themselves farther down between the muscular fibres on these parts, and by their irritation occasion extreme pain. Many cures have been prescribed, but the total removal of them is always found to be attended with great difficulty. It has been recommended to soften them with plasters, and then to pull them up by the roots, to apply caustic, &c. A piece of raw beef laid on by way of plaster, and frequently shifted, is also said to be effectual; but the best cure is to bathe them frequently in warm water, and pare away as much as possible of the indurated skin without drawing blood.

CORN, in farricry. See FARRIERY.

CORNAGE, an ancient tenure, the service whereof was to blow a horn when any invasion of the Scots was perceived. This tenure was very frequent in the northern counties near the Picts wall; but by stat. 12. Car. II. all tenures are converted into free and common socage.—An old rental calls cornage, *newtgeldt*, q d. *neat-geld*. Lord Coke says, in old books it is called *horngeld*.

CORNARISTS, in ecclesiastical history, the disciples of Theodore Cornhart, an enthusiastic secretary of the states of Holland. He wrote at the same time against the Catholics, Lutherans, and Calvinists. He maintained that every religious communion needed reformation; but he added, that no person had a right to engage in accomplishing it, without a mission supported by miracles. He was also of opinion, that a person might be a good Christian without being a member of any visible church.

CORNARIUS, or HAGUENBOT, (John), a celebrated German physician, born at Zwickow in Saxony. His preceptor made him change his name of Haguenbot to that of Cornarius, under which he is most known. At 20 years of age he taught grammar, and explained the Greek and Latin poets and orators to his scholars; and at 23 was licentiate in medicine. He found fault with most of the remedies provided by the apothecaries; and observing, that the greatest part of the physicians taught their pupils only what is to be found in Avicenna, Rasis, and the other Arabian

physicians, he carefully sought for the writings of the best physicians of Greece, and employed about 15 years in translating them into Latin, especially the works of Hippocrates, Aetius, Eginetes, and a part of those of Galen. Meanwhile he practised physic with reputation at Zwickow, Francfort, Marpurg, Nordhausen, and Gena, where he died of an apoplexy in 1558, aged 58. He also wrote some medicinal treatises; published editions of some poems of the ancients on medicine and botany; and translated some of the works of the fathers, particularly those of Basil, and a part of those of Epiphanius.

CORNARO (Lewis), a Venetian of noble extraction, memorable for having lived healthful and active to above 100 years of age by a rigid course of temperance. By the ill conduct of some of his relations he was deprived of the dignity of a noble Venetian; and seeing himself excluded from all employments under the republic, he settled at Padua. In his youth, he was of a weak constitution; and by irregular indulgence reduced himself, at about 40 years of age, to the brink of the grave, under a complication of disorders; at which extremity he was told that he had no other chance for his life, but by becoming sober and temperate. Being wise enough to adopt this wholesome counsel, he reduced himself to a regimen of which there are very few examples. He allowed himself no more than 12 ounces of food and 14 ounces of liquor each day; which became so habitual to him, that when he was above 70 years of age, the experiment of adding two ounces to each by the advice of his friends, had like to have proved fatal to him. At 83, he wrote a treatise which has been translated into English, and often printed, intitled, *Sure and certain Methods of attaining a Long and Healthful Life*; in which he relates his own story, and extols temperance to a degree of enthusiasm. At length, the yolk of an egg became sufficient for a meal, and sometimes for two, until he died with much ease and composure in 1566. The writer of the Spectator, n^o 195, confirms the fact from the authority of the Venetian ambassador at that time, who was a descendant of the Cornaro family.

CORNAVII (Ptolemy), a people of Britain, beginning in the very heart of the island, and extending to Chester. Now *Warwick, Worcester, Salop, Stafford shires, and Cheshire* (Camden).

CORNEA TUNICA, in anatomy, the second coat of the eye; so called from its substance resembling the horn of a lantern, in Latin *cornu*. See ANATOMY, n^o 142.

CORNEILLE (Peter), a celebrated French poet, was born at Rouen in the year 1606. He was brought up to the bar, which he attended for some little time; but formed with a genius too elevated for such a profession, and having no turn for business, he soon deserted it. An affair of gallantry occasioned his writing his first piece, intitled *Melite*; which had prodigious success. Encouraged by the applause of the public, he wrote the *Cid*, and the other tragedies that have immortalized his name. In his dramatic works he discovers a majesty, a strength and elevation of genius, scarce to be found in any other of the French poets; and, like our immortal Shakespeare, seems better acquainted with nature than with the rules of critics. Corneille was received into the French academy

Cornaro
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Corneille.

Corneille
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Cornelia.

demy in 1647, and died dean of that academy in 1684, aged 78. Besides his dramatic pieces, he wrote a translation, in French verse, of the "Imitation of Jesus Christ," &c. The best edition of his works is that of 1682, in 4 vols 12mo.

CORNEILLE (Thomas), brother of the former, was a member of the French academy and of that of inscriptions. He discovered in his youth a great inclination to poetry; and at length published several dramatic pieces in 5 vols 12mo, some of which were applauded by the public, and acted with success. He also wrote, 1. A translation of Ovid's *Metamorphoses*, and of some of Ovid's *Epistles*; 2. *Remarks on Vauglas*; 3. A *Dictionary of Arts*, 2 vols folio; and, 4. An universal, geographical, and historical *Dictionary*, in 3 vols folio.

CORNEILLE (Michael), a celebrated painter, was born at Paris in the year 1642; and was instructed by his father, who was himself a painter of great merit. Having gained a prize at the academy, young Corneille obtained a pension from Louis XIV.; and was sent to Rome, where that prince had founded a school for young artists of genius. Having studied there some time, he gave up his pension, and applied to the antique with great care. He is said to have equalled Carache in drawing, but in colouring he was deficient. Upon his return from Rome, he was chosen professor in the academy of Paris; and was employed by the above prince in all the great works he was carrying on at Versailles and Trianon, where are still to be seen some noble efforts of his genius.

CORNEL-TREE, in botany. See CORNUS.

CORNELIA, daughter of Scipio Africanus, was the mother of Tiberius and Caius Gracchus. She was courted by a king, but she preferred being the wife of a Roman citizen to that of a monarch. Her virtues have been deservedly commended, as well as the wholesome principles she inculcated in her two sons. When a Campanian lady made once a show of her jewels at Cornelia's house, and entreated her to favour her with a sight of her own, Cornelia produced her two sons, saying, "These are the only jewels of which I can boast."

CORNELIA Lex, *de civitate*, was enacted, in the year of Rome 670, by L. Corn. Sylla. It confirmed the Sulpician law, and required that the citizens of the eight newly elected tribes should be divided among the 35 ancient tribes.—Another, *de judiciis*, in 673, by the same. It ordained, that the prætor should always observe the same invariable method in judicial proceedings, and that the process should not depend upon his will.—Another, *de sumptibus*, by the same. It limited the expences which generally attended funerals.—Another, *de religione*, by the same, in 677. It restored to the college of priests the privilege of choosing the priests, which by the Domitian law had been lodged in the hands of the people.—Another, *de municipiis*, by the same; which revoked all the privileges which had been some time before granted to the several towns that had assisted Marius and Cinna in the civil wars.—Another, *de magistratibus*, by the same; which gave the power of bearing honours, and being promoted before the legal age, to those who had followed the interest of Sylla; while the sons and partizans of his

enemies, who had been proscribed, were deprived of the privilege of standing for any office in the state.—Another, *de magistratibus*, by the same, in 673. It ordained, that no person should exercise the same office within ten years distance, or be invested with two different magistracies in one year.—Another, *de magistratibus*, by the same, in 673. It divested the tribunes of the privilege of making laws, interfering, holding assemblies, and receiving appeals. All such as had been tribunes were incapable of holding any other office in the state by that law.—Another, *de majestate*, by the same, in 670. It made it treason to lead an army out of a province, or engage in a war without orders, to influence the soldiers to spare or ransom a captive general of the enemy, to pardon the leaders of robbers or pirates, or for the absence of a Roman citizen to a foreign court without previous leave. The punishment was *aque & ignis interdictio*.—Another by the same. It gave the power to a man accused of murder, either by poison, weapons, or false accusations, and the setting fire to buildings, to choose whether the jury that tried him should give their verdict *clam* or *palam*, *viva voce* or by ballot. Another by the same; which made it *aque & ignis interdictio* to such as were guilty of forgery, concealing and altering of wills, corruption, false accusations, and the debasing or counterfeiting of the public coin. All such as were accessory to this offence were deemed as guilty as the offender.—Another, *de pecuniis repetundis*; by which a man convicted of peculation or extortion in the provinces was condemned to suffer the *aque & ignis interdictio*.—Another by the same; which gave the power to such as were sent into the provinces with any government, of retaining their command and appointment without a renewal of it by the senate, as was before observed.—Another by the same; which ordained, that the lands of proscribed persons should be common, especially those about Volaterræ and Fesulæ in Etruria, which Sylla divided among his soldiers.—Another by C. Cornelius tribune of the people, in 686. It ordained, that no person should be exempted from any law according to the general custom, unless 200 senators were present in the senate; and no person thus exempted could hinder the bill of his exemption from being carried to the people for their concurrence.—Another by Nasica, in 582, to make war against Perseus, son of Philip king of Macedonia, if he did not give proper satisfaction to the Roman people.

CORNELIAN. See CARNELIAN.

CORNER, in a general sense, the same with ANGLE.

CORNET, in the military art of the ancients, an instrument much in the nature of a trumpet; which when it only sounded, the ensigns were to march alone without the soldiers; whereas, when the trumpet only sounded, the soldiers were to move without the ensigns. The cornets and buccinæ sounded the charge and retreat; and the cornets and trumpets sounded during the course of the battle. See Plate CL.

CORNET, in modern military œconomy, denotes an officer in the cavalry who bears the ensign or colours of a troop.

The cornet is the third officer in the company, and commands in the absence of the captain and lieutenant.

Cornelia
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Cornet.

Corneus
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Cornucopia.

He takes his title from his ensign, which is square; and is supposed to be called by that name from *cornu*, because placed on the wings, which form a kind of points or horns of the army.—Others derive the name from *coronet*; alleging, that it was the ancient custom for these officers to wear coronets or garlands on their heads.

CORNEUS, the name by which Linnæus calls a kind of tin-ore, found in black columns, with irregular sides, and terminating in prisms.

CORNICHE, **CORNISH**, or **CORNICE**, in architecture, the uppermost member of the entablature of a column, as that which crowns the order. See **ARCHITECTURE**, Chap. I. and the Plates.

CORNICHE, is also used, in general, for all little projections in masonry or joinery, even where there are no columns, as the cornice of a chimney, buffet, &c.

CORNICER-RING, a piece of ordnance, is that next from the muzzle-ring, backward.

CORNICULARIUS, in antiquity, an officer in the Roman army, whose business was to aid and assist the military tribune in quality of a lieutenant.

The *cornicularii* went the rounds in lieu of the tribune, visited the watch, and were nearly what the aids major are in the French army.

The denomination *cornicularius* was given them from a little horn, called *corniculum*, which they used in giving orders to the soldiers: though Salmastus derives it from *corniculum*, the crest of an head-piece; it being an observation of Pliny, that they wore iron or brass horns on their helmets; and that these were called *cornicula*.

In the *Nutitia Imperii* we find a kind of secretary or register of the same name. His business was to attend the judge, and enter down his sentences and decisions. The critics derive the word, in this sense, from *corniculum*, a little horn to put ink in.

CORNICULUM (anc. geog.), a town of the Sabines, to the east of Crustumerium, towards the Anio. It was burnt down by Tarquin; but restored again, after the expulsion of the kings, (Florus). Now in ruins, called *il Monte Gennaro*, (Hollstenius).

CORNISH DIAMOND, a name given by many people to the crystals found in digging the mines of tin in Cornwall. See **CORNWAL**, p. 462. col. 2.

CORNIX, in ornithology, the trivial name of a species of **CORVUS**.

CORNU. See **HORN**.

CORNU Ammonis, in natural history, fossil shells, called also *serpent-stones*, or *snake-stones*.

They are found of all sizes, from the breadth of a sixpence, to more than two feet in diameter; some of them rounded, others greatly compressed, and lodged in different strata of stones and clays; some again are smooth, and others ridged in different manners, their striæ and ridges being either straight, irregularly crooked, or undulated. See **SNAKE-STONE**.

CORNU Cervi. See **HARTSHORN**.

CORNUCOPIA, among the ancient poets, a horn out of which proceeded plenty of all things; by a particular privilege which Jupiter granted his nurse, supposed to be the goat Amalthea. The fable is thus interpreted: That in Lybia there is a little territory shaped not unlike a bullock's horn, exceeding fertile,

given by king Ammon to his daughter Amalthea, whom the poets feign to have been Jupiter's nurse.

In architecture and sculpture, the cornucopia, or horn of plenty, is represented under the figure of a large horn, out of which issue fruits, flowers, &c. On medals, F. Joubert observes, the cornucopia is given to all deities.

CORNUCOPIÆ, in botany: A genus of the digynia order, belonging to the triandria class of plants; and in the natural method ranking under the 4th order, *Gramina*. The involucre is monophyllous, funnel-shaped, crenated, and multiflorous; the calyx bivalved; corolla one valved.

CORNUS, **CORNEL-TREE**, **CORNELIAN CHERRY**, or **DOG-WOOD**: A genus of the monogynia order, belonging to the tetrandria class of plants; and in the natural method ranking under the 47th order, *Stellata*. The involucre is most frequently tetraphyllous; the petals above the receptacle of the fruit four; the fruit itself a bilocular kernel.

Species. Of this genus there are five species; the most remarkable are the following. 1. The mas, or cornelian cherry-tree, hath an upright tree-stem, rising 20 feet high, branching, and forming a large head, garnished with oblong leaves, and small umbels of yellowish-green flowers at the sides and ends of the branches, appearing early in the spring, and succeeded by small, red, cherry-like, catable, acid, fruit. 2. The sanguinea, bloody-twig, or common dog-wood: hath an upright tree-stem, branching 10 or 12 feet high, having blood-red shoots, garnished with oblong pointed nervous leaves two inches long; and all the branches terminated by umbellate white flowers succeeded by black berries: of this there is a kind with variegated leaves. 3. The florida, or Virginian dog-wood, hath a tree-stem branching 12 or 15 feet high, and fine red shoots garnished with large heart-shaped leaves; and the branches terminated by umbellate white flowers, having a large involucre succeeded by dark red berries. Of this species there are several varieties, chiefly distinguished by the colour of their berries, which are red, white, or blue.

Culture. All the species may be propagated by seeds, which ought to be sown in autumn, otherwise they will lie a year in the ground. When the plants come up, they should be duly watered in dry weather, and kept clean from weeds. The following autumn they may be transplanted into the nursery; and having remained there two or three years, they may then be removed to the places where they are to remain. They may also be propagated by suckers, of which they produce great plenty, or by laying down the young branches.

CORNUTIA, in botany: A genus of the angiospermia order, belonging to the didynamia class of plants; and in the natural method ranking under the 40th order, *Personata*. The calyx is quinque-dentated; the stamina larger than the corolla; the style very long; the berry monospermous. There is but one species, *viz.* the pyramidata, with a blue pyramidal flower, and hoary leaves. It grows plentifully in several of the islands of the West Indies, also at Campeachy, and at La Vera Cruz. It rises to the height of 10 or 12 feet, with rude branches, the leaves being placed opposite. The flowers are produced in spikes at the end.

Cornucopia
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Cornutia.

Cornwal.

end of the branches, and are of a fine blue colour. They usually appear in autumn, and will sometimes remain in beauty for two months or more. It is propagated either by seeds or cuttings, and makes a fine appearance in the stove; but is too tender to bear the open air in this country.

CORNWAL, the most westerly county of England, bounded by the English channel on the south, St George's channel on the west, the Bristol channel on the north, and on the east by the river Tamar, which separates it from Devonshire. Its name is supposed by some to be compounded of *carn*, signifying "a rock" in the British language, and *Gauls*, or *Wales*, the name the Saxons gave to the Britons. Others, however, think it is derived from the Latin *cornu*, or the British *kern*, "a horn;" on account of its running out into the sea somewhat in the form of a horn. Hither the ancient Britons (as well as in Wales) retired on the intrusion of the Saxons, where they opposed their further conquests. In this part of the island they formed a kingdom that existed for many years after, under different princes, amongst whom were Ambrosius Aurelius, and the justly celebrated Arthur; nor were they subdued till the middle of the 7th century, from which time Cornwall was considered as subject to the West Saxon kings, who began their sovereignty in 519, and continued it till 828, under 18 sovereigns, the last of whom was the great Egbert, who subdued all the others; and by uniting them, formed the kingdom of England, when this county was included in the county of Devon, then the 9th division; and that accounts for Alfred's not mentioning Cornwall, which on forming the circuits after the Norman conquest, is included in the western circuit. In 1337, Edward III. erected it into a dukedom, and invested with it *Edward the Black Prince*. But this, according to the express words of the grant, is limited to the first-born son and heir, on which account Richard II. was created duke of Cornwall by charter. So was Henry V. by his father Henry IV. Henry VI. delivered the duchy to his son prince Edward, and Edward IV. created his son Edward V. duke of Cornwall, as did Henry VII. his son, afterwards Henry VIII. upon the death of his elder brother Arthur. James I. created his son Henry duke of Cornwall, which title on his decease came to his brother Charles. The eldest sons of succeeding kings have enjoyed this title by inheritance. These not only appoint the sheriff, but all writs, deeds, &c. are in their name, and not in the king's; and they have also peculiar royalties and prerogative distinct from the crown, for which they appoint the officers. This county is 80 miles long, 40 broad, and 250 in circumference; containing 960,000 acres, and 126,000 inhabitants. It is divided into 9 hundreds; has 27 market towns, *viz.* Launceston, Truro, Falmouth, Helfton, Saltash, Bodmyn, St Ives, Tregony, Camelford, Fowey, St Germain, Penryn, Callington, St Austle, East Looe, Paditow, St Colomb, Penfance, Grampond, Lestard, Lestwithiel, St Mawes, St Michael, Newport, Market Jew, Stratton, and Redruth; 1230 villages, 161 parishes, 89 vicarages, provides 640 men to the militia, and pays 8 parts of the land-tax. Its chief rivers are the Tamer, Fale, Cober, Looe, Camel, Fowe, Haile, Lemara, Kenfe,

and Aire. Its principal capes or head-lands are the Land's-end, the Lizard, Cape Cornwall, Deadman's-head, Rame-head, &c. and a cluster of islands, 145 in number, called the *Scilly Isles*, supposed formerly to have been joined to the main land, though now 30 miles distant; abounding with antiquities, particularly druidical.

As Cornwall is surrounded by the sea on all sides except the east, its climate is somewhat different from that of the other parts of Britain. The reasons of this difference will be easily understood from what is observed concerning the climate of America. The summers in Cornwall are less hot, and the winters less cold, than in other parts of England, and the spring and harvest are observed to be more backward. High and sudden winds are also more common in this than in other counties of England. The county is rocky and mountainous; but the mountains are rich in metals, especially tin and copper. The valleys are very pleasant and fertile, yielding great plenty both of corn and pasture. The lands near the sea-coast are manured and fertilized with sea-weed, and a kind of sand formed by the particles of broken shells as they are dashed against each other by the sea. Cattle of all sorts are smaller here than in the other counties of England; and the wool of the sheep, which are mostly without horns, is very fine, and the flesh, both of them and of the black cattle, extremely delicate. The county is well supplied with fish from the sea and the many rivers with which it is watered. The most noted of the sea-fish is the pilchard; of which prodigious quantities are caught from July to November, and exported to different parts, especially to Spain. It is said that a million have been sometimes taken at a single draught. The natives are remarkable for their strength and activity, as well as their dexterity in wrestling, in which exercise the Cornish hug is highly extolled.

This county abounds in mines of different metals and semimetals; but the principal produce is tin. The Phenicians early visited these coasts for this article, some think 400 or 450 years before Christ; and the mines continued to be wrought with various success at different periods. In the time of king John they appear to have yielded no great emolument; the right of working them being wholly in the king as earl of Cornwall, and the mines farmed by the Jews for 100 marks; and according to this proportion the 10th of it, L. 6. 13s. 4d. is at this day paid by the crown to the bishop of Exeter. In the time of Richard king of the Romans and earl of Cornwall, the tin-mines were immensely rich, the Jews being farmed out to him by his brother Henry III. what interest they had was at his disposal. The Spanish tin-mines being stopped by the Moors, and none discovered in Germany, the Malabar coast, or the Spanish West Indies, Cornwall and its earls had all the trade of Europe for it. The Jews being banished the kingdom, 18 Edw. I. they were again neglected till the gentlemen of Blackmore, lords of seven tithings best stored at that time with tin, obtained of Edmund earl of Cornwall, son of Richard king of the Romans, a charter under his own seal, with more explicit grants of privileges, courts, pleas, parliaments, and the toll-tin or $\frac{1}{3}$ th of all the tin raised. At this time too the right of bounding or dividing

Cornwal.

Cornwal.

dividing tin-grounds into separate partitions for the encouragement of searching for it seems to have been first appointed, or at least adjusted. This charter was confirmed 33 Edward I. and the Cornish separated from the Devonshire tanners. Their laws, particularly recited in Plowden's Commentaries, p. 237, were further explained 50 Edw. III. confirmed and enlarged by parliament, 8 Rich. II. 3 Ed. IV. 1 Ed. VI. 1 and 2 P. and M. and 2 Eliz. and the whole society divided into four parts under one general warden, to do justice in law and equity, from whose sentence lies an appeal to the duke of Cornwall in council, or for want of a duke of Cornwall to the crown. The lord-warden appoints a vice-warden to determine all stannary disputes every month: he also constitutes four stewards, one for each of the precincts before mentioned, who hold their courts every three weeks, and decide by juries of six persons, with an appeal reserved to the vice-warden, lord-warden, and lord of the prince's council. In difficult cases the lord-warden, by commission, issues his precept to the four principal towns of the stannary districts, who each choose six members, and these twenty-four stannators constitute the parliament of tanners. Each stannator chooses an assistant, making a kind of standing council in a different apartment to give information to the prince. Whatever is enacted by the body of tanners must be signed by the stannators, the lord-warden, or his deputy, and by the duke or the king, and thenceforward has with regard to tin affairs all the authority of an act of the whole legislature. Five towns are appointed in the most convenient parts of the county for the tanners to bring their tin to every quarter of a year. These are Lescard, Lestwithiel, Truro, Helston, and Pensance, the last added by Charles II. for the convenience of the western tanners. In the time of Henry VIII. there were but two coinages, at Midsummer and Michaelmas: two more at Christmas and Lady-day were added, for which the tanners pay an acknowledgment called *Post groats*, or 4*d.* for every hundred of white tin then coined. The officers appointed by the duke assay it; and if well purified stamp it by a hammer with the duchy seal, the arms of Richard earl of Cornwall, a lion rampant G. crowned O. within a bordure of bezants S; and this is a permission to the coiner to sell, and is called *coining the tin*. Every hundred of white tin so coined pays to the duke 4*s.* The tin of the whole county, which, in Carew's time, in the last century, amounted to 30 or 40,000*l.* yearly, has for 24 years last past amounted one year with another to L. 180,000 or 190,000 sterling. Of this the duke of Cornwall receives for his 4*s.* duty on every hundred of white tin above L. 10,000 yearly: the bounders or proprietors of the soil about $\frac{1}{2}$ th at a medium clear, or about L. 30,000 yearly; the remainder goes to the adventurers in the mine, who are at all the charge of working. Tin is found collected and fixed in lodes and floors, or in grains and bunches in the natural rock, or loose and detached in single separate stones called *shodes* or *streams*, or in a continued course of such stones called the *beuhysl* or *living stream*, or in an arenaceous pulverized state. It is most easily discovered by tracing the lodes by the scattered fragments of them called *shodes*, by leave of the lord of the soil or the bounder. The tin being divided among the lords and

Cornwal.

adventurers, is stamped and worked at the mill; and being thus dressed is carried under the name of *black tin* to the melting-house, where it is melted by Welsh pit-coal, and poured into blocks of 320*lb.* weight, and carried to the coinage town. Mundic, a scarce metal or mineral ore, of a white, brassy, or brown colour, is found in large quantities, intermixed with tin, copper, and lead, and sometimes by itself. Iron ore is found in Cornwall, but the working it does not answer. There is no richer copper, nor a greater variety any where than in this county. Silver, if really found here in the reigns of Edward I. and II. has been rarely found since, nor do the lead-mines answer. Very late discoveries have proved that Cornwall has more gold than was formerly imagined. What is called the *Cornish diamond* is a figured crystal generally hexagonal and pyramidal, or columnar, or both, of a fine clear water, and of all our bastard diamonds in this nation esteemed the best, and some of different colours, black, yellow, &c. The clearer these are, the better they will bear engraving for seals.

In privileges and language Cornwall seems to be another kingdom. By 21 Elizabeth it was ordered that all duty on Cornish cloth exported should be remitted to every Englishman within the duchy of Cornwall. This was first granted by the black prince, in consideration of their paying 4*s.* for the coinage of every hundred of tin; whereas Devonshire pays no more than 8*d.* They have also by grant from Richard earl of Cornwall, confirmed 45 Henry III. freedom to take sand out of the sea and carry it through the country for manure; whereupon in the following reign, on an inquisition made, we find a complaint that Saltash had lately taken 12*s.* yearly for each barge that carried sand up the Tamar; whereas nothing ought to be demanded. They still continue this ancient method of improving their land, carrying it ten miles up into the country, and great part of the way on horses backs. Mr Ray supposes the virtue of this sand depends chiefly on the salt mixed with it, which is so copious that in many places salt is boiled up out of a lixivium made of the sea sand; and the reason why sand when it has lain long in the sun and wind proves less enriching and useful is, that the dews and rain evaporate great part of its salt. They had likewise a privilege of trading to all parts of the world, granted them by Charles I. in recompence of their loyalty.

The number of boroughs in this small county was surprisingly increased by Edward VI. who added seven to the original six, Mary two, Elizabeth six, making in all 21, sending 40 members besides the county two. Eight of these boroughs had an immediate or remote connection with the demesne lands of the duchy; the rest belonged to religious houses, or powerful families, or were old boroughs, which had legal immunities granted to them by their princes or lords.

The Cornish language is a dialect of that which till the Saxons came in was common to all Britain, and more anciently to Ireland and Gaul; but the inhabitants of this island being dispersed before those conquests, and driven into Wales and Cornwall, and thence into Bretagne, the same language, for want of frequent intercourse, became differently pronounced and written, and in different degrees mixed with different

Corody
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Coroman-
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ferent languages. Hence came the Welsh, the Cornish, and the Armoric dialects, whose radicals are so much alike that they are known and admitted by the inhabitants of either country; but the grammar so varied that they cannot converse. The Cornish is reckoned the most pleasing of the three. It was spoken so generally here down to the reign of Henry VIII. that Dr John Moreman, vicar of Mynhinet, is said to have been the first who taught his parishioners the Lord's prayer, the creed, and ten commandments in English, and at the Reformation the natives desired the service in English. The older people in some parishes retained their original language to the middle of the last century: and the last sermon was preached in it in 1678. When Mr Ray was here, 1662, he could find but one person who could write this language; and it is now so nearly extinct, that Mr Barrington, in 1768, could only find one old woman who could scold in it, and she is since dead.

CORODY. See REVENUE.

COROLLA, among botanists, the most conspicuous part of a flower, surrounding the organs of generation, and composed of one or more flower-leaves, most commonly called *petals*, to distinguish them from the leaves of the plant; according as there is one, two, or three of these petals, the corolla is said to be monopetalous, dipetalous, tripetalous, &c.

COROLLARY is a consequence drawn from something already advanced or demonstrated: thus, it being demonstrated that a triangle which has two equal sides, has also two angles equal; this corollary will follow, that a triangle which has three sides equal, has also its three angles equal.

COROLLISTÆ, a name by which Linnæus distinguishes those systematic botanists who have arranged vegetables from the regularity, figure, number, and other circumstances, of the petals, or beautiful coloured leaves of the flower. The best systems of this kind are those of Rivinus and Tournefort. The former proceeds upon the regularity and number of the petals; the latter, with much more certainty, on their regularity and figure.

COROLLULA, a term used by botanists to express the little partial flowers which make up the compound ones.

COROMANDEL, the eastern coast of the peninsula on this side the Ganges in Asia. It is bounded on the north by Golconda, on the east by the bay of Bengal, on the south by Madura, and on the west by Bishnagar. This coast so much resembles that of Orissa, that the Abbé Raynal chooses to consider them as one, and gives to both the general name of *Coromandel*. Here an excessive heat reigns from the beginning of May to the end of October. It begins at nine in the morning, and continues till nine in the evening. During the night it is allayed by a sea-breeze from the south-east; and most commonly this refreshing gale begins at three in the afternoon. The air is less inflamed during the rest of the year, though in all seasons it is very hot. It rains almost continually during the months of November and December. This immense tract is covered with a parched sand for the extent of two miles, and sometimes only one mile along the coast.

This country was at first neglected by the Europe-

ans for many reasons. It was separated by inaccessible mountains from Malabar, where these bold adventurers endeavoured to settle themselves. Spices and aromatics, which were the principal objects of their attention, were not to be found there. In short, civil dissensions had banished from it tranquillity, security, and industry. At that period the empire of Bishnagar, to which this vast country was subject, was falling to ruin. The governments of Visapour, the Carnatic, Golconda, and Orissa, threw off their dependence, and assumed the title of kings. Those of Madura, Tanjore, Myfore, Gingi, and some others, likewise usurped the sovereign authority, though they retained their ancient title of *Naick*. This revolution had just happened when the Europeans appeared on the coast of Coromandel. The foreign trade was at that time inconsiderable; it consisted only of diamonds from Golconda, which were carried to Calicut and Surat, and from thence to Ormus or Suez, whence they were circulated through all Europe and Asia. Massulipatan, the richest and most populous city of these countries, was the only market that was known for linens; they were purchased at a great fair annually holden there by the Arabian and Malayan vessels that frequented that bay, and by caravans arrived from distant parts. The linens were exported to the same places with the diamonds. The fondness for the manufactures of Coromandel which began to prevail here, inspired all the European nations trading to the Indian seas with the resolution of forming settlements there. They were not discouraged either by the difficulty of conveying goods from the inland parts of the country, where there was no navigable river; by the total want of harbours, where the sea at one season of the year is not navigable; by the barrenness of the coasts, for the most part uncultivated and uninhabited; nor by the tyranny and fluctuating state of the government. They thought that silver would be industriously sought after; that Pegu would furnish timber for building, and Bengal corn for subsistence; that a prosperous voyage of nine months would be more than sufficient to complete their ladings; and that by fortifying themselves they should be secure against the attacks of the weak tyrants that oppressed these countries.

The first European colonies were established near the shore. Some of them obtained a settlement by force; most of them were formed with the consent of the sovereigns; and all were confined to a very narrow tract of land. The boundaries of each were marked out by a hedge of thorny plants, which was their only defence. In process of time fortifications were raised; and the security derived from them, added to the lenity of the government, soon increased the number of colonists. The splendor and independence of these settlements several times raised the jealousy of the princes in whose dominions they were formed; but their attempts to demolish them proved abortive. Each colony increased in prosperity in proportion to the riches and the wisdom of the nation that founded it. None of the companies that exercised an exclusive privilege beyond the Cape of Good Hope had any concern in the trade of diamonds. This was always left to private merchants, and by degrees fell entirely into the hands of the English, or the Jews

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and Armenians that lived under their protection. At present this grand object of luxury and industry is much reduced. The revolutions that have happened in Indostan have prevented people from resorting to these rich mines; and the anarchy in which this unhappy country is plunged, leaves no room to hope that they will be again attended to. The whole of the commercial operations on the coast of Coromandel is confined to the purchase of cottons. The manufacturing of the white cottons bought there, differs so little from ours, that it would be neither interesting nor instructive to enter into a minute description of it. The process used in making their printed cottons, which was at first servilely followed in Europe, has since been rendered more simple, and brought to greater perfection by our manufacturers. The painted cottons which are bought there, we have not yet attempted to imitate. Those who imagine we have been prevented from undertaking this branch merely by the high price of labour among us, are mistaken. Nature has not given us the wild fruits and drugs necessary for the composition of those bright and indelible colours which constitute the principal merit of the Indian manufactures; nor has she furnished us with the waters that serve to fix them. The Indians do not universally observe the same method in painting their cottons; either because there are some niceties peculiar to certain provinces, or because different soils produce different drugs for the same uses. We should tire the patience of our readers were we to trace the slow and painful progress of the Indians in the art of painting their cottons. It is natural to believe that they owe it to length of time, rather than to the fertility of their genius. What seems to authorize this conjecture is, that they have stopped in their improvements, and have not advanced a single step in the arts for many ages; whereas we have proceeded with amazing rapidity. Indeed, were we to consider only the want of invention in the Indians, we should be tempted to believe, that, from time immemorial, they have received the arts they cultivate from some more industrious nation; but when it is remembered that these arts have a peculiar dependence on the materials, gums, colours, and productions of India, we cannot but be convinced that they are natives of that country. It may appear somewhat surprising that cottons painted with all sorts of colours should be sold at so moderate a price, that they are almost as cheap as those that have only two or three. But it must be observed, that the merchants of the country sell to all the companies a large quantity of cottons at a time; and that the demand for cottons painted with various colours makes but a small article in their assortments, as they are not much esteemed in Europe.

Though cottons of all sorts are in some degree manufactured through the whole country of Indostan, which extends from Cape Comorin to the banks of the Ganges; it is observable, that the fine sorts are made in the eastern part, the common ones in the centre, and the coarse ones in the most western parts. Manufactures are established in the European colonies, and upon the coast: they are more frequent at the distance of five or six leagues from the sea, where cotton is more cultivated, and provisions are cheaper. The purchases made there are carried 30 or 40 leagues

farther into the country. The Indian merchants settled in the European factories have always the management of this business. The quantity and quality of the goods wanted are settled with these people: the price is fixed according to the patterns: and at the time a contract is made, a third or a fourth part of the money agreed on is advanced. This arrangement is owing to the necessity these merchants themselves are under of advancing money to the workmen by the partners or agents who are dispersed through the whole country: of keeping a watchful eye upon them, for fear of losing what they have advanced; and of gradually lessening the sum, by calling for the cottons as fast as they are worked off. Without these precautions, nothing could be depended on in an oppressive government, where the weaver cannot work on his own account, either because his circumstances will not permit, or because he dares not venture to discover them for fear of exactions. The companies that have either success or good management, constantly keep the stock of one year in advance in their settlements. By this method they are sure of having the quantity of goods they have occasion for, and of the quality they choose, at the most convenient time: not to mention that their workmen, and their merchants, who are kept in constant employment, never leave them. Such nations as want money and credit cannot begin their mercantile operations till the arrival of their ships. They have only five or six months at most to execute the orders sent from Europe. The goods are manufactured and examined in haste; and they are even obliged to take such as are known to be bad, and would be rejected at any other time. The necessity they are under of completing their cargoes, and sitting out their vessels before hurricanes come on, leaves no room for nicety of inspection. It would be a mistake to imagine that the country agents could be prevailed upon to order goods to be made on their account, in hopes of selling them with a reasonable advantage to the company with whom they are engaged. For, besides that the generality of them are not rich enough to embark in so large an undertaking, they would not be certain of finding their account in it. If the company that employ them should be hindered by unforeseen accidents from sending the usual number of ships, these merchants would have no vent for their commodities. The Indians, the form of whose dress requires different breadths and lengths from those of the cottons fabricated for our use, would not purchase them; and the other European companies would be provided, or certain of being provided, with whatever the extent of their trade required, and their money enabled them to purchase. The plan of procuring loans, which was contrived to remedy this inconvenience, never has, nor can be useful. It has been a custom, time immemorial, in Indostan, for every citizen who borrows money, to give a written instrument to his creditor. This deed is of no force in a court of judicature, unless it is signed by three witnesses, and bears the day of the month and the year when it was made, with the rate of interest agreed upon by the parties. If the borrower fails to fulfil his engagements, he may be arrested by the lender himself. He is never imprisoned, because there is no fear of his making his escape. He would

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not even eat, without obtaining leave of his creditor. The Indians make a three-fold division of interest: one kind they call *vice*; another neither *vice* nor *virtue*; and a third, they say, is *virtue*. The first is four *per cent.* a month; the second two; and the third one. The last is, in their opinion, an act of beneficence that only belongs to the most heroic minds. Yet, though the Europeans, who are forced to borrow, meet with this treatment, it is plain they cannot avail themselves of the indulgence without being involved in ruin.

The foreign trade of Coromandel is not in the hands of the natives. In the western part, indeed, there are Mohammedans known by the name of *Gbalias*, who, at Naour and Porto-Nuovo, send out ships to Aeken, Merguy, Siam, and the eastern coast. Besides vessels of considerable burden employed in these voyages, they have smaller embarkations for the coasting trade for Ceylon and the pearl fishery. The Indians of Massulipatan turn their attention another way. They import from Bengal white callicoes, which they dye or print, and sell them again at the places from whence they had them, at 35 or 40 *per cent.* advantage. Excepting these transactions, which are of very little consequence, the whole trade is vested in the Europeans, who have no partners but a few Banians and Armenians settled in their colonies. The quantity of callicoes exported from Coromandel to the different ports of India, may be computed at 3500 bales. Of these the French carry 800 to Malabar, Mocha, and the isle of France; the English, 1200 to Bombay, Malabar, Sumatra, and the Philippine Islands; and the Dutch 1500 to their different settlements. Except 500 bales destined for Manila, each of the value of 100 guineas, the others are of such an ordinary kind that they do not exceed 30 guineas at prime cost; so that the whole number of bales do not amount to more than about L. 150,000.

Coromandel furnishes Europe with 9500 bales; 800 of which are brought by the Danes, 2500 by the French, 3000 by the English, and 3200 by the Dutch. A considerable part of these callicoes are dyed blue, or striped blue and red for the African trade. The others are fine muslins, printed callicoes, and handkerchiefs from Massulipatan, or Paliacate. It is proved by experience that each of these bales costs only about L. 42 Sterling; consequently they ought to bring in to the manufactory where they are wrought near L. 360,000. The payments are not entirely made in specie, either in Europe or Asia; we give in exchange, cloths, iron, lead, copper, coral, and some other articles of less value. On the other hand, Asia pays with spices, pepper, rice, sugar, corn, and dates. All these articles taken together may amount to about L. 210,000; and from this calculation it follows, that Coromandel receives annually from Europe about L. 300,000 in money. The British, who have acquired the same superiority on this coast that they have elsewhere, have formed on it several settlements.

CORONA, among anatomists, denotes that edge of the glans penis where the preputium begins.

CORONA, or *Halo*, in optics, a luminous circle, surrounding the sun, the moon, the planets, or fixed stars. Sometimes these circles are white, and sometimes coloured, like the rainbow. Sometimes one only is vi-

sible, and sometimes several concentric coronas make their appearance at the same time. Those which have been seen about Sirius and Jupiter were never more than three, four, or five degrees in diameter; those which surround the moon are, also, sometimes no more than three or five degrees; but these, as well as those which surround the sun, are of very different magnitudes, *viz.* of 12° 0', 22° 35', 30° 0', 38° 0', 41° 2', 45° 0', 46° 24', 47° 0', and 90°, or even larger than this. Their diameters also sometimes vary during the time of observation, and the breadths both of the coloured and white circles are very different, *viz.* of 2, 4, or 7 degrees.

The colours of these coronas are more dilute than those of the rainbow; and they are in a different order, according to their size. In those which Newton observed in 1692, they were in the following order, reckoning from the inside. In the innermost were blue, white, and red; in the middle were purple, blue, green, yellow, and pale red; in the outermost, pale blue and pale red. Mr Huygens observed red next the sun, and a pale blue outwards. Sometimes they are red on the inside and white on the outside. M. Weidler observed one that was yellow on the inside and white on the outside. In France, one was observed in 1683, the middle of which was white; after which followed a border of red; next to it was blue, then green, and the outermost circle was a bright red. In 1728, one was seen of a pale red outwardly, then followed yellow, and then green, terminated by a white.

These coronas are very frequent. In Holland, M. Muschenbroeck says, 50 may be seen in the day-time, almost every year; but they are difficult to be observed, except the eye be so situated, that not the body of the sun, but only the neighbouring parts of the heavens can be seen. Mr Middleton says, that this phenomenon is very frequent in North America; for that there is generally one or two about the sun every week, and as many about the moon every month. Halos round the sun are very frequent in Russia. M. Æpinus says, that from the 23d of April 1758, to the 20th of September, he himself had observed no less than 26, and that he has sometimes seen twice as many in the same space of time.

Coronas may be produced by placing a lighted candle in the midst of steam in cold weather. Also, if glass windows be breathed upon, and the flame of a candle be placed some feet from it, while the spectator is also at the distance of some feet from another part of a window, the flame will be surrounded with a coloured halo. And if a candle be placed behind a glass receiver, when air is admitted into the vacuum within it, at a certain degree of density, the vapour with which it is loaded will make a coloured halo round the flame. This was observed by Otto Guericke. In December 1756, M. Muschenbroeck observed, that when the glass windows of his room were covered with a thin plate of ice on the inside, the moon appearing through it was surrounded with a large and variously coloured halo; and, opening the window, he found that it arose intirely from that thin plate of ice, for none was seen except through it.

Similar, in some respects, to the halo, was the remarkable

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markable appearance which M. Bouguer describes, as observed by himself and his companions on the top of Mount Pichinca, in the Cordilleras. When the sun was just rising behind them, so as to appear white, each of them saw his own shadow projected upon it, and no other. The distance was such, that all the parts of the shadow were easily distinguishable, as the arms, the leg, and the head; but what surprised them most was, that the head was adorned with a kind of glory, consisting of three or four small concentric crowns, of a very lively colour, each exhibiting all the varieties of the primary rainbow, and having the circle of red on the outside. The intervals between these circles continued equal, though the diameters of them all were constantly changing. The last of them was very faint, and at a considerable distance was another great white circle, which surrounded the whole. As near as M. Bouguer could compute, the diameter of the first of these circles was about $5\frac{1}{2}$ degrees, that of the second 11, that of the third 17, and so on; but the diameter of the white circle was about 76 degrees. This phenomenon never appeared but in a cloud consisting of frozen particles, and never in drops of rain like the rainbow. When the sun was not in the horizon, only part of the white circle was visible, as M. Bouguer frequently observed afterwards.

Similar also to this curious appearance was one that was observed by Dr M^r Fait in Scotland. This gentleman observed a rainbow round his shadow in the mist, when he was upon an eminence above it. In this situation the whole country round seemed, as it were, buried under a vast deluge, and nothing but the tops of distant hills appeared here and there above the flood; so that a man would think of diving down into it with a kind of horror. In those upper regions the air, he says, is at that time very pure and agreeable to breathe in. At another time he observed a double range of colours round his shadow in these circumstances. The colours of the outermost range were broad and very distinct, and every where about two feet distant from the shadow. Then there was a darkish interval, and after that another narrower range of colours, closely surrounding the shadow, which was very much contracted. This person seems to think that these ranges of colours are caused by the inflection of the rays of light, the same that occasioned the ring of light which surrounds the shadows of all bodies, observed by M. Maraldi, and this author*. But the prodigious variety with which these appearances are exhibited seems to show that many of them do not result from the general laws of reflexion, refraction, or inflection, belonging to transparent substances of a large mass; but upon the alternate reflexion and transmission of the different kinds of rays, peculiar to substances reduced to the form of thin plates, or consisting of separate and very minute parts. But where the dimensions of the coronas are pretty constant, as in the usual and larger halo, which is about half the diameter of the rainbow, they may, perhaps, be explained on the general principles of refraction only.

Descartes observes, that the halo never appears when it rains: from which he concludes that this phenomenon is occasioned by the refraction of light in the round particles of ice, which are then floating in the atmosphere; and though these particles are flat when

they fall to the ground, he thought they must be protuberant in the middle, before their descent; and according to this protuberancy he imagined that the diameter of the halo would vary.—In treating of meteors, Gassendi supposed that a halo is the same thing with the rainbow, the rays of light being in both cases twice refracted and once reflected: within each drop of rain or vapour, and that all the difference there is between them arises from their different situation with respect to the observer. For, whereas, when the sun is behind the spectator, and consequently the rainbow before him, his eye is in the centre of the circle; when he views the halo, with his face towards the sun, his eye is in the circumference of the circle; so that according to the known principles of geometry, the angle under which the object appears in this case, must be just half of what it is in the other. Though this writer says a great deal upon the subject, and endeavours to give reasons why the colours of the halo are in a different order to those of the rainbow, he does not describe the progress of the rays of light from the sun to the eye of the spectator when a halo is formed by them, and he gives no figures to explain his ideas.

DeChales, also, endeavours to show that the generation of the halo is similar to that of the rainbow. If, says he, a sphere of glass or crystal, AB, ($n^{\circ} 1.$) full of water, be placed in the beams of the sun shining from C, there will not only be two circles of coloured light on the side next the sun, and which constitute the two rainbows; but there will also be another on the part opposite to the sun, the rays belonging to which meeting at E, afterwards diverge, and form the coloured circle G, as will be visible, if the light that is transmitted through the globe be received on a piece of white paper. The colours also will appear to an eye placed in any part of the surface of the cone FEG. Measuring the angle FEH, he found it to be 23 degrees. They were only the extreme rays of this cone that were coloured like those of the rainbow.

This experiment he thought sufficiently illustrated the generation of the halo; so that whenever the texture of the clouds is such, as not entirely to intercept the rays of the sun or moon, and yet have some degree of density, there will always be an halo round them, the colours of the rainbow appearing in those drops which are 23 degrees distant from the sun or moon. If the sun be at A, and the spectator in B, the halo will be the circle DFE, DBE being 46 degrees, or twice 23.

The reason why the colours of the halo are more dilute than those of the rainbow, he says, is owing principally to their being formed not in large drops of rain, but in very small vapour; for if the drops of water were large, the cloud would be so thick, that the rays of the sun could not be regularly transmitted through them; and, on the other hand, he had observed, that when the rainbow is formed by very thin vapours, the colours hardly appear. As for those circles of colours which are sometimes seen round candles, it was his opinion that they are owing to nothing; but moisture on the eye of the observer; for that he could never produce this appearance by means of vapour only, if he wiped his eyes carefully; and he had observed that such circles are visible to some persons

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* *Edin. Es
says*, Vol. i.
p. 198.

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The most considerable of all the theories respecting halos, and that which has met with most favourable and the longest reception, is that of Mr Huygens. Sir Isaac Newton mentions it with respect, and Dr Smith, in his Complete System of Optics, does not so much as hint at any other. The occasion of M. Huygens publishing his thoughts on this subject, was the appearance of a halo at Paris, on the 12th of May 1667, of which he gave an account in a paper read at the Royal Academy in that city, which was afterwards translated, and published in the English Philosophical Transactions, and which may be seen in Lowthorp's Abridgment, Vol. II. p. 189. But this article contains nothing more than the heads of a discourse, which he afterwards composed, but never quite finished, on this subject; and which has been translated, with some additions, by Dr Smith, from whom the following account is chiefly extracted.

Our philosopher had been first engaged to think particularly upon this subject, by the appearance of five suns at Warsaw, in 1658; presently after which, he says, he hit upon the true cause of halos, and not long after of that of mock suns also.

To prepare the way for the following observations, it must be remarked, that if we can conceive any kind of bodies in the atmosphere, which, according to the known laws of optics, will, either by means of reflection or refraction, produce the appearance in question, when nothing else can be found that will do it, we must acquiesce in the hypothesis, and suppose such bodies to exist, even though we cannot give a satisfactory account of their generation. Now, two such bodies are assumed by Mr Huygens; one of them a round ball, opaque in the centre, but covered with a transparent shell; and the other is a cylinder, of a similar composition. By the help of the former he endeavours to account for halos, and by the latter for those appearances which are called mock suns. Those bodies which Mr Huygens requires, in order to explain these phenomena, are not, however, a mere assumption; for some such, though of a larger size than his purpose requires, have been actually found, consisting of snow within and ice without. They are particularly mentioned by Descartes.

The balls with the opaque kernel, which he supposed to have been the cause of them, he imagines not to exceed the size of a turnip-seed; but, in order to illustrate this hypothesis, he gives a figure of one, of a larger size, in ABCDEF, ($n^{\circ} 3.$) representing the kernel of snow in the middle of it. If the rays of light, coming from GH, fall upon the side AD, it is manifest they will be so refracted at A and D, as to bend inwards; and many of them will strike upon the kernel EF. Others, however, as GA and HD, will only touch the sides of the kernel; and being again refracted at B and C, will emerge in the lines BK, CK, crossing each other in the point K, whose nearest distance from the globule is somewhat less than its apparent diameter. If, therefore, BK and CK be produced towards M and L, ($n^{\circ} 4.$) it is evident that no light can reach the eye placed within the angle LKM, but may fall upon it when placed out of that angle, or rather the cone represented by it.

For the same reason, every other of these globules will have a shadow behind it, in which the light of the sun will not be perceived. If the eye be at N, and that be conceived to be the vertex of a cone, the sides of which NR, NQ, are parallel to the sides of the former cone KL, KM, it is evident that none of the globules within the cone QNR can send any rays of the sun to the eye at N. But any other globule out of this cone, as X, may send those rays, which are more refracted than XZ, to the eye; so that this will appear enlightened, while those within the cone will appear obscure. It is evident from this, that a certain area, or space, quite round the sun, must appear dark; and that the space next to this area will appear luminous, and more so in those parts that are nearest to the obscure area; because, he says, it may easily be demonstrated, that those globules which are nearest to the cone QNR exhibit the largest image of the sun. It is plain, also, that a corona ought to be produced in the same manner whatever be the sun's altitude, because of the spherical figure of the globules.

To verify this hypothesis, our philosopher advises us to expose to the sun a thin glass bubble, filled with water, and having some opaque substance in the centre of it; and he says we shall find, that we shall not be able to see the sun through it, unless at a certain distance from a place opposite to the centre of it; but as soon as we do perceive the light, the image of the sun will immediately appear the brightest, and coloured red, for the same reason as in the rainbow.

These coronas, he says, often appear about the moon; but the colours are so weak as to appear only white. Such white coronas he had also seen about the sun, when the space within them appeared scarce darker than that without. This he supposes to happen when there are but few of those globules in the atmosphere; for the more plentiful they are, the more lively the colours of the halo appear; at the same time also the area within the corona will be the darker. The apparent diameter of the corona, which is generally about 45 degrees, depends upon the size of the dark kernel; for the larger it is with respect to the whole globule, the larger will be the dark cone behind it.

The globules that form these halos, Mr Huygens supposes to have consisted of soft snow, and to have been rounded by continual agitation in the air, and thawed on their outsides by the heat of the sun.

To make the diameter of the halo 45 degrees, he demonstrates that the semidiameter of the globule must be to the semidiameter of the kernel of snow very nearly as 1000 to 480; and that to make a corona of 100 degrees, it must be as 1000 to 680.

Mr Weidler, in his Commentary on parhelia, published at Wirtemburgh in 1733, observes that it is very improbable that such globules as Mr Huygens's hypothesis requires, with nuclei of such a precise proportion, should exist; and if there were such bodies, he thinks they would be too small to produce the effects ascribed to them. Besides, he observes that appearances exactly similar to halos are not uncommon, where fluid vapour alone are concerned; as when a candle is placed behind the steam of boiling water in frosty weather, or in the midst of the vapour issuing

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copiously from a bath, or behind a receiver when the air is so much rarefied as to be incapable of supporting the water it contains. The rays of the sun twice reflected and twice refracted within small drops of water are sufficient, he says, without any opaque kernel, to produce all the appearances of the halos that have the red light towards the sun, as may be proved by experiment. That the diameter of the halos is generally half of that of the rainbow, he accounts for as Cassendi did before him.

M. Marriotte accounts for the formation of the small coronas by the transmission of light through aqueous vapours, where it suffers two refractions, without any intermediate reflection. He shows that light which comes to the eye, after being refracted in this manner, will be chiefly that which falls upon the drop nearly perpendicular; because more rays fall upon any given quantity of surface in that situation, fewer of them are reflected with small degrees of obliquity, and they are not so much scattered after refraction. The red will always be outermost in these coronas, as consisting of rays which suffer the least refraction. And whereas he had seen, when the clouds were driven briskly by the wind, halos round the moon, varying frequently in their diameter, being sometimes of two, sometimes of three, and sometimes of four degrees; sometimes also being coloured, sometimes only white, and sometimes disappearing entirely; he concluded that all these variations arose from the different thickness of the clouds, through which sometimes more and sometimes less light was transmitted. He supposed, also, that the light which formed them might sometimes be reflected, and at other times refracted. As to those coronas which consist of two orders of colours, he imagined that they were produced by small pieces of snow, which when they begin to dissolve, form figures which are a little convex towards their extremities. Sometimes, also, the snow will be melted in different shapes; and in this case, the colours of several halos will be intermixed and confused; and such, he says, he had sometimes observed round the sun.

M. Mariotte then proceeds to explain the larger coronas, namely those that are about 45 degrees in diameter, and for this purpose he has recourse to equiangular prisms of ice, in a certain position with respect to the sun; and he takes pains to trace the progress of the rays of light for this purpose: but this hypothesis is very improbable. In some cases he thought that these large coronas were caused by hail-stones, of a pyramidal figure; because after two or three of them had been seen about the sun, there fell the same day several such pyramidal hail-stones. M. Mariotte explains parhelia by the help of the same suppositions. See PARHELIA.

Sir Isaac Newton does not appear to have given any particular attention to the subject of halos, but he has hinted at his sentiments concerning them occasionally; by which we perceive that he considered the larger and less variable appearances of this kind as produced according to the common laws of refraction, but that the less and more variable appearances depend upon the same cause with the colours of thin plates.

He concludes his explication of the rainbow with

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the following observation on halos and parhelia. "The light which come through drops of rain by two refractions, without any reflexion, ought to appear the strongest at the distance of about 26 degrees from the sun, and to decay gradually both ways as the distance from him increases. And the same is to be understood of light transmitted through spherical hail-stones: and if the hail be a little flatted, as it often is, the transmitted light may be so strong, at a little less distance than that of 26 degrees, as to form a halo about the sun or moon; which halo, as often as the hail-stones are duly figured, may be coloured, and then it must be red within by the least refrangible rays, and blue without by the most refrangible ones; especially if the hail-stones have opaque globules of snow in their centres to intercept the light within the halo, as Mr Huygens has observed, and make the inside of it more distinctly defined than it would otherwise be. For such hail-stones, though spherical, by terminating the light by the snow, may make a halo red within, and colourless without, and darker within the red than without, as halos use to be. For of those rays which pass close by the snow, the red-making ones will be the least refracted, and so come to the eye in the straightest lines."

Some farther thoughts of Sir Isaac Newton's on the subject of halos we find subjoined to the account of his experiments on the colours of thick plates of glass, which he conceived to be similar to those which are exhibited by thin ones. "As light reflected by a lens quick-silvered on the back side makes the rings of the colours above described, so (he says) it ought to make the like rings in passing through a drop of water. At the first reflexion of the rays within the drop, some colours ought to be transmitted, as in the case of a lens, and others to be reflected back to the eye. For instance, if the diameter of a small drop or globule of water be about the 5000th part of an inch, so that a red-making ray, in passing through the middle of this globule, has 250 fits of easy transmission within the globule, and all the red-making rays which are at a certain distance from this middle ray round about it have 249 fits within the globule, and all the like rays at a certain farther distance round about it have 248 fits, and all those at a certain farther distance 247 fits and so on, these concentric circles of rays, after their transmission, falling on a white paper, will make concentric rings of red upon the paper; supposing the light which passes through one single globule strong enough to be sensible, and in like manner the rays of other colours will make rings of other colours. Suppose now that in a fair day the sun should shine through a thin cloud of such globules of water or hail, and that the globules are all of the same size, the sun seen through this cloud ought to appear surrounded with the like concentric rings of colours, and the diameter of the first ring of red should be $7\frac{1}{4}$ degrees, that of the second $10\frac{1}{4}$, that of the third $12^{\circ} 33'$, and according as the globules of water are bigger or less, the ring should be less or bigger."

This curious theory our author informs us was confirmed by an observation which he made in 1692. He saw by reflexion, in a vessel of stagnating water, three halos, crowns, or rings of colours about the sun, like three little rainbows concentric to his body. The colours

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At the same time there appeared a halo at the distance of about $22^{\circ} 35'$ from the centre of the moon.

It was elliptical; and its long diameter was perpendicular to the horizon, verging below farthest from the moon. He was told that the moon has sometimes three or more concentric crowns of colours encompassing one another next about her body. The more equal the globules of water or ice are to one another, the more crowns of colours will appear, and the colours will be the more lively. The halo, at the distance of $22\frac{1}{2}$ degrees from the moon, is of another sort. By its being oval, and more remote from the moon below than above, he concludes that it was made by refraction in some kind of hail or snow floating in the air in an horizontal posture, the refracting angle being about 50 or 60 degrees. Dr Smith, however, makes it sufficiently evident, that the reason why this halo appeared oval, and more remote from the moon towards the horizon, is a deception of sight, and the same with that which makes the moon appear larger in the horizon.

Dr Kotelnihow, having, like Dr Halley, made very accurate observations to determine the number of possible rainbows, considers the coloured halo which appears about a candle as the same thing with one of these bows which is formed near the body of the sun, but which is not visible on account of his excessive splendor.

Lastly, M. Muschenbroeck concludes his account of coronas with observing, that some density of vapour, or some thickness of the plates of ice, divides the light in its transmission through the small globules of water, or their interstices, into its separate colours: but what that density was, or what was the size of the particles which composed the vapour, he could not pretend to determine.

CORONA, among botanists, the name given by some to the circumference or margin of a radiated compound flower. It corresponds to the radius of Linnæus; and is exemplified in the flat, tongue-shaped petals which occupy the margin of the daisy or sunflower.

CORONA Australis, or *Meridionalis*, Southern Crown, a constellation of the southern hemisphere, whose stars in Ptolemy's catalogue are 13, in the British catalogue 12.

CORONA Borealis, the Northern Crown, or Garland, in astronomy, a constellation of the northern hemisphere, whose stars in Ptolemy's catalogue are eight, in Tycho's as many, and in Mr Flamstead's 21.

CORONA Imperialis, in conchyology, a name given by some authors to a kind of voluta, differing from the other shells of that family, by having its head ornamented with a number of points, forming a sort of crown. See **VOLUTA**.

CORONAL, in anatomy, the first future of the skull. See **ANATOMY**, n^o 13.

CORONALE os, the same with the os frontis. See **ANATOMY**, n^o 12.

CORONARY VESSELS, in anatomy, certain vessels which furnish the substance of the heart with blood.

CORONARY Arteries, are two arteries springing out of the aorta, before it leaves the pericardium. See **ANATOMY**, n^o 122, and 123.

CORONARY Vein, a vein diffused over the exterior surface of the heart. See **ANATOMY**, n^o 122.

Stomachic CORONARY, a vein inserted into the trunk of the splenic vein, which, by uniting with the mesenteric, forms the vena porta. See **ANATOMY**, n^o 123.

CORONARIÆ, in botany, the 10th order of plants in Linnæus's Fragments of a natural method. Under this name, instead of the more obvious one *libaceæ*, Linnæus collects a great number of genera, most of which furnish very beautiful garden-flowers, viz. albuca, cyanella, fritillaria, helonias, hyacinthus, hypoxis, lilium, melanthium, ornithogalum, scilla, tulipa, agave, aletris, aloe, anthericum, asphodelus, bromelia, burmannia, hemerocallis, polianthes, tillandsia, veratrum, yucca.

CORONATION, the ceremony of investing with a crown, particularly applied to the crowning of kings, upon their succeeding to the sovereignty. See **KING**.

CORONÆ (anc. geog.), a town of Bœotia, near mount Helicon, and the lake Copais, situated on an eminence; famous for the defeat of the Athenians and Bœotians by Agesilaus.—Another Coronæ of Thessaly; having Narthacium to the east, and Lamia near the Sperchius, to the north, (Ptolemy).

CORONÆ (anc. geog.), a town of Messenia, situated on the sea, giving name to the Sinus Coronæus, (Pliny): now *Golfo di Coron*. Pausanias takes it to be the *Aepea* of Homer; but Strabo *Thuria*, and Pliny *Pedafus*, now *Coron*, in the territory of Belvidere, in the Morea. E. Long. 22, Lat. 36. 30.

CORONELLI (Vincent), a famous geographer, born at Venice. His skill in the mathematics having brought him to the knowledge of the count d'Estrees, his eminence employed him in making globes for Louis XIV. With this view Coronelli spent some time

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Coroner. time at Paris; and left a great number of globes there, which are esteemed. In 1685, he was made cosmographer to the republic of Venice: and four years after, public professor of geography. He founded an academy of cosmography at Venice; and died in that city in 1718. He published above 400 geographical charts, an abridgement of cosmography, several books on geography, and other works.

CORONER (*coronator*), an ancient officer in England, so called because he hath principally to do with pleas of the crown, or such wherein the king is more immediately concerned. And in this light, the lord chief justice of the king's bench is the principal coroner in the kingdom; and may, if he pleases, exercise the jurisdiction of a coroner in any part of the realm. But there are also particular coroners for every county of England; usually four, but sometimes six, and sometimes fewer. This officer is of equal authority with the sheriff; and was ordained, together with him, to keep the peace when the earls gave up the wardship of the county.

He is chosen by all the freeholders of the county court; and by the statute of Westminster 1. it was enacted, that none but lawful and discreet knights should be chosen: but it seems now sufficient if a man have lands enough to be made a knight, whether he be really knighted or not: for the coroner ought to have an estate sufficient to maintain the dignity of his office, and answer any fines that may be made upon him for his misbehaviour; and, if he hath not enough to answer, his fine shall be levied on the county, as a punishment for electing an insufficient officer. Now, indeed, through the culpable neglect of gentlemen of property, this office has been suffered to fall into disrepute, and get into low and indigent hands; so that although formerly no coroners would be paid for serving their country, and they were by the aforesaid statute of Westminster 1. expressly forbidden to take a reward under pain of great forfeiture to the king; yet for many years past they have only desired to be chosen for the sake of their perquisites; being allowed fees for their attendance by the statute 3 Hen. VII. c. 1. which Sir Edward Coke complains of heavily, though since his time those fees have been much enlarged.

The coroner is chosen for life; but may be removed, either by being made sheriff or chosen verderor, which are offices incompatible with the other; and by the statute 25 Geo. II. c. 29. extortion, neglect, or misbehaviour, are also made causes of removal.

The office and power of a coroner are also, like those of the sheriff, either judicial or ministerial; but principally judicial. This is in great measure ascertained by statute 4 Edw. I. *De officio coronatoris*; and consists, first, in inquiring, when any person is slain, or dies suddenly, or in prison, concerning the manner of his death. And this must be *super visum corporis*; for if the body is not found, the coroner cannot sit. He must also sit at the very place where the death happened. And his inquiry is made by a jury from four, five, or six of the neighbouring towns, over whom he is to preside. If any be found guilty by this inquest of murder, he is to commit to prison for farther trial, and is also to inquire concerning their lands, goods, and chattels, which are forfeited thereby: but whe-

ther it be murder or not, he must inquire whether any deodand has accrued to the king, or the lord of the franchise, by this death; and must certify the whole of this inquisition to the court of king's-bench, or the next assizes. Another branch of his office is to inquire concerning shipwrecks; and certify whether wreck or not, and who is in possession of the goods. Concerning treasure-trove, he is also to inquire concerning the finders, and where it is, and whether any one be suspected of having found and concealed a treasure; "and that may well be perceived (saith the old statute of Edw. I.), where one liveth riotously, haunting taverns, and hath done so of long time;" whereupon he might be attached and held to bail upon this suspicion only.

The ministerial office of the coroner is only as the sheriff's substitute. For when just exception can be taken to the sheriff, for suspicion of partiality (as that he is interested in the suit, or of kindred to either plaintiff or defendant), the process must then be awarded to the coroner, instead of the sheriff, for execution of the king's writs.

CORONET. See **CROWN.**

CORONET, or **cornet**, of a horse, the lowest part of the pasteron, which runs round the coffin, and is distinguished by the hair joining and covering the upper part of the hoof.

CORONILLA, *jointed podded COLUTEA*: A genus of the decandria order, belonging to the diadelphia class of plants; and in the natural method ranking under the 32d order, *Papilionaceæ*. The calyx is bilabiate, with two segments above coalited; the vexillum scarce any longer than the alæ; the legumen much contracted between the seeds. To this genus Linnæus also joins the emerus, or scorpion fena; though Mr Miller makes it a distinct species. There are 11 species, all of them plants of considerable beauty, with very bright yellow flowers. All of them, however, are rather too tender for this climate, except the emerus. This species rises with a shrubby stem, branching numerously six or eight feet high, closely garnished with winged leaves of three pair of lobes, terminated by an odd one; and, at the sides of the branches, numerous long flower-stalks, each supporting two or three large yellow flowers of the papilionaceous kind, succeeded by longish pods; it is easily propagated by seeds, and likewise by layers or cuttings. The leaves of this plant are esteemed laxative, and used as a substitute for common fena in some parts of Europe. A dye is procured by fermentation from the leaves, like that of indigo.

CORONOID, and **CONDYLOID**, processes. See **ANATOMY**, n^o 26.

CORPORA CAVERNOSA, in anatomy, two spongy bodies, called also *corpora nervosa* and *corpus spongiosum*. See **ANATOMY**, p. 738, col. 2.

CORPORA PYRAMIDALIA, are two protuberances of the under part of the *cerebellum*, about an inch long; so called from their resemblance to a pyramid. See **ANATOMY**, n^o 134.

CORPORA STRIATA. See **ANATOMY**, p. 758, col. 1.

CORPORAL, an inferior officer under a sergeant, in a company of foot, who has charge over one of the divisions, places and relieves centinels, and keeps good order in the corps de garde: he also receives the word from the inferior rounds, which passes by his corps

Corporal, corps de garde. This officer carries a fusée, and is commonly an old soldier: there are generally three corporals in each company.

CORPORAL of a *Ship of War*, an officer under the master at arms, employed to teach the officers the exercise of small arms, or of musketry; to attend at the gang-way, on entering ports, and observe that no spirituous liquors are brought into the ship, unless by express leave from the officers. He is also to extinguish the fire and candles at eight o'clock in winter and nine in summer, when the evening gun is fired; and to walk frequently down in the lower decks in his watch, to see that there are no lights but such as are under the charge of proper centinels.

CORPORAL (*Corporale*), is also an ancient church-term, signifying the sacred linen spread under the chalice in the eucharist and mass, to receive the fragments of the bread, if any chance to fall. Some say, it was pope Eusebius who first enjoined the use of the corporal; others ascribe it to St Silvester. It was the custom to carry corporals, with some solemnity, to fires, and to heave them against the flames, in order to extinguish them. Philip de Comines says, the pope made Louis XI. a present of the corporale, whereon my lord St Peter sung mass.

CORPORATION, a body politic or incorporate, so called, because the persons or members are joined into one body, and are qualified to take, grant, &c.

Of corporations there is a great variety subsisting, for the advancement of religion, of learning, and of commerce; in order to preserve entire and for ever those rights and immunities, which, if they were granted only to those individuals of which the body corporate is composed, would upon their death be utterly lost and extinct. To show the advantages of these incorporations, let us consider the case of a college in either of our universities, founded *ad studendum et orandum*, for the encouragement and support of religion and learning. If this was a mere voluntary assembly, the individuals which compose it might indeed read, pray, study, and perform scholastic exercises together, so long as they could agree to do so: but they could neither frame, nor receive, any laws or rules of their conduct; none at least which would have any binding force, for want of a coercive power to create a sufficient obligation. Neither could they be capable of retaining any privileges or immunities: for, if such privileges be attacked, which of all this unconnected assembly has the right or ability to defend them? And, when they are dispersed by death or otherwise, how shall they transfer these advantages to another set of students, equally unconnected as themselves? So also, with regard to holding estates or other property, if land be granted for the purposes of religion or learning to 20 individuals not incorporated, there is no legal way of continuing the property to any other persons for the same purposes, but by endless conveyances from one to the other, as often as the hands are changed. But when they are consolidated and united into a corporation, they and their successors are then considered as one person in law: as one person, they have one will, which is collected from the sense of the majority of the individuals: this one will may establish rules and orders for the regulation of the whole, which are a sort of mu-

nicipal laws of this little republic; or rules and statutes may be prescribed to it at its creation, which are then in the place of natural laws: the privileges and immunities, the estates and possessions, of the corporation, when once vested in them, will be for ever vested, without any new conveyance to new successors; for all the individual members that have existed from the foundation to the present time, or that shall ever hereafter exist, are but one person in law, a person that never dies: in like manner as the river Thames is still the same river, though the parts which compose it are changing every instant.

The honour of originally inventing these political constitutions entirely belongs to the Romans. They were introduced, as Plutarch says, by Numa; who finding, upon his accession, the city torn to pieces by the two rival factions of Sabines and Romans, thought it a prudent and politic measure to subdivide these two into many smaller ones, by instituting separate societies of every manual trade and profession. They were afterwards much considered by the civil law, in which they were called *universitates*, as forming one whole out of many individuals; or *collegia*, from being gathered together: they were adopted also by the canon law, for the maintenance of ecclesiastical discipline; and from them our spiritual corporations are derived. But our laws have considerably refined and improved upon the invention, according to the usual genius of the English nation: particularly with regard to sole corporations, consisting of one person only, of which the Roman lawyers had no notion; their maxim being that "tres faciunt collegium:" though they held, that if a corporation, originally consisting of three persons, be reduced to one, "si universitas ad unum redit," it may still subsist as a corporation, "et stet nomen universitatis."

As to the several sorts of corporations, the first division of them is into *aggregate* and *sole*. Corporations aggregate consist of many persons united together into one society, and are kept up by a perpetual succession of members, so as to continue for ever: of which kind are the mayor and commonalty of a city, the head and fellows of a college, the dean and chapter of a cathedral church. Corporations sole consist of one person only and his successors, in some particular station, who are incorporated by law, in order to give them some legal capacities and advantages, particularly that of perpetuity, which in their natural persons they could not have had. In this sense the king is a sole corporation: so is a bishop: so are some deans and prebendaries, distinct from their several chapters: and so is every parson and vicar. And the necessity, or at least use, of this institution will be very apparent, if we consider the case of a parson of a church. At the original endowment of parish-churches, the freehold of the church, the church-yard, the parsonage-house, the glebe, and the tithes of the parish, were vested in the then parson by the bounty of the donor, as a temporal recompence to him for his spiritual care of the inhabitants, and with intent that the same emoluments should ever afterwards continue as a recompence for the same care. But how was this to be effected? The freehold was vested in the parson; and, if we suppose it vested in his natural capacity, on his death it might descend to his heir, and would be liable to his debts and incumbrances.

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brances: or at best the heir might be compellable, at some trouble and expence, to convey these rights to the succeeding incumbent. The law therefore has wisely ordained, that the parson, *quatenus* parson, shall never die, any more than the king; by making him and his successors a corporation. By which means all the original rights of the parsonage are preserved entire to the successor: for the present incumbent, and his predecessor who lived seven centuries ago, are in law one and the same person; and what was given to the one was given to the other also.

Another division of corporations, either sole or aggregate, is into *ecclesiastical* and *lay*. Ecclesiastical corporations are where the members that compose it are entirely spiritual persons; such as bishops; certain deans and prebendaries; all archdeacons, parsons, and vicars; which are sole corporations: deans and chapters at present, and formerly prior and convent, abbot and monks, and the like, bodies aggregate. These are erected for the furtherance of religion, and perpetuating the rights of the church.—Lay corporations are of two sorts, *civil* and *elemosynary*. The civil are such as are erected for a variety of temporal purposes. The king, for instance, is made a corporation to prevent in general the possibility of an *interregnum* or vacancy of the throne, and to preserve the possessions of the crown entire; for, immediately upon the demise of one king, his successor is in full possession of the regal rights and dignity. Other lay corporations are erected for the good government of a town or particular district, as a mayor and commonalty, bailiff and burgesses, or the like: some for the advancement and regulation of manufactures and commerce; as the trading companies of London and other towns: and some for the better carrying on of divers special purposes; as church-wardens, for conservation of the goods of the parish; the college of physicians and company of surgeons in London, for the improvement of the medical science; the royal society for the advancement of natural knowledge; and the society of antiquarians for promoting the study of antiquities. The elemosynary sort are such as are constituted for the perpetual distribution of the free alms, or bounty, of the founder of them to such persons as he has directed. Of this kind are all hospitals for the maintenance of the poor, sick, and impotent; and all colleges, both *in* our universities and *out* of them: which colleges are founded for two purposes: 1. For the promotion of piety and learning by proper regulations and ordinances. 2. For imparting assistance to the members of those bodies, in order to enable them to prosecute their devotion and studies with greater ease and assiduity. And all these elemosynary corporations are, strictly speaking, lay, and not ecclesiastical, even though composed of ecclesiastical persons, and although they in some things partake of the nature, privileges, and restrictions of ecclesiastical bodies.

Having thus marshalled the several species of corporations, let us next proceed to consider, 1. How corporations in general may be created. 2. What are their powers, capacities, and incapacities. And, 3. How they may be dissolved.

I. Corporations, by the civil law, seem to have been created by the mere act and voluntary associa-

tion of their members; provided such convention was not contrary to law, for then it was *illicitum collegium*. It does not appear that the prince's consent was necessary to be actually given to the foundation of them; but merely that the original founders of these voluntary and friendly societies (for they were little more than such) should not establish any meetings in opposition to the laws of the state.

But in England the king's consent is absolutely necessary to the erection of any corporation, either impliedly or expressly given. The king's implied consent is to be found in corporations which exist by force of the common law, to which our former kings are supposed to have given their concurrence; common law being nothing else but custom, arising from the universal agreement of the whole community. Of this sort are the king himself, all bishops, parsons, vicars, church-wardens, and some others; who by common law have ever been held (as far as our books can show us) to have been corporations, *virtute officii*: and this incorporation is so inseparably annexed to their offices, that we cannot frame a complete legal idea of any of these persons, but we must also have an idea of a corporation, capable to transmit his rights to his successors, at the same time. Another method of implication, whereby the king's consent is presumed, is as to all corporations by prescription, such as the city of London, and many others, which have existed as corporations, time whereof the memory of man runneth out to the contrary; and therefore are looked upon in law to be well created. For though the members thereof can show no legal charter of incorporation, yet in cases of such high antiquity the law presumes there once was one; and that by the variety of accidents, which a length of time may produce, the charter is lost or destroyed. The methods by which the king's consent is expressly given, are either by act of parliament or charter. By act of parliament, of which the royal assent is a necessary ingredient, corporations may undoubtedly be created: but it is observable, that most of those statutes, which are usually cited as having created corporations, do either confirm such as have been before created by the king; as in the case of the college of physicians, erected by charter ro Hen. VIII. which charter was afterwards confirmed in parliament; or, they permit the king to erect a corporation *in futuro* with such and such powers; as in the case of the bank of England, and the society of the British fishery. So that the immediate creative act is usually performed by the king alone, in virtue of his royal prerogative.

All the other methods therefore whereby corporations exist, by common law, by prescription, and by act of parliament, are for the most part reducible to this of the king's letters patent, or charter of incorporation. The king's creation may be performed by the words *creamus*, *erigimus*, *fundamus*, *incorporamus*, or the like. Nay it is held, that if the king grants to a set of men to have *gildam mercatoriam*, "a mercantile meeting or assembly," this is alone sufficient to incorporate and establish them for ever.

The king (it is said) may grant to a subject the power of erecting corporations, though the contrary was formerly held: that is, he may permit the sub-

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ject to name the persons and powers of the corporation at his pleasure; but it is really the king that erects, and the subject is but the instrument; for though none but the king can make a corporation, yet *qui facit per alium, facit per se*. In this manner the chancellor of the university of Oxford has power by charter to erect corporations; and has actually often exerted it in the erection of several matriculated companies, now subsisting, of tradesmen subservient to the students.

When a corporation is erected, a name must be given to it; and by that name alone it must sue and be sued, and do all legal acts.

II. After a corporation is so formed and named, it acquires many powers and rights, which we are next to consider. Some of these are necessarily and inseparably incident to every corporation; which incidents, as soon as a corporation is duly erected, are tacitly annexed of course. As, 1. To have perpetual succession. This is the very end of its incorporation: for there cannot be a succession for ever without an incorporation; and therefore all aggregate corporations have a power necessarily implied of electing members in the room of such as go off. 2. To sue or be sued, implead or be impleaded, grant or receive, by its corporate name, and do all other acts as natural persons may. 3. To purchase lands, and hold them, for the benefit of themselves and their successors: which two are consequential to the former. 4. To have a common seal. For a corporation, being an invisible body, cannot manifest its intentions by any personal act or oral discourse: it otherwise acts and speaks only by its common seal. For though the particular members may express their private consents to any act, by words, or signing their names, yet this does not bind the corporation; it is the fixing of the seal, and that only, which unites the several assents of the individuals who compose the community, and makes one joint assent of the whole. 5. To make by-laws or private statutes for the better government of the corporation; which are binding upon themselves, unless contrary to the laws of the land, and then they are void. But no trading company is with us allowed to make by-laws which may affect the king's prerogative or the common profit of the people, under penalty of L. 40, unless they be approved by the chancellor, treasurer, and chief justices, or the judges of assize in their circuits: and even though they be so approved, still, if contrary to law, they are void. These five powers are inseparably incident to every corporation, at least to every corporation aggregate: for two of them, though they may be practised, yet are very unnecessary to a corporation sole; viz. to have a corporate seal to testify his sole assent, and to make statutes for the regulation of his own conduct.

Corporations have a capacity to purchase lands for themselves and successors; but they are excepted out of the statute of wills; so that no devise of lands to a corporation by will is good; except for charitable uses, by statute 4 Eliz. c. 4. which exception is again greatly narrowed by the statute 9 Geo. II. c. 36. And also, by a great variety of statutes, their privilege even of purchasing from any living grantor is much abridged; so that now a corporation, either ecclesiastical or lay, must have a licence from the king to purchase, before they can exert that capacity which is vested in them.

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by the common law: nor is even this in all cases sufficient. These statutes are generally called the statutes of *mortmain*. See *MORTMAIN*.

The general duties of all bodies politic, considered in their corporate capacity, may, like those of natural persons, be reduced to this single one; that of acting up to the end or design, whatever it be, for which they were created by their founder.

III. How corporations may be dissolved. Any particular member may be disfranchised, or lose his place in the corporation, by acting contrary to the laws of the society, or the laws of the land: or he may resign it by his own voluntary act. But the body politic may also itself be dissolved in several ways; which dissolution is the civil death of the corporation: and in this case their lands and tenements shall revert to the person, or his heirs, who granted them to the corporation: for the law doth annex a condition to every such grant, that if the corporation be dissolved, the grantor shall have the lands again, because the cause of the grant faileth. The grant is indeed only during the life of the corporation; which may endure for ever: but when that life is determined by the dissolution of the body politic, the grantor takes it back by reversion, as in the case of every other grant for life. The debts of a corporation, either to or from it, are totally extinguished by its dissolution; so that the members thereof cannot recover, or be charged with them, in their natural capacities: agreeable to that maxim of the civil law, *Si quid universitati debetur, singulis non debetur; nec, quod debet universitas, singuli debent*.

A corporation may be dissolved, 1. By act of parliament, which is boundless in its operations. 2. By the natural death of all its members, in cases of an aggregate corporation. 3. By surrender of its franchises into the hands of the king, which is a kind of suicide. 4. By forfeiture of its charter, through negligence or abuse of its franchises; in which case the law judges that the body politic has broken the condition upon which it was incorporated, and thereupon the incorporation is void. And the regular course is to bring an information in nature of a writ of *quo warranto*, to inquire by what warrant the members now exercise their corporate power, having forfeited it by such and such proceedings. The exertion of this act of law, for the purposes of the state, in the reigns of king Charles and king James II. particularly by seizing the charter of the city of London, gave great and just offence; though perhaps, in strictness of law, the proceedings in most of them were sufficiently regular: but the judgment against that of London was reversed by act of parliament after the revolution; and by the same statute it is enacted, that the franchises of the city of London shall never more be forfeited for any cause whatsoever. And because by the common law corporations were dissolved, in case the mayor or head officer was not duly elected on the day appointed in the charter or established by prescription, it is now provided, that for the future no corporation shall be dissolved upon that account; and ample directions are given for appointing a new officer, in case there be no election, or a void one, made upon the charter or prescriptive day.

CORPORATION Act, is that which prevents any person

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Corporeal from being legally elected into any office relating to the government of any city or corporation, unless within a twelvemonth before he has received the sacrament of the Lord's supper, according to the rites of the church of England; and which enjoins him to take the oaths of allegiance and supremacy when he takes the oath of office; otherwise his election is void.

CORPOREAL, those qualities which denominate a body. See **INCORPOREAL**.

CORPOREITY, the quality of that which is corporeal, or his body; or that which constitutes or denominates it such.—The corporeity of God was the capital error of the Anthropomorphites. Some authors reproach Tertullian with admitting a corporeity in the Deity; but it is manifest, by *body* he means no more than *substance*.—The Mahometans reproach the Samaritans at this day, with a belief of the corporeity of God. Many of the ancients believed the corporeity of angels.

CORPSE, a dead body.

If any one, in taking up a dead body, steals the shroud, or other apparel, it will be felony. Stealing only the corpse itself is not felony; but it is punishable as a misdemeanor by indictment at common law.

CORPS, in architecture, is a term borrowed from the French, signifying any part that projects or advances beyond the naked of a wall; and which serves as a ground for some decoration or the like.

CORPS de Bataille, is the main body of an army drawn up for battle.

CORPS de Garde, a post in an army, sometimes under covert, sometimes in the open air, to receive a body of soldiery, who are relieved from time to time, and are to watch in their turns, for the security of a quarter, a camp, station, &c.—The word is also used for the men who watch therein. It is usual to have, beside the great, a little corps de garde, at a good distance before the lines; to be the more readily advertised of the approach of the enemy.

CORPULENCY, the state of a person too much loaded with flesh or fat.

Corpulency is the occasion of various diseases, and particularly the apoplexy. It was held infamous among the ancient Lacedæmonians.

Sennertus mentions a man that weighed 600 pounds, and a maid 36 years of age who weighed 450. Bright of Malden, who died at the age of 29 years in 1750, weighed 616 pounds. Chiapin Vitelli, Marquis of Cerrona, a noted Spanish general in his time, from an excessive corpulency, is said to have reduced himself, by drinking of vinegar, to such a degree of leanness, that he could fold his skin several times round him.

Castile soap, in the form of a bolus, an electuary, pills, or dissolved in a gill or more soft water, from one to four drachms, taken at bed-time, is strongly recommended with a view of reducing corpulency, in a discourse on its nature, causes, and cure, by Malcolm Flemyng, M. D. Lond. 1760. See **MEDICINE-Index**.

CORPUS, in anatomy, is applied to several parts of the animal structure; as *corpus callosum*, *corpus cavernosum*, &c. See **ANATOMY**, p. 739, and p. 740.

CORPUS is also used in matters of learning, for several works of the same nature collected and bound together.

Gratian made a collection of the canons of the church, called *corpus canonum*. The *corpus* of the civil law is composed of the digest, code, and institutes. We have also a *corpus* of the Greek poets; and another of the Latin poets.

CORPUS Christi, a festival of the church of England, kept on the next Thursday after Trinity-sunday, instituted in honour of the eucharist; to which also one of the colleges in Oxford is dedicated.

CORPUSCLE, in Physics, a minute particle, or physical atom, being such as a natural body is made up of. By this word is not meant the elementary particles, nor the hypostatical principles of chemists; but such particles, whether of a simple or compound nature, whose parts will not be dissolved nor dissipated by ordinary degrees of heat.

CORPUSCULAR PHILOSOPHY, that way of philosophizing which endeavours to explain things, and to account for the phenomena of nature, by the motion, figure, rest, position, &c. of the corpuscles, or the minute particles of matter.

Mr Boyle sums up the chief principles of the corpuscular hypothesis, which now flourishes under the mechanical philosophy in these particulars:

1. They suppose that there is but one catholic or universal matter, which is an extended, impenetrable, and divisible substance, common to all bodies, and capable of all forms.
2. That this matter, in order to form the vast variety of natural bodies, must have motion in some or all its assignable parts; and that this motion was given to matter by God the Creator of all things, and has all manner of directions and tendencies.
3. Matter must also be actually divided into parts, and each of these primitive particles, fragments, or atoms of matter, must have its proper magnitude or size, as also its peculiar figure or shape.
4. They suppose also, that these differently sized and shaped particles may have as different orders and positions, whereof great variety may arise in the composition of bodies.

CORRADINI DE SEZZA (Peter Marcellinus), a learned civilian and cardinal, born at Sezza, in 1658, acquired the esteem and confidence of Clement XI. and died at Rome in 1743. He was the author of a learned and curious work entitled "Vernus Latium profanum & sacrum," 2 vols folio; and a history of Sezza, in 4to.

CORRADO (Sebastian), an Italian grammarian of the 16th century, taught the Greek and Latin tongues at Reggio, where he formed an academy of polite literature; and at length removed to Bologna, in order to be professor of those languages. He wrote several works, the most esteemed of which are, "Questura in qua Cicronis Vita refertur," an excellent performance; and, "de Linguâ Latinâ." He died in 1556.

CORRECTION, in printing, the act of retrenching the faults in a work; or the reading which the corrector gives the first proofs, to point out and amend the faults, to be rectified by the compositor.

The corrections are placed on the margin of each page, right against the line where the faults are found. There are different characters used to express different corrections, as D or d, *dele*, for any thing to be effaced or left out. When any thing is to be inserted, the

Corporeal
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Corpus.

Corpus
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Correction.

Corrector
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Corr. lives.

the place is marked in the line with a caret, and the insertion added in the margin. When a word, syllable, &c. is to be altered, it is erased out of the proof, and that to be put in its room written in the margin; always observing, if there be several mistakes in the same line, that the corrections in the margin be separated by little bars, or strokes, |. If a space be omitted, its place is marked with a caret, and the margin with ✕. If a space be wrong placed, as in the middle of a word, the two parts are connected with a curve, and the same character put in the margin. If a letter be inverted, it is expressed on the margin with ꝓ. If any thing be transposed, it is marked thus: *The shortest [are the] follies best*; for *the shortest follies are the best*; and in the margin is added *tr.* in a circle. If Roman characters are to be changed for Italic, or *vice versa*, a line is drawn under them thus, and *Roman* or *Italic* added in the margin; if to capitals, a double line. If a word or sentence is entirely omitted, the place is marked with a caret, and in the margin is inserted the word *out*. If the letters of a word stand too far asunder, a line is drawn under them, and in the margin is put a crooked line or hook, thus ~.

CORRECTOR, in general, denotes something that mends the faults or bad qualities of others.

CORRECTOR of the Staple, a clerk belonging to the staple, whose business is to write down and record the bargains that merchants make there.

CORRECTOR, in medicine or pharmacy, an ingredient in a composition, which guards against or abates the force of another.

CORREGIDOR, the name of an officer of justice in Spain, and countries subject to the Spanish government. He is the chief judge of a town or province.

CORREGGIO. See ALLEGRI.

CORRELATIVE, something opposed to another in a certain relation. Thus, father and son are correlatives. Light and darkness, motion and rest, are correlative and opposite terms.

CORRIGIOLA, in botany: A genus of the trigynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 54th order, *Miscellanea*. The calyx is pentaphyllous; the petals five: and one three-cornered seed.

CORROBORANTS, or **CORROBORATIVE Medicines**. See STRENGTHENERS.

CORROSION, in a general sense, the action of gnawing away, by degrees, the continuity of the parts of bodies.

CORROSION, in chemistry, an action of bodies, by means of proper menstrua, that produces new combinations, and a change of their form, without converting them to fluidity.

CORROSIVE SUBLIMATE MERCURY. See CHEMISTRY *Index*.

CORRUGATOR MUSCLE. See ANATOMY, *Table of the Muscles*.

CORROSIVES, in surgery, are medicines which corrode whatever part of the body they are applied to: such are burnt alum, white precipitate of mercury, white vitriol, red precipitate of mercury, butter of antimony, lapis infernalis, &c.

Corrupti-
cola,
Corrup-
tion.

CORRUPTICOLÆ, a sect who rose out of the Monophysites in Egypt about the year 519, under their chief Severus, the pretended patriarch of Alexandria.

Their distinguishing doctrine, whence they derived their name, was, that the body of Jesus Christ was *corruptible*; that the fathers had owned it; and that to deny it was to deny the truth of our Saviour's passion.

On the other hand, Julian of Halicarnassus, another Eutychian, a refugee, as well as Severus, in Alexandria, maintained that the body of Jesus Christ had been always incorruptible; that to say it was corruptible, was to make a distinction between Jesus Christ and the Word, and by consequence to make two natures in Jesus Christ.

The people of Alexandria were divided between the two opinions; and the partisans of Severus were called *corrupticola*, q. d. worshippers of something *corruptible*: sometimes they were denominated *corruptibiles*; and the adherents of Julian *incorruptibiles* or *phantasiastæ*. The clergy and secular powers favoured the first; the monks and the people the latter.

CORRUPTION, the destruction, extinction, or at least cessation for a time, of the proper mode of existence of any natural body. See PUTREFACTION.

CORRUPTION of Blood, in law, one of the consequences of an attainder; and is both upwards and downwards; so that an attainted person can neither inherit lands or other hereditaments from his ancestors, nor retain those he is already in possession of, nor transmit them by descent to any heir; but the same shall escheat to the lord of the fee, subject to the king's superior right of forfeiture; and the person attainted shall also obstruct all descents to his posterity, wherever they are obliged to derive a title through him to a remoter ancestor. See **ATTAINDER**.

This is one of those notions which our laws have adopted from the feudal constitutions, at the time of the Norman conquest; as appears from its being unknown in those tenures which are indisputably Saxon, or Gavel kind: wherein, though by treason, according to the ancient Saxon laws, the land is forfeited to the king, yet no corruption of blood, no impediment of descents, ensues; and on judgment of mere felony, no escheat accrues to the lord. But, by the law of England, derived as above, a man's blood is so universally corrupted by attainder, that his sons can neither inherit to him nor to any other ancestor, at least on the part of their attainted father.

This corruption of blood cannot be absolutely removed but by authority of parliament. The king may excuse the public punishment of an offender; but cannot abolish the private right which has accrued, or may accrue, to individuals as a consequence of the criminal's attainder. He may remit a forfeiture in which the interest of the crown is alone concerned: but he cannot wipe away the corruption of blood; for therein a third person hath an interest, the lord who claims by escheat. If therefore a man hath a son, and is attainted, and afterwards pardoned by the king; this son can never inherit to his father, or father's ancestors; because his paternal blood, being once thoroughly corrupted by his father's attainder, must continue so: but if the son had been born after the pardon, he

Corfair
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Corfica

might inherit; because, by the pardon, the father is made a new man, and may convey new inheritable blood to his after-born children.

This corruption of blood, thus arising from feudal principles, but perhaps extended farther than even these principles will warrant, has been long looked upon as a peculiar hardship: because the oppressive parts of the feudal tenures being now in general abolished, it seems unreasonable to reserve one of their most inequitable consequences; namely, that the children should not only be reduced to present poverty (which, however severe, is sufficiently justified upon reasons of public policy), but also be laid under future difficulties of inheritance, on account of the guilt of their ancestors. And therefore in most (if not all) of the new felonies treated by Parliament since the reign of Henry VIII. it is declared that they shall not extend to any corruption of blood: and by the statute 7 Anne c. 21. (the operation of which is postponed by the statute 17 Geo. II. c. 39.) it is enacted, that, after the death of the late pretender and his sons, no attainder for treason shall extend to the disinheriting any heir, nor the prejudice of any person, other than the offender himself: which provisions have indeed carried the remedy farther than was required by the hardship above complained of; which is only the future obstruction of descents, where the pedigree happens to be deduced through the blood of an attained ancestor.

CORSAIR, a pirate or person who scours the seas, especially the Mediterranean, with a vessel armed for war, without commission from any prince or power, to plunder merchant-vessels. The word comes from the Italian *corsare*, of *corso*, or à *curfibus*, by reason of their courses, or excursions.—The name is commonly given to the piratical cruisers of Barbary, who had their rise about the beginning of the 16th century.

A *corsair* is distinguished from a *privateer* in this, that the latter does it under a commission, and only attacks the vessels of those at war with the state whence his commission is derived. The punishment of a corsair is to be hanged, without remission; whereas privateers are to be treated as prisoners of war. All corsair vessels are good prizes.

CORSELET, a little cuirass; or, according to others, an armour or coat made to cover the whole body, anciently worn by the pike-men, usually placed in the front and flanks of the battle, for the better resisting the enemy's assaults, and guarding the soldiers placed behind them.

CORSICA, (anc. geog.) an island situated in that part of the Mediterranean anciently called the *Sea of Liguria*, in length from north to south 150 miles, and where broadest 50, (Pliny). The ancient inhabitants were the Phocenses, (Herodotus); from which they removed to Massilia. To them succeeded the Ligurians and Hispani, as appears from the similitude of rites and customs: afterwards two Roman colonies, one by Marius, the other by Sylla. To the south it is separated from Sardinia by a narrow strait called *Tappo*, or *Fossa*, (Pliny); sixty stadia or about seven miles in breadth, (Strabo). It was famous for its barren rocks, its woods, and its honey; which last was reckoned noxious, from the great plenty of yew-trees, ac-

ording to Diodorus Siculus and Virgil. *Corfi* was the name of the people, (Livy); *Cyrnaeus*, the epithet, (Virgil).—The island still retains its ancient name *Corfica*; situated between 8 and 10 degrees of east longitude, and between 41 and 43 degrees of north latitude. It was formerly subject to Genoa; though the natives for many years disputed their right. The island is now in the hands of the French; and have lately, in consequence of the revolution in France, been admitted to a participation of all the rights and privileges of free citizens.

CORSNED, or MORSEL of EXECRATION, a species of trial or purgation * anciently in use among us, and which probably arose from an abuse of revelation in the dark ages of superstition. It consisted of a piece of cheese or bread, about an ounce in weight, which was consecrated with a form of exorcism; desiring of the Almighty that it might cause convulsions and paleness, and find no passage if the man was really guilty; but might turn to health and nourishment if he was innocent; as the water of jealousy among the Jews was, by God's especial appointment, to cause the belly to swell, and the thigh to rot, if the woman was guilty of adultery. This corned was then given to the suspected person, who at the same time also received the holy sacrament: if indeed the corned was not, as some have suspected, the sacramental bread itself; till the subsequent invention of transubstantiation preserved it from profane uses with a more profound respect than formerly. Our historians assure us, that Godwin, Earl of Kent, in the reign of King Edward the Confessor, abjuring the death of the king's brother, at last appealed to his corned, "*per buccellam deglutendam abjuravit*," which stuck in his throat and killed him. This custom has been long since gradually abolished, though the remembrance of it still subsists in certain phrases of abjuration retained among the common people; as, "I will take the sacrament upon it; May this morsel be my last;" and the like.

CORT (Cornelius), a celebrated engraver, was born at Hoorn in Holland in 1536. After having learned the first principles of drawing and engraving, he went to Italy to complete his studies, and visited all the places famous for the works of the great masters. At Venice he was courteously received by Titian; and engraved several plates from the pictures of that admirable painter. He at last settled at Rome, where he died 1578, aged 42. According to Basan, he was "the best engraver with the burin or graver only that Holland ever produced. We find in his prints," adds he, "correctness of drawing, and an exquisite taste." He praises also the taste and lightness of touch with which he engraved landscapes, and that without the assistance of the point. It is no small honour to this artist, that Agostino Carracci was his scholar, and imitated his style of engraving rather than that of any other master. His engravings are very numerous (151 according to Abbé Marolles), and by no means uncommon.

CORTES of SPAIN, a term purely Spanish, signifying the *courts*, i. e. the states, or assembly of the states, at Madrid.

CORTES, or CORTEZ, (Ferdinand), a Spanish general, famous for the conquest of Mexico, and other victories

Corfned
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Cortes.

* See Trial.

Cortex
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Cortusa.

victories over the natives of South America; but infamous for the cruelties he committed upon the vanquished, without regard to rank, age, or sex. It probably was on this account he was but coolly received on his return to Europe by his royal master Charles le Quint: it is even asserted that the emperor asked him who he was? to which Cortez replied; "I am the man who have given you more provinces than your ancestors have left you towns." Died in 1554, aged 63. See MEXICO.

CORTEX, in botany; the rind or coarse outer bark of plants. The organization of the outer and inner barks, which differ principally in the fineness of their texture, is particularly explained under the article PLANTS.

Wounds of the bark, and its separations from the wood, whether naturally or artificially made, are easily cured, and made to unite again by proper care. If sections be made in the rinds of the ash and sycamore of a square figure, three sides cut, and the fourth uncut, and the whole be afterwards bound round with a pack-thread, it will all unite again, only leaving a scar in each of the three sides where it was cut. If several parts of the bark of either of these trees be cut off, and entirely separated from the tree; some shallower, leaving a part of the bark on, and others deeper, to the wood itself; these pieces being again put into their places, and bound on with pack-thread, will not indeed unite, but a fresh bark will grow in their places, and thrust them away: but if they be first carefully laid on in the exact direction in which they originally grew, and then the whole part beyond the wound on every side covered with a large plaster of diachylon, or the like, and this bound over with pack-thread to keep all firmly in their places, the pieces of bark, whether cut off shallower or deep down to the very wood of the tree, will firmly unite themselves to the places where they originally grew. This cure will be performed in about three weeks: but the outer rind of the separated pieces will not be plump, but somewhat shrivelled; the edges also will recede somewhat from their original place; so that there remains a sort of scar all round. These experiments are best made in the spring season; for in the autumn and winter, the sap arising but weakly, the parts that should unite wither before that is brought about. The success of these experiments has made some think that the whole branch of a tree separated and bound on again might unite with the rest. But the experiments that have been made in the most favourable manner for such a trial have all proved vain, the branch cut off withering always in a few days, however well united and carefully kept on.

CORTEX Peruvianus. See CINCHONA.

CORTEX Winteranus. See WINTERA.

CORTONA (Pietro da). See BERRETINI.

CORTONA, a very ancient town of Italy, mentioned by many of the Roman historians. It was originally called *Corton*, and lay to the northward of the lake Thrasymenus. It still retains the name of Cortona. E. Long. 13. 0. N. Lat. 43. 15.

CORTONESE (Pietro Palo) See GOBBO.

CORTUSA, BEAR'S-EAR SANICLE; A genus of the monogynia order, belonging to the pentandria class of

plants, and in the natural method ranking under the 21st order, *Precie*. The corolla is wheel-shaped, with its throat like an elevated ring; the capsule unilocular, oval, and quinquevalved at the top. There are two species, both of them very low, flowery, herbaceous perennials, crowned by umbels of monopetalous, wheel-shaped flowers, of a fine red colour. They are natives of mountainous rocky parts abroad, so must have a dry lean soil; or they may be kept in pots of dry sandy earth placed in the shade, and in summer must be duly watered; and their propagation here is by slipping the roots in October.

CORRUNNA, or **GROYNE**, a port-town of Galicia in Spain, situated on a fine bay of the Atlantic ocean, about 32 miles north of Compostella: W. Long. 9. 0. and N. Lat. 43. 0.

CORUS, **OMER**, **HOMER**, or **CHOMER**, in the Jewish antiquities, a measure containing 10 baths or 75 gallons and 5 pints, as a measure of things liquid, and 32 pecks and 1 pint as a measure for things dry. The *corus* or *omer* was most commonly a measure for things dry; and the greatest that was used among the Jews. It contained, according to the rabbins, 10 ephahs or 30 fatha or seahs. *Corus* is the most usual term in the historical writers, and *omer* or *chomer* among the prophets.

Corus is also used in some of our old writers for eight bushels or a quarter; *decem coros tritici, five decem quarteria*.

CORUSCATION, a glittering or gleam of light issuing from any thing. It is chiefly used for a flash of lightning darting from the clouds in time of thunder.

There is a method of producing artificial coruscations or sparkling fiery meteors, which will be visible not only in the dark but at noon-day, and that from two liquors actually cold. The method is this. Fifteen grains of solid phosphorus are to be melted in about a drachm of water; when this is cold, pour upon it about two ounces of oil of vitriol; let these be shaken together, and they will at first heat, and afterwards they will throw up fiery balls in great number, which will adhere like so many stars to the sides of the glass, and continue burning a considerable time; after this, if a small quantity of oil of turpentine is poured in, without shaking the vial, the mixture will of itself take fire, and burn very furiously. The vessel should be large, and open at the top.

Artificial coruscations may also be produced by means of oil of vitriol and iron, in the following manner. Take a glass body capable of holding three quarts; put into this three ounces of oil of vitriol and twelve ounces of water; then warming the mixture a little, throw in, at several times, two ounces, or more, of clean iron filings: upon this an ebullition and white vapours will arise: then present a lighted candle to the mouth of the vessel, and the vapour will take fire, and afford a bright fulmination or flash like lightning. Applying the candle in this manner several times, the effect will always be the same; and sometimes the fire will fill the whole body of the glass, and even circulate to the bottom of the liquor; at others, it will only reach a little way down its neck. The great caution to be used in making this experiment is the

Corrunna
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Coruscation.

Corvorant,
Corvus.

the making the vapour of a proper heat: for, if too cold, few vapours will arise; and, if made too hot, they will arise too fast, and will only take fire in the neck of the glass, without any remarkable coruscation.

CORVORANT, formerly written **CORMORANT**.
See **PELICANUS**.

CORVUS, the **RAVEN** or **CROW** kind, in ornithology; a genus of birds of the order of *picæ*, the distinguishing characteristics of which are these: The beak is convex and cultrated; the nostrils are covered with bristly feathers; the tongue is forked and cartilaginous; and the feet are of the walking kind. The species are 19. The most remarkable are:

1. The *corax*, or raven of English authors, weighs three pounds, and is about two feet two inches in length; the colour is black, finely glossed with a rich blue; the belly excepted, which is of a dusky colour. They are very docile birds, and may be trained up to fowling like hawks; to fetch and carry like spaniels; they may be taught to speak like parrots; and, what is most extraordinary of all, they may be taught to imitate the human voice in singing. They have a great propensity to pilfer, often hiding things of value to the great loss of the owner, without use to themselves. They frequent the neighbourhood of great towns, where they are useful in devouring the carcases and filth which would otherwise prove a nuisance. They, however, also destroy many living animals; such as, rabbits, young ducks, and chickens, and not unfrequently lambs which have been dropped in a weak state. In clear weather they fly in pairs to a great height, making a deep loud noise, different from the common croaking. Their scent is remarkably good; and they are very long lived. The quills of ravens sell for 12 s. per hundred, being of great use in tuning the lower notes of an harpsichord when the wires are set at a considerable distance from the sticks.—The raven makes its nest early in the spring, laying 5 or 6 eggs, of a pale bluish-green colour spotted with brown. With us it builds in trees; but in Greenland and Iceland makes its nest in the holes of rocks, composing it of roots and twigs, together with the bones they have picked, and lining it with hair, moss, &c. The flesh of these birds, rank and unfavoury as we may well suppose it, is eaten in Greenland by many of the natives, who also use the skins as a warm under-covering.

2. The *corone*, or carrion-crow, in the form of its body agrees with the raven; also in its food, which is carrion and other filth. It will also eat grain and insects; and like the raven will pick out the eyes: for which reason it was formerly distinguished from the rook, which feeds entirely on grain and insects, by the name of the *gor*, or *gor-crow*. Virgil says that its croaking foreboded rain:

Tum cornix plena pluviam vocat improba voce.

It was also thought a bird of bad omen, especially if it happened to be seen on the left hand:

Sæpe sinistra cava prædixit ab ilice cornix.

England breeds more of this kind of birds than any other country in Europe. In the 24th of Henry VIII. they were grown so numerous, and thought to be so prejudicial to the farmer, that they were considered as an evil worthy of parliamentary redress; an act was passed for their destruction, in which rooks and

choughs were included. Every hamlet was to provide crow-nets for ten years; and all the inhabitants were obliged at certain times to assemble during that space to consult of the proper means for extirpating them. But though the crow abounds thus in Britain, it is so rare in Sweden, that Linnæus speaks of it only as a bird that he once knew killed there. It lays the same number of eggs as the raven, and of the same colour: immediately after deserting their young they go in pairs. Both these birds are often found white or pied; an accident that befalls black birds more frequently than any others. Mr Pennant says, he has observed one entirely of a pale brown colour, not only in its plumage, but even in its bill and feet. The crow weighs about 20 ounces. Its length is 18 inches; its breadth two feet two inches.

Concerning these birds, we have the following curious anecdote in Mr Edward's natural history*. "The reverend Mr Robinson rector of Onby in Westmoreland and Cumberland, says, 'that birds are natural planters of all sorts of wood and trees. They disseminate the kernels upon the earth, which like nurseries brings them forth till they grow up to their natural strength and perfection.' He says, 'About 25 years ago, coming from Roscastle early in the morning, I observed a great number of crows very busy at their work upon a declining ground of a mossy surface: I went out of my way on purpose to view their labour, and I found they were planting a grove of oaks. The manner of their planting was thus: they first made little holes in the earth with their bills, going about and about till the hole was deep enough; and then they dropped in the acorn, and covered it with earth and moss. The season was at the latter end of autumn when all seeds are full ripe.' Mr Robinson seems to think that Providence had given the crows this instinct solely for the propagation of trees; but I imagine it was given them principally for their own preservation, by hiding provision in time of plenty, in order to supply them in a time of scarcity: for it is observed in tame pies and daws kept about houses, that they will hide their meat when they have plenty of it, and fetch it from their hiding-places when they want. So that such an instinct in these birds may answer a double purpose; both their own support in times of need, and the propagation of the trees they plant: for wherever they hide a great number of nuts or grain in the earth, we cannot suppose they find them all again; but that as many will remain in the plot of ground they make use of, as can well grow by one another."

3. The *frugilegus*, or rook, is the *corvus* of Virgil; no other species of this kind being gregarious.

*E postu decedens agmine magno
Corvorum inerepuit densis exercitus alis.*

A very natural description of the evening return of these birds to their nests.

The rook differs not greatly in its form from the carrion crow: the most remarkable difference is in the nostrils and root of the bill; which parts in the crow are well clothed with feathers, but in the rook are bare, or covered only with some bristly hairs. This arises from its thrusting the bill into the earth continually, after the various worms and eruceæ of insects, on which it feeds; for it does not live on carrion, like the

Corvus.

* Vol. 7.
Pref. xxv.

the last species and ravens. Besides insects, it also feeds on all sorts of grain, to some inconvenience perhaps to the husbandman, but no doubt doubly repaid by the good done him in extirpating the maggot of the chaferbeetle, which in some seasons destroys whole crops of corns by feeding on the roots. The rook is a gregarious bird, sometimes being seen in immense flocks, so as to almost darken the air. These flights they regularly perform morning and evening, except in breeding-time, when the daily attendance of both male and female is required for the use of incubation, or feeding the young; for it is observed that they do both by turns. As these birds are apt to form themselves into societies, such places as they frequent during the breeding-time are called *rookeries*; and they generally choose a large clump of the tallest trees for this purpose; but make so great a litter, and such a perpetual chatter, that nothing but habit and a length of time can reconcile one to the noise. The eggs are like those of crows, but less, and the spots larger. They begin to build in March, and after the breeding-season forsake their nest trees, going to roost elsewhere, but have been observed to return to them in August: in October they repair their nests. In Britain they remain the whole year; yet we are told that both in France and Silesia they are birds of passage. Whether they migrate or not in Sweden, we are not told; but Linnæus talks of their building there. The young birds are accounted good eating, especially if skinned and put in a pie.

4. The cornix, or royston crow, pretty much resembles the rook, feeding on insects, and flying together in great flocks. In England it is a bird of passage, visiting that kingdom in the beginning of winter, and leaving it with the woodcocks. In the maritime parts they feed on crabs and shell-fish. They are very common in Scotland: in many parts of the Highlands, and in all the Hebrides, Orknies, and Shetland, it is the only species of genuine crow; the carrion and rook being unknown there. It breeds and continues in those parts the whole year round. In the Highlands, they breed indifferently in all kinds of trees: lay six eggs: have a shriller note than the common crows; are much more mischievous; pick out the eyes of lambs, and even of horses when engaged in bogs. They are, therefore, in many places proscribed, and rewards given for killing them. For want of other food these birds will eat cran-berries or other mountain berries.

5. The dauricus, or white-breasted crow, is in length about 12 inches: the bill is black; the head and throat are black, glossed with blue; the neck and breast white; the rest of the body, wings, and tail, blue black; the legs of a lead-colour; the claws black. The specimen figured by Buffon came from Senegal; but it is by no means confined to that quarter. Pallas describes the same species, which he says come early in the spring in great flights from China, and the southern Mongols country, into the parts about the lake Baikal, but most frequent about the towns and villages on the river Lena, in which part the jackdaws and Royston crows are very seldom seen. It is said they are likewise found in vast numbers in the island of Johann, where they live chiefly on insects and fruits, and make their nests in trees.

6. The monedula, or jack-daw, weighs nine ounces; the length thirteen inches, the breadth twenty-eight. The head is large in proportion to its body; which, Mr Willoughby says, argues him to be ingenious and crafty. The irides are white: the breast and belly are of a dusky hue inclining to ash-colour: the rest of the plumage is black, slightly glossed with blue: the claws very strong and hooked. It is a docile and loquacious bird. Jack-daws breed in steeples, old castles, and in high rocks, laying five or six eggs. Sometimes they have been known to breed in hollow-trees near a rookery, and join those birds in their foraging parties. In some parts of Hampshire, they make their nests in rabbit holes: they also build in the interstices between the upright and transum stones of Stonehenge; a proof of the prodigious height of that stupendous antiquity, for their nests are placed beyond the reach of the shepherd boys, who are always idling about this spot. They are gregarious birds; and feed on insects, grain, and seeds.—These birds are frequently brought up tame: they have a practice of hiding that part of their food which they cannot eat; and often, along with it, they secret small valuables, thereby sometimes occasioning injurious suspicions of theft in servants or others not guilty.

7. The glandarius, or jay, is one of the most beautiful of British birds. The weight is between six and seven ounces: the length 13 inches. The forehead is white streaked with black; the head is covered with very long feathers, which it can erect at pleasure into the form of a crest: the whole neck, back, breast, and belly, are of a faint purple dashed with grey; the covert-feathers of the wings are of the same colour. The first quill-feather is black; the exterior webs of the nine next are ash-coloured; the interior webs dusky; the six next are black, but the lower sides of their exterior webs are white tinged with blue; the two next wholly black; the last of a fine bay colour tipped with black. The lesser coverts are of a light bay: the greater covert feathers most beautifully barred with a lively blue, black, and white: the rest are black: the rump is white. The tail consists of twelve black feathers. The feet are of a pale brown; the claws large and hooked.—Jays build chiefly in woods, making their nest of sticks, fibres of roots, and tender twigs; and lay five or six eggs, of the size of a pigeon's, cinereous olive, marked with pale brown. The young keep with the old ones till the next pairing time in spring; when they choose each his mate to produce their future progeny. In general they feed on acorns, nuts, seeds, and fruits of all kinds; but will sometimes destroy young chickens and eggs, and will also take away birds that have been caught in a trap or entangled with birdlime. They are often kept in cages, and will talk pretty well; but then lose all their beauty so conspicuous in the wild state.

8. The caryocatactes, or nutcracker, is somewhat less than the jack-daw: the bill is strong, straight, and black: the colour of the whole head and neck, breast and body, of a rusty brown: the crown of the head and rump are plain; the other parts marked with triangular white spots: the wings are black; the coverts spotted in the same manner as the body: the tail is rounded at the end, black tipped with white: the vent-feathers

Corvus. feathers are white; the legs dusky. We find these birds scattered in many parts of Europe, but no where so plenty as in Germany; they are found also in Sweden and Denmark, where they frequent the mountainous parts. Sometimes they come in vast flocks into France, especially Burgundy. They visit England very seldom; are also found in North America, but not near the sea-coasts. One has been brought from Kamtschatka by the late voyagers.—In manners this bird is said to resemble the jay, laying up a store of acorns and nuts. In some parts it keeps chiefly in the pine forests, on the kernels of which it then feeds; but is said frequently to pierce the trees like the woodpecker, for which the bill seems not unapt. It makes its nest in holes of trees. Klein mentions two varieties, one smaller than the other; the largest, he says, breaks the nuts to pieces, and the other pierces them. Both feed at times on wild berries and insects.

9. The pica, or magpie, is in length above 18 inches, and weighs 8 or 9 ounces. The bill is black: the irides are hazel: the scapulars, and all the under parts from the breast, are white; the rest of the plumage, wings, and tail, black, glossed with green, purple, and blue, in different lights: the eleven first quills are white in the middle on the inner web, lessening by degrees as they advance inwards: the tail is very cuneiform, the two middle feathers being near 11 inches in length, and the outmost only 5 inches and a half: the legs are black. We can form no judgment of the beauties of this bird, from those dirty mutilated specimens which we see exposed daily in a wicker cage at every stall. It is only in a state of nature that they can be found; and whoever views them in this state, will do so with astonishment: for though the colours, at a distant view, seem to be mere black and white, yet the splendor that meets in every new situation the eye of the beholder, will oblige him to own that there is not a more beautiful bird in Britain. In these parts it is every where common. Mr Latham has been able to trace this bird no farther south than Italy on the European continent; and to the north, Sweden, and Denmark. Forster met with it at Madeira; and it is also seen in America, but not common, and is a bird of passage in those parts. At Hudson's Bay it is called by the Indians *Oue-ta-kee-afke*, which signifies *Heart-Bird*; but for what reason does not appear. In manners it approaches to the crow, feeding almost on every thing in turn, both animal and vegetable; and like that will kill young ducks and chickens, and suck the eggs. It builds its nest with art, making a thorny cover at top, leaving a hole on the side for admittance: lays six or seven pale greenish eggs, thickly spotted with black. It is a crafty bird in every state, and if brought up young, becomes exceedingly familiar, and will talk a great many sentences, as well as imitate every noise within hearing, like a parrot, but not near so plain.

10. The graculus, or red-legged crow, is but thinly scattered over the northern world: no mention is made of it by any of the Faunists; nor do we find it in other parts of Europe except Britain and the Alps. It is produced in the island of Canadia in Asia; and it visits Egypt towards the end of the inundations of the Nile. Except in Egypt, it affects mountainous and rocky

N^o 92.

places; builds its nest in high cliffs or ruined towers; and lays four or five eggs, white spotted with a dirty yellow. It feeds on insects, and also on new-sown corn. They commonly fly high, make a shriller noise than the jack-daw, and may be taught to speak. It is a very tender bird, and unable to bear very severe weather; is of an elegant, slender-make; active, restless, and thieving; much taken with glitter, and so meddling as not to be trusted where things of consequence lie. It is very apt to catch up bits of lighted sticks; so that there are instances of houses being set on fire by its means; on which account Cambden calls it *incendiaria avis*. It is found in Cornwall, Flintshire, Caernarvonshire, and Anglesea, in the rocky cliffs along the shores. It is also found in Scotland as far as Strathnavern, and in some of the Hebrides. Its colour is wholly black, beautifully glossed over with blue and purple: the legs and bill are of a bright orange colour inclining to red: the tongue is almost as long as the bill, and a little cloven: the claws are large, hooked, and black.

11. The cristatus, or blue jay, is much smaller than the common jay. The bill is black and above an inch long: the head is crested and blue: a streak of the sides of the head and throat are of a bluish white, and there is a spot of the same over the eye: hind part of the neck and back is blue: the wings and tail are the same; all the feathers of the last, except the two middle ones, tipped with white; the feathers of both it and the wings elegantly barred with black, and the greater coverts and second quills tipped with white: the breast is of a blossom colour; the belly and under tail-coverts white: the legs are dusky brown: the tail is nearly as long as the rest of the bird. The colours of the female are less bright than those of the male—This species is said to be peculiar to North America, but not seen farther north than the town of Albany. It builds in swamps, and has a soft delicate note. Its food is hazel-nuts, chefnuts, and such like, which it breaks by placing between the feet, and pecking with the bill till the shell gives way. It is also very fond of maize; and being a gregarious bird, often unites into flocks of 20,000 at least, which alighting on a field of 10 or 12 acres soon lay waste the whole: hence it is reckoned the most destructive bird in that country. They will often take up with snails and vermin thro' necessity, but not while any thing they like better is to be got at. They are not accounted good to eat.

12. The canadensis is in length 9 inches, and weighs two ounces. The bill is blackish, and not quite an inch long: the irides are black: the forehead and throat are of a dirty yellowish white; the hind head and sides of blackish brown: the upper parts of the body are brown; beneath pale ash, palest on the breast: the quills and tail are brown, tipped with white: tail is a little wedged: the legs and claws are blackish. These birds inhabit Canada; and are frequent near Hudson's Bay, where they are called *Whiskijohn* and *Whiskijack*. They breed early in the spring; build in pine-trees; and have two, rarely three, young at a time. The eggs are blue. They are not gregarious. Their food is black moss, worms, and flesh. They are very bold pilfering birds, stealing from the traveller even salt meat, and devouring often the bait from the traps set

Cicadae.



Corvus Dauricus.



Coracias.

Chinese.



Blue striped.



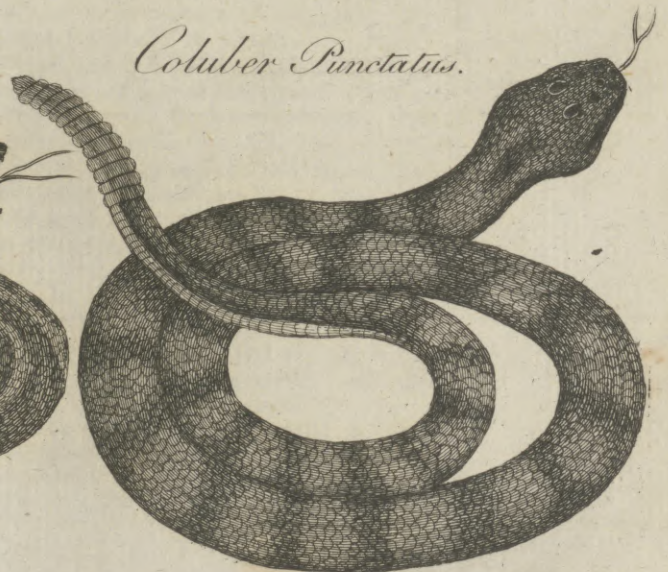
Chrysomela.



Crotalus Horridus.



Coluber Punctatus.



Corvus || **Coryban-**
tes. for the martins, as soon as the persons who set them turn their backs. They lay up stores for winter; at which time they are seldom seen unless near habitations. They do not bear confinement well. What natural note they have, we are not told; but they are said to act the mocking bird, in imitating that of others.—There are near 30 other species.

CORVUS (*Raven*), in astronomy, a constellation of the southern hemisphere; whose stars in Ptolemy's Catalogue are 7; in Tycho's as many; in the Britannic Catalogue 9.

CORVUS, in Roman antiquity, a military engine, or rather gallery, moveable at pleasure by means of pulleys; chiefly used in boarding the enemy's ships to cover the men. The construction of the corvus was as follows: They erected on the prow of their vessels a round piece of timber of about a foot and an half diameter, and about 12 feet long: on the top of which they had a block or pulley. Round this piece of timber they laid a stage or platform of boards, four feet broad, and about 18 feet long, which was well framed and fastened with iron. The entrance was long-ways, and it moved about on the above mentioned upright piece of timber as on a spindle, and could be hoisted up within six feet of the top: about this was a sort of parapet knee-high, which was defended with upright bars of iron sharpened at the end, and towards the top there was a ring, by the help of which and a pulley or tackle, they raised or lowered the engine at pleasure. With this moveable gallery they boarded the enemy's vessels (when they did not oppose side to side), sometimes on their bow, and sometimes on their stern, as occasion best served. When they had grappled the enemy with these iron spikes, if they happened to swing broadside to broadside, then they entered from all parts; but in case they attacked them on the bow, they entered two and two by the help of this machine, the foremost defending the foreparts, and those that followed the flanks keeping the bows of their bucklers level with the top of the parapet.

CORYATE (Thomas), a very extraordinary personage, who seems to have made himself famous by his whimsical extravagancies, was the son of a clergyman, and born at Oldcombe in Somersetshire in 1577. He acquired Greek and Latin at Oxford; and coming to London, was received into the household of Henry prince of Wales. If Coryate was not over witty himself, he got acquainted with the wits of that time, and served to exercise their abilities, having more learning than judgment. He was a great peripatetic: for, in 1608, he took a long journey on foot; and after he returned, published his travels under the following strange title, *Crudities hastily gobbled up in five months Travels in France, Savoy, Italy, Rhetia, Helvetia, some parts of High Germany, and the Netherlands*, Lond. 1611, 4to. In 1612 he set out again with a resolution to spend ten years in travelling: he went first to Constantinople; and after travelling over a great part of the East, died of a flux at Surat in the East Indies. Some of the accounts of his peregrinations are to be found in Purchas's Pilgrimages.

CORYBANTES, in antiquity, priests of Cybele, who danced and capered to the sound of flutes and drums. See **CROTALUM**.

Catullus, in his poem called *Atys*, gives a beautiful

description of them, representing them as madmen. Accordingly Maximus Tyrius says, that those possessed with the spirit of Corybantes, as soon as they heard the sound of a flute, were seized with an enthusiasm, and lost the use of their reason. And hence the Greeks use the word *κορυβαντες*, to *corobantize*, to signify a person's being transported or possessed with a devil. See **ENTHUSIASM**.

Some say that the Corybantes were all eunuchs; and that it is on this account Catullus, in his *Atys*, always uses feminine epithets and relatives in speaking of them.

Diodorus Siculus remarks, that Corybas, son of Janus and Cybele, passing into Phrygia with his uncle Dardanus, there instituted the worship of the mother of the gods, and gave his own name to the priests. Strabo relates it as the opinion of some, that the Corybantes were children of Jupiter and Calliope, and the same with the *Cabiri*. Others say the word had its origin from this, that the Corybantes always walked dancing (if the expression may be allowed) or tossing the head, *κορυβαντες βαμβουσι*.

CORYBANTICA, a festival held in Crete, in memory of the Corybantes, who educated Jupiter when he was concealed in that island from his father Saturn, who would have devoured him.

CORYCEUM, in antiquity, that part of the gymnasium where people undressed. It was otherwise called *apolyterion*.

CORYCOMACHIA, among the ancients, was a sort of exercise in which they pushed forwards a ball, suspended from the ceiling, and at its return either caught it with their hands, or suffered it to meet their body. Oribasius informs us it was recommended for extenuating too gross bodies.

CORYDALES, in botany, an order of plants in the *Fragmenta Methodi Naturalis* of Linnæus, containing the following genera, *viz.* epimedium, hypecoum, leontice, melianthus, pinguicula, and utricularia.

CORYDALIS, in botany. See **FUMARIA**.

CORYLUS, the **HAZLE**: A genus of the polyandria order, belonging to the monœcia class of plants; and in the natural method ranking under the 50th order, *Amentacea*. The male calyx is monophyllous, scale-like, trifid, and uniflorous; there is no corolla; the stamina eight in number: The female calyx diphyllous and lacerated; no corolla; two styles; and an egg-shaped nut. Mr Miller reckons three species, though other botanists make only two. They are all of the large shrub kind, hardy and deciduous; and have several varieties valuable for their nuts, as also for their variety in large wildernesses and shrubbery works. They will prosper in almost any soil or situation, and turn out to good account when growing in coppices to cut as underwood, and as poles for various uses, as hoops, spars, hurdles, handles to husbandry implements, walking sticks, fishing rods, &c. for which purposes they may be cut every 5th, 7th, or 8th year, according to the purposes for which they are designed. The best method of propagating them is by layers, though they may also be raised from the nuts.

The kernels of the fruit have a mild, farinaceous, oily taste, agreeable to most palates. Squirrels and mice are fond of them, as well as some birds, such as jays, nutcrackers, &c. A kind of chocolate has been prepared

Coryban-
tica
||
Corylus.

Corymbiferæ
 12
 ||
 Corypha.

prepared from them, and there are instances of their having been formed into bread. The oil expressed from them is little inferior to the oil of almonds; and is used by painters, and by chemists, for receiving and retaining odours. The charcoal made of the wood is used by painters in drawing. Some of the Highlanders, where superstition is not totally subsided, look upon the tree itself as unlucky; but are glad to get two of the nuts naturally conjoined, which is a good omen. These they call *eno chomblaich*, and carry them as an efficacious charm against witchcraft.

Evelyn tells us, that no plant is more proper for thickening of copses than the hazle, for which he directs the following expeditious method. Take a pole of hazle (ash or poplar may also be used), of 20 or 30 feet in length, the head a little lopped into the ground, giving it a chop near the ground to make it succumb; this fastened to the earth with a hook or two, and covered with some fresh mould at a competent depth, (as gardeners lay their carnations), will produce a great number of suckers, and thicken and furnish a copse speedily.

CORYMBIFERÆ, in botany, the name of an order or division of the compound flowers adopted by Linnæus after Ray and Vaillant, in the former editions of his *Fragments of a Natural Method*. This title in the later editions is changed for *Discoidæ*, another name borrowed from Ray's *Method*, but used in a somewhat different sense.

CORYMBIUM, in antiquity, an ornament of hair worn by the women. Its form was that of a corymbus.

CORYMBIUM, in botany: A genus of the monogamia order, belonging to the syngenesia class of plants; and in the natural method ranking under the 49th order, *Compositæ*. The calyx is diphyllous, uniflorous, and prismatical; the corolla monopetalous and regular; there is one woolly seed below each floret.

CORYMBUS, properly signifies a cluster of ivy berries. Among botanists, it is a mode of flowering in which the lesser or partial flower-stalks are produced along the common stalk on both sides; and, though of unequal lengths, rise to the same height, so as to form a flat and even surface at the top. See *BOTANY*, n° 273.

CORYNOCARPUS, in botany: A genus of the monogynia order, belonging to the pentandria class of plants. The calyx is a pentaphyllous perianthium; the corolla consists of five roundish, erect, and hollow petals; the stamina five subulated filaments arising from the base of the petals; the antheræ are erect and oblong; the pericarpium a monospermous, turbinat-clavated nut.

CORYPHA, MOUNTAIN PALM, or *Umbrella Tree*, in botany: A genus of the order of *Palmæ*, belonging to the monœcia class of plants. The corolla is tripetalous; the stamina six, with one pistil; the fruit a monospermous plum. There is only one species, the *umbracula*, a native of the West Indies, where it is called *coddla-pana*. It rises to a considerable height, and produces at the top many large palmated, plaited leaves, the lobes of which are very long, and are placed regularly round the end of a long spiny footstalk, in a manner representing a large umbrella. The flowers are produced on a branched spadix, from a compound

spatha or sheath; they are hermaphrodite, and each consists of one petal, divided into three oval parts, and contains six awl-shaped stamina, surrounding a short slender style, crowned with a simple stigma. The germen is nearly round, and becomes a large globular fruit of one cell, including a large round stone. These plums having a pleasant flavour are held in esteem by the Indians.

CORYPHÆNA, in ichthyology, a genus belonging to the order of thoracici. The head is declined and truncated; the branchiostege membrane has six rays; and the back-fin runs the whole length of the back. There are twelve species, most of them natives of foreign seas. The most remarkable are the blue and parrot fishes, described by Mr Catesby.—The head of the first is of an odd structure, resembling that of the spermaceti whale: the mouth is small, each mandible armed with a single row of even teeth, so closely joined that they seem entire bones; the iris of the eye is red. On the back is a long pliant fin, somewhat indented on the edge; behind the gills are two fins, one under the abdomen and another behind the anus. The tail is forked; and the whole fish entirely blue. They are taken on the coasts of the Bahama Islands, and in most of the seas between the tropics.—The parrot-fish hath a large mouth, paved as it were with blunt teeth, closely connected, after the manner of the *lupus marinus*. The body is covered with large green scales; the eyes are red and yellow; the upper part of the head brown, the lower part and the gills blue, bordered with a dusky red: a streak of red extends from the throat behind the gills, at the upper end of which is a bright yellow spot. The fins are five in number, one extending almost the length of the back, of a bay or cinnamon colour; there are two behind the gills, blended with black, green, and purplish colours, with the upper edge verged with blue: under the abdomen is another red fin verged with blue: under the anus extends another long narrow green fin, with a list of red through the middle of it: at the basis of the tail on each side is a large yellow spot. The tail is large, forked, and green, with a curved red line running through the middle parallel to the curve, and ending in two points. This fish is more esteemed for beauty than the delicacy of its taste. They are taken on the coasts of Hispaniola, Cuba, and the Bahama Islands.

CORYPHÆUS, in the ancient tragedy, was the chief or leader of the company that composed the chorus: (See *CHORUS*).—The word is formed from the Greek *κρυφή*, “tip of the head.” The coryphæus spoke for all the rest, whenever the chorus took part in the action, in quality of a person of the drama, during the course of the acts. Hence coryphæus had passed into a general name for the chief or principal of any company, corporation, sect, opinion, &c. Thus Eustacius of Antioch is called the *coryphæus* of the council of Nice; and Cicero calls Zeno the *coryphæus* of the stoics.

CORYZA, in medicine, a catarrh of the nose. See *MEDICINE-Index*.

CORZOLA, or *CURSCOLA*, an island in the gulph of Venice, divided from Ragusa in Dalmatia by a narrow strait. E. Long. 18. o. N. Lat. 42. 35.

COS, or *Coos*, (anc. geog.), a noble island on the coast

Coryphæus
 ||
 Cos.

Cos
||
Cosenage.

coast of Caria, in the Hither Asia, fifteen miles to the west of Halicarnassus, a hundred in compass, called *Meropis*; and hence Thucydides joins both names together, *Cos Meropis*: it had a cognominal town *Cos*, but originally called *Alypalaea*, mentioned by Homer; with a port locked or walled round, (*Scylax, Mela*). The island was fruitful, and yielded a generous wine, (*Strabo*). It boasted of Hippocrates and Apelles; each at the head of his several profession. It was the country of Philetas, an excellent elegiac poet, who flourished in the time of Philip and Alexander; the preceptor of Ptolemy Philadelphus: so thin and light that he was obliged to wear lead to prevent the being blown away by a puff of wind (*Aelian, Athenæus*); much commended by Propertius. The *vestes Coae*, made of silk, were famous for their fineness and colour, (*Horace, Propertius, Tibullus*). In the suburbs of *Cos* stood the temple of *Æsculapius*, a noble structure, and extremely rich.

COS, the **WHESTONE**, in natural history, a genus of vitrescent stones, consisting of fragments of an indeterminate figure, sub-opaque, and granulated.

Of this genus there are several species, some consisting of rougher, and others of smoother, or even of altogether impalpable particles; and used not only for whet-stones, but also for mill-stones, and other the like purposes.

COS TURCICA, *Turky-stone*, a species of stones of the garnet kind, belonging to the siliceous class. It is of a dull white, and often of an unequal colour; some parts appearing more compact than others. Its specific gravity is 2598: it strikes fire with steel, and effervesces with acids. Mr Kirwan found that 100 parts of it contain 25 of mild calcareous earth, and no iron. Cronstedt is of opinion that there are probably two sorts of stones known by this name, as that described by Wallerius neither gives fire with steel nor effervesces with acids. It is used as a whetstone; and those of the finest grain are the best hones for the most delicate cutting tools, and even for razors, lancets, &c.

COSCINOMANCY, the art of divination, by means of a sieve. The word comes from *κοσκινον, cibrum*, "a sieve;" and *μαντια, divination*. The sieve being suspended, after rehearsing a formula of words, it is taken between two fingers only; and the names of the parties suspected repeated: he at whose name the sieve turns, trembles, or shakes, is reputed guilty of the evil in question.

This must be a very ancient practice: Theocritus, in his third Idyllion, mentions a woman very skilful in it. It was sometimes also practised by suspending the sieve by a thread, or fixing it to the points of a pair of sheers, giving it room to turn, and naming, as before, the parties suspected; in which last manner *coscinomancy* is still practised in some parts of England. It appears from Theocritus, that it was not only used to find out persons unknown, but also to discover the secrets of those that were known.

CO-SECANT, in geometry, the secant of an arch which is the complement of another to 90°. See **GEOMETRY**.

COSENAGE, in law, a writ that lies where the trefail, that is, the tritavus, the father of the besail, or great grandfather, being seized in fee at his death of

certain lands or tenements, dies; a stranger enters, and abates; then shall his heir have this writ of cosenage; the form of which see in Fitzh. Nat. Br. fol. 221.

Cosening
||
Cosmopolite.

COSENING, in law, an offence whereby any thing is done deceitfully, in or out of contracts, which cannot be fitly termed by any especial name. In the civil law it is called *stellionatus*. See **STELLIONATE**.

COSENZA, the capital of the Hither Calabria, in the kingdom of Naples. E. Long. 16. 35. N. Lat. 39. 15. It is an archbishop's see.

COSHERING, in the feudal customs, a kind of right of the lords to lie and feast themselves and their followers at their tenants houses. The word *coshering* may perhaps be derived from the old English word *cosbe*, a cot or cottage.

CO-SINE, in trigonometry, the sine of an arch which is the complement of another to 90°. See **GEOMETRY**.

COSMETIC, in physic, any medicine or preparation which renders the skin soft and white, or helps to beautify and improve the complexion; as lip-salves, cold creams, cerufs, &c.

COSMICAL, a term in astronomy, expressing one of the poetical risings of a star: thus a star is said to rise cosmically when it rises with the sun; or with that point of the ecliptic in which the sun is at that time: and the cosmical setting is when a star sets in the west at the same time that the sun rises in the east.

COSMOGONY, in physics, signifies the science of the formation of the universe. It is formed of *κοσμος, the world*, and *γεννομια, I am born*.

In our conjectures about the formation of the world there are two principles which we ought never to lose sight of. 1. That of *creation*; for certainly matter could not give itself existence, it must have received it. 2. That of a *Supreme Intelligence* directing this creation, and the arrangement of the parts of matter, in consequence of which this world was formed. See **CREATION** and **EARTH**.

COSMOGRAPHY, the description of the world; or the art which teaches the construction, figure, disposition, and relation of all the parts of the world, with the manner of representing them on a plane. The word comes from *κοσμος, world*, and *γραφω, I describe*.

Cosmography consists chiefly of two parts. *Astronomy*, which shows the structure of the heavens, and the disposition of the stars; and *Geography*, which shows those of the earth.

COSMOLABE (from *κοσμος, world*, and *λαβω, I take*), an ancient mathematical instrument, serving to measure distances, both in the heavens and on earth. The *cosmolabe* is in great measure the same with the astrolabe. It is also called *pentacosm*, or the *universal instrument*, by L. Morgard, in a treatise written expressly upon it, printed in 1612.

COSMOLOGY (from *κοσμος, world*, and *λογος, discourse*), the science of the world in general. This Wolfius calls *general*, or *transcendental cosmology*, and has written a treatise on the subject, wherein he endeavours to explain how the world arises from simple substances; and treats of the general principles of the modifications of material things, of the elements of bodies, of the laws of motion, of the perfection of the world, and of the order and course of nature.

COSMOPOLITE, or **COSMOPOLITAN**, a term

Cossacks. sometimes used to signify a person who has no fixed living or place of abode, or a man who is a stranger nowhere. The word comes from the Greek *κοσμοσ*, "world," and *πολις*, "city."—One of the ancient philosophers being interrogated what countryman he was? answered, he was a *cosmopolite*, i. e. an inhabitant or citizen of the world.

COSSACKS, a name given to the people inhabiting the banks of the rivers Nieper and Don, near the Black Sea and borders of Turkey. The word implies irregular troops of horse. These people are divided into European and Asiatic Cossacks. The first consist of the Zaporog, who dwell below the cataract of the Dnieper, some on the side next to Russia, and others on the opposite side of that river; the Lower and Upper Cossacks; the Bielgorod Cossacks; and a part of the Don Cossacks. The Asiatic Cossacks are composed of the rest of the Don Cossacks, the Grebin Cossacks, the Yaik Cossacks, and the Western Calmucs, who retiring from those that inhabited the south borders of Siberia under Yaiuki Can, settled upon the Wolga, and are dependent upon Russia.

The Cossacks were known by that name ever since the 948th year of Christ. They dwelt upon mount Caucasus, in the place now called *Cabardy*; and were reduced to the Russian dominion by prince Mstislav in the year 1021. Many Russians, Poles, and others, who could not live at home, have, at different times, been admitted among the Cossacks; but the latter, abstracted from these fugitives, must have been an ancient and well governed nation.

Towards the beginning of the 16th century, the Zaporog Cossacks fixed their habitations on the spacious plains that extend along the banks of the Dnieper. They had undergone considerable hardships from the incursions of the Tartars, for which they afterwards found means to avenge themselves in an ample manner. The Poles being sensible how serviceable the Cossacks might be in defending them from the ravages of the Tartars, and even of the Russians, proposed to them terms of alliance. In 1562, they solemnly took them under their protection, and engaged to pay them an annual subsidy; in return for which, the Cossacks were to keep on foot a sufficient body of troops for the defence of the Polish dominions. With a view to bind them still more strongly by ties of interest, the Poles gave them the whole country between the rivers Dnieper and Neister, and the borders of Tartary. The Cossacks applied themselves with great industry to the cultivation of this fertile spot; so that in a short time it was interspersed with large towns and handsome villages. Besides they continually harassed the Turks, and did them great damage by their incursions; and in order to prevent the latter from pursuing them, or making reprisals, they possessed themselves of several small islands in the Dnieper, where they kept their magazines, &c. The hettman, or general of the Cossacks, was not in the least subordinate to the field-marshal of Poland; but acted in concert with him as an ally, and not as a subject of that republic. But this alliance, though of such manifest advantage to both parties, was not of long duration. The Poles, seeing the vast improvements made by the Cossacks in the country they had given up to them, became envious of them, and actually made an attempt

Cossacks. to bring them into subjection, as we have seen in the history of Poland. In 1648 the Cossacks gained great advantages over them, and next year came to an accommodation, in which they not only preserved their old immunities, but obtained additional privileges. The result of all was, that these Cossacks remained under the protection of Russia; and as their former country was entirely laid waste in the late wars, they settled in the Russian Ukraine, upon receiving formal assurances from the court of Russia, that no alteration should be made in their political constitution, and that no taxes whatever should be laid upon them. The Cossacks, on the other hand, were always to keep in readiness a good body of troops for the service of Russia: but in the year 1708 Mazeppa, their hettman or chief, went over from the Russians to the Swedes; upon which Peter I. resolved to prevent such revolts for the future. To this end, after the battle of Pultowa, he sent a strong detachment into the above mentioned little islands in the Dnieper, whither the Cossacks had fled, with their wives and children, and all their effects; and ordered them all to be put to the sword without distinction, and the plunder to be divided among his soldiers. He likewise sent a great number of men into their country, and caused several thousands of the Cossacks to be carried to the coasts of the Baltic, where they were put to all sorts of hard labour; by which means he in a manner extirpated the whole nation.

What distinguishes the Zaporog Cossacks from all other people is, that they never suffer any women in their settlements, as the Amazons are said not to have suffered any men among them. The women of these Cossacks live in other islands of the Dnieper. They never marry, nor have any family: all their male children are enrolled as soldiers, and the females are left with their mothers. The brother often has children by his sister, and the father by his daughter. They know no laws but those which custom has introduced, founded on their natural wants; though they have among them some priests of the Greek persuasion. They serve in the armies as irregulars; and woe to those who fall into their hands.

The country of these Cossacks, who are an assemblage of ancient Roxelans, Sarmatians, and Tartars, is called the *Ocraine* or *Ukraine*. It lies upon the borders of Russia and Poland, Little Tartary, and Turkey, and was anciently a part of Scythia. By virtue of the last treaty settled between Russia and Poland, in 1693, the latter remains in possession of all that part of the Ukraine which is situated on the west side of the Dnieper, and is now but poorly cultivated. That on the east side, inhabited by the Cossacks, is in a much better condition, and extends about two hundred and sixty miles in length, and as many in breadth. It is one continued fertile plain, watered by a great number of fine rivers, diversified with pleasant woods, and yields such plenty of all sorts of grain, pulse, tobacco, honey, and wax, as to supply a great part of the Russian empire with those commodities. Its pastures are exceeding rich, and its cattle very large; but the inhabitants are greatly plagued by locusts, which infest this fine country. The houses in the Ukraine are, like those of the Russians, mostly built with timber.

Cossacks.

The Cossacks are tall and well made, generally hawknosed, and of a good mien. They are hardy, vigorous, brave, and extremely jealous of what is most valuable in life, their liberty; sickle and wavering, but sociable, cheerful, and sprightly. They are a very powerful people, and their forces consist wholly of cavalry. Their dialect is a compound of the Polish and Russian language; but the latter is the most predominant. They were formerly Pagans or Mahometans; but upon their entering into the Polish service, they were baptized Christians of the Romish communion; and now that they belong to Russia, they profess themselves members of the Greek church.

Each of their towns, with the district belonging to it, is governed by an officer called *ottomann* or *attamann*.

The Don-Cossacks, so called from their residence upon the banks of the river Don, greatly resemble those already described. In the year 1559, when the czar Iwan Basilowitz was emperor of Russia, they voluntarily put themselves under his protection, and are at this time on a pretty equal footing with the other Russian subjects. They have several towns and villages upon the banks of the Don; but are prevented from extending themselves farther up the country, by the scarcity of fresh water and wood in many places. Their chief support is grazing and agriculture, and occasionally robbing and plundering, for which they want neither capacity nor inclination. Every town is governed by a magistrate called *tamann*; and the *tamanns*, with their towns, are under the jurisdiction of two *ottomanns*, who reside at Tsherkaſky. The troops of these Cossacks likewise consist entirely of cavalry. In this country all the towns and villages are fortified and encompassed with palisades, to defend them against the incursions of the Calmucs and Kuban Tartars, with whom they are continually at war. The Cossacks, in general, are of great service to garrison towns by way of defence, or to pursue an enemy; but are not so good at regular attacks.

The Sietsh Cossacks, who are also called *Haidamacks*, have their particular hettman. They inhabit the Russian, Polish, and Turkish dominions, along the banks of the Dnieper.

The Yaik Cossacks dwell on the south side of the river Yaik; and upon the success of the Russian arms in the kingdom of Astracan, voluntarily submitted to them. In stature they greatly resemble the other Cossacks; though by their boorish manner of living, and intermarriages with the Tartars, they have not the shape and air peculiar to the rest of their countrymen. Their natural dispositions and customs are, however, nearly the same. Husbandry, fishing, and feeding of cattle, are their principal employments; and, like the other tribes, they let slip no opportunity of making depredations on their neighbours. Their continual wars with the Kara-Kalpacs and the Kafatshaia-Horda oblige them to keep their towns and villages in a state of defence. They are indeed subject to Russian waiwodes, to whom they pay an annual tribute in corn, wax, honey, and cattle; but they have also their particular chiefs, who govern them according to their ancient customs. Though the generality of the Yaik Cossacks profess the Greek religion, yet a great many relics of Mahometanism and Paganism are still found

among them. Being naturally bold and hardy, they make excellent soldiers; and they are not so turbulent as the other Cossacks. They live entirely at peace with the Calmucs and their other neighbours, and even maintain a commercial intercourse with them.

COSSE DE GENISTE, an order of knighthood instituted in 1234, by Louis IX. at his marriage with Margaret of Provence. The motto on the collar of this order was, *exaltat humilis*.

COSSET, among farmers, a colt, calf, or lamb, brought up by hand without the dam.

COSTA (Christopher a), a celebrated botanist of the 16th century, was born in Africa, of a Portuguese father, and went into Asia to perfect himself in the knowledge of simples, where he was taken prisoner, but found means to make his escape, and after several voyages, practised physic at Bourgos. He wrote, 1. A Treatise on Indian Drugs and Medicines. 2. His Voyages to the Indies. 3. A book in praise of Women; and other works.

COSTAL, an appellation given by anatomists to several parts belonging to the sides: thus we meet with costal muscles, vertebræ, &c.

COSTANZO (Angelo di), an Italian historian and poet, lord of Catalupo, was born in 1507, of a noble and ancient family of Naples, and died about 1591. He wrote, 1. A History of Naples, from 1250 to 1489; the best edition of which is that of Aquila, in 1582, in folio, very scarce. 2. Italian Poems, which are esteemed, and have had several editions.

COSTA-RICCA, a province of North America in New Spain, and in the audience of Guatimala, bounded on the north-east by the northern ocean, on the south-west by the south sea, on the north-west by Nicaragua, and on the south-east by Veragua. The soil is not very fertile, though there is plenty of cattle. Carthage is the capital town.

COSTARD (George), a clergyman of the church of England, and author of several learned works, was born about the year 1710. He was educated at Wadham College, Oxford; and took the degree of M. A. in 1733. The first ecclesiastical situation in which he was placed was that of curate of Islip in Oxfordshire. In 1747 he published, in 8vo, *Some Observations tending to illustrate the Book of Job*. In 1750 he published *Two Dissertations*: I. On the meaning of the Word *Kesitab*, mentioned in Job, chap. xlii. ver. 11. II. On the Signification of the Word *Hermes*. In 1752 he published, in 8vo, at Oxford, *Dissertationes II. Critico-Sacræ, quarum prima explicatur Ezek. xiii. 18. Altera vero, 2 Reg. x. 22*. In 1755 he wrote a letter to Dr Birch, which is preserved in the British Museum, respecting the meaning of the phrase *sphæra barbarica*. Some time after this he undertook to publish a second edition of Dr Hyde's *Historia Religionis veterum Perfarum, eorumque Majorum*; and which was accordingly printed, under his inspection, and with his corrections, at the Clarendon Press at Oxford, in 4to, in 1760. Mr Costard's extensive learning having now recommended him to the notice of Lord Chancellor Northington, he obtained, by the favour of that nobleman, in June 1764, the vicarage of Twickenham in Middlesex; in which situation he continued till his death. In 1767 he published, in one volume quarto, *The History of Astronomy, with its application to Geography, History, and Chronology*;

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occasionally exemplified by the Globes. This work was chiefly intended for the use of students, and contains a full and distinct view of the several improvements made in geography and astronomy. Mr Costard has shown, "by a gradual deduction, at what time, and by whom, the principal discoveries have been made in geography and astronomy; how each discovery has paved the way to what followed; and by what easy steps, through the revolution of so many ages, these very useful sciences have advanced towards their present state of perfection." In 1778 he published, in 8vo, *A Letter to Nathaniel Brassey Halhead, Esq;* containing some Remarks on his Preface to the Code of Gentoo Laws. This appears to have been the last of his publications. It contains some criticisms which were intended to invalidate the opinion which Mr Halhead had conceived concerning the great antiquity of the Gentoo laws; and some arguments against a notion which had been adopted by several writers, drawn from the observation of natural phenomena, that the world is far more ancient than it is represented to be by the Hebrew chronology. Mr Costard died on the 10th of January 1782. He was a man of uncommon learning, and eminently skilled in Grecian and oriental literature. His private character was amiable, and he was much respected in the neighbourhood in which he lived for his humanity and benevolence.—Besides the works already mentioned, he wrote some others; and was also the author of learned papers, inserted in the Philosophical Transactions, on astronomical and chronological subjects.

COSTIVENESS, a preternatural detention of the feces, with an unusual dryness and hardness thereof, and thence a suppression of their evacuation. See (the *Index* subjoined to) **MEDICINE**.

COSTMARY, the English name of a species of tanfy. See **TANACETUM**.

COSTS, in law, imply the expences of a suit recovered by the plaintiff, together with damages. Costs were not allowed by the common law, the amercement of the vanquished party being his only punishment; but they are given by statute*. Costs are allowed in chancery for failing to make answer to a bill exhibited, or making an insufficient answer: and if a first answer be certified by a master to be insufficient, the defendant is to pay 40s.; 3l. for a second insufficient answer; 4l. for a third, &c. But if the answer be reported good, the plaintiff shall pay the defendant 40s. costs.

COSTUME, a rule or precept in painting, by which the artist is enjoined to make every person and thing sustain its proper character, and not only observe the story, but the circumstances, the scene of action, the country or place, and take care that the habits, arms, manners, proportions, and the like, exactly correspond.

COSTUS, in botany: A genus of the monogynia order, belonging to the monandria class of plants; and in the natural method ranking under the eighth order, *Scitamineæ*. The corolla is interior, inflated, and ringent, with the under lip trifid. There is but one species, *viz.* the arabicus, a native of the Indies. The root was formerly in some esteem as an attenuant, and serviceable in venereal complaints; but it is now rarely prescribed or met with in the shops.

COTA (Rodriguez), a Spanish poet in the 16th century, was the author of the *Tragi-comedia de Calisto y Melibea*, which has been translated into Latin by Gaspar Barthius, and into French by James de Lavaradin. The Spaniards set a great value on this performance.

CO-TANGENT, the tangent of an arch which is the complement of another to 90°. See **GEOMETRY**.

COTBUS, a town of Germany in Lower Luface. It is a strong important place, and has been subject to the king of Prussia ever since the year 1645. It is seated on the river Spree, 60 miles south-by-east of Berlin, and 55 south-east of Wirtemberg. Here are a great number of French Protestants, who have introduced manufactures; and this place is noted for excellent beer, pitch, and the cultivation of flax. E. Long. 15. 29. N. Lat. 51. 40.

COTE, a term used in coursing, to express the advantage one greyhound has over another when he runs by the side of it, and, putting before it, gives the hare a turn. See **COURSING**.

COTE-GARE, a kind of refuse wool, so clung or clotted together that it cannot be pulled asunder. By 13 Rich. II. stat. 1. c. 9. it is provided, that neither denizen or foreigner make any other refuse of wools but cote-gare and villein. So the printed statute has it; but in the parliament-roll of that year it is *cod-land* and *villein*. *Cot*, or *cote*, signifies as much as cottage in many places, and was so used by the Saxons according to Verstegan.

COTELERIUS (John Baptist), fellow of the Sorbonne, and king's Greek professor, was born at Nismes in Languedoc in 1627. He made a collection of the fathers who lived in the apostolic age, which he published at Paris in two volumes folio in 1672; all reviewed and corrected from several MSS. with a Latin translation and notes. He also published *Monumenta Ecclesie Græcæ*, in 3 vols; being a collection of Greek tracts out of the king's and M. Colbert's libraries, and which had never been published before: to these he added a Latin translation and notes. He intended a farther prosecution of this work; but his intense studies broke his constitution, and deprived him of life in 1686. Besides his great skill in languages and ecclesiastical antiquities, Cotelerius was remarkable for his probity and candour.

COTERELLUS. *Cotarius*, and *coterellus*, according to Spelman and Du Fresne, are servile tenants; but in Doomsday and other ancient MSS. there appears a distinction, as well in their tenure and quality as in their name: for the cotarius hath a free soccage tenure, and paid a stated firm or rent in provisions or money, with some occasional customary services; whereas the coterellus seems to have held in mere villenage, and his person, issue, and goods, were disposible at the pleasure of the lord.

COTERIE, a term adopted from the French trading associations or partnerships, where each person advances his quota of stock and receives his proportion of gain; and which retains its original meaning when applied to little assemblies or companies associated for mirth and good humour, where each one furnishes his quota of pleasantry. Here they coin new words not understood elsewhere, but which it becomes fashionable for others to use; and they are thought ridiculous who

* Blackst.
Comment.
iii. 399,
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Cota
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Coterie.

are ignorant of them. It has been used of late to signify a club of ladies.

COTES (Roger), an excellent mathematician of the 18th century. He early discovered an inclination to the mathematics; and at 17 years of age was admitted a pensioner of Trinity College, Cambridge. In 1706 he was appointed professor of astronomy in the professorship founded by Dr Plume archdeacon of Rochester, being chosen the first in that chair for his great merit and learning. In the year 1713, at the request of Dr Richard Bentley, he published at Cambridge, in 4to, a second edition of Sir Isaac Newton's *Principia*, with all the improvements which the author had annexed thereto; to which he prefixed an excellent Preface. He prepared several useful books for the public; and wrote A Description of the great Meteor which appeared on the 6th of March 1716, published in the Philosophical Transactions. He lived but a little while to carry on the discourses for which he was eminently qualified; dying in the prime of his age in 1716, to the great regret of all the lovers of the sciences.

COTESWOLD, several sheep-cotes, and sheep feeding on hills. It comes from the Saxon *cote*, i. e. *cafu*, "a cottage," and *wold*, "a place where there is no wood."

COTHURNUS, **BUSKIN**, a very high shoe or patten raised on soles of cork, worn by the ancient actors in tragedy to make them appear taller and more like the heroes they represented; most of whom were supposed to be giants. It covered the greatest part of the leg, and was tied beneath the knee. Æschylus is said to have invented the cothurnus. See **BUSKIN**.

COTICE, or **COTISE**, in heraldry, is the fourth part of the bend; which with us is seldom or ever borne but in couples, with a bend between them: whence probably the name; from the French *cote*, "side;" they being borne, as it were, a-side of the bend.—A bend thus bordered is said to be *cotised*, *cotice*. He bears sable on a bend cotised argent three cinquefoils.

COTILLON, the name of a well-known brisk dance, in which eight persons are employed. The term is French, and signifies an under-petticoat.

COTRONE, a town in the Hither Calabria, standing on the site of the ancient Croton, though not occupying the same extent of ground: (See **CROTON**). It is fortified with single walls, and a castle erected by Charles V. Its private buildings are poor and fordid, the streets dismal and narrow. Cheese and corn are the principle commodities. For the stowage of corn, there are ranges of granaries in the suburbs; and the annual export is about 200,000 tomoti. The cheese is tolerably good; but has a great deal of that hot acrid taste so common to all cheese made with goats milk. The wine is not unpleasent, and appears susceptible of improvement by better management in the making and keeping.

COTT, a particular sort of bed-frame, suspended from the beams of a ship for the officers to sleep in between the decks. This contrivance is much more convenient at sea than either the hammocks or fixed cabins; being a large piece of canvas sewed into the form of a chest, about six feet long, one foot deep, and from two to three feet wide. It is extended by a

square wooden frame with a canvas bottom, equal to its length and breadth, to retain it in an horizontal position.

COTTAGE, **COTTAGIUM**, is properly a little house for habitation without lands belonging to it; stat. 4. Edw. I. But by a later statute, 31 Eliz. c. 7. no man may build a cottage unless he lay four acres of land thereto; except it be in market-towns or cities, or within a mile of the sea, or for the habitation of labourers in mines, sailors, foresters, shepherds, &c. and cottages erected by order of justices of peace for poor impotent people are excepted out of the statute. The four acres of land to make it a cottage within the law are to be freehold, and land of inheritance; and four acres holden by copy, or for life or lives, or for any number of years, will not be sufficient to make a lawful cottage.

COTTON, in commerce, a soft downy substance found on the gossypium, or cotton-tree. See **GOSSEYPIUM**.

Cotton is separated from the seeds of the plant by a mill, and then spun and prepared for all sorts of fine works, as stockings, waistcoats, quilts, tapestry, curtains, &c. With it they likewise make muslin; and sometimes it is mixed with wool, sometimes with silk, and even with gold itself.

The finest sort comes from Bengal and the coast of Coromandel.

Cotton makes a very considerable article in commerce, and is distinguished into cotton-wool and cotton-thread. The first is brought mostly from Cyprus, St John d'Arce, and Smyrna: the most esteemed is white, long, and soft. Those who buy it in bales should see that it has not been wet, moisture being very prejudicial to it.

Of cotton-thread, that of Damas, called *cotton-d'ounce*, and that of Jerusalem, called *bazas*, are the most esteemed; as also that of the West India islands. It is to be chosen white, fine, very dry, and evenly spun. The other cotton-threads are the half bazas, the rames, the beledin, and gondezel; the payas and montafiri, the geneguins, the baquins, the josselassars, of which there are two sorts. Those of India, known by the name of Tutucorin, Java, Bengal, and Surat, are of four or five sorts, distinguished by the letters A, B, C, &c. They are sold in bags, with a deduction of one pound and a half on each of those of Tutucorin, which are the dearest, and two pounds on each bag of the other sorts. For those of Fielebas, Smyrna, Aleppo, and Jerusalem, the deduction at Amsterdam is eight in the hundred for the tare, and two in the hundred for weight, and on the value one per cent. for prompt payment.

Cotton of Siam, is a kind of silky cotton in the Antilles, so called because the grain was brought from Siam. It is of an extraordinary fineness, even surpassing silk in softness. They make hose of it there preferable to silk ones for their lustre and beauty. They sell from 10 to 12 and 15 crowns a pair, but there are very few made unless for curiosity.

The manner of packing **COTTON** as practised in the Antilles. The bags are made of coarse cloth, of which they take three ells and a half each; the breadth is one ell three inches. When the bag has been well soaked in water, they hang it up, extending the mouth

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Cotton.

of it to cross pieces of timber nailed to posts fixed in the ground seven or eight feet high. He who packs it goes into the bag, which is six feet nine inches deep, or thereabouts, and presses down the cotton, which another hands him, with hands and feet; observing to tread it equally every where, and putting in but little at a time. The best time of packing is in rainy moist weather, provided the cotton be under cover. The bag should contain from 300 to 320 pounds. The tare abated in the Antilles is three in the hundred. Cotton being a production applicable to a great variety of manufactures, it cannot be too much cultivated in our own plantations that will admit of it.

Cotton-Spinning, the art or process of reducing cotton-wool into yarn or thread.

The most simple method for this purpose, and the only one in use for a long time in this country, was by the hand upon the well-known domestic machine called a *one-thread wheel*. But as the demand for cotton-goods began to increase, other inventions were thought of for expediting this part of the manufacture. About 50 years ago, one Paul and others of London contrived an engine for a more easy and expeditious method of spinning cotton, and for which they obtained a patent; but the undertaking did not prove successful. Some years thereafter, various machines were constructed by different persons for facilitating the spinning of cotton; but without producing any very material or lasting advantage. At length, about the year 1767, Mr James Hargrave, a weaver in the neighbourhood of Blackburn in Lancashire, constructed a machine by which a great number of threads (from 20 to 80) might be spun at once, and for which he obtained his Majesty's letters-patent. This machine is called a *Jenny*, and is the best contrivance for spinning *wool* or *shute* that has hitherto appeared. It is now commonly constructed for 84 threads; and with it one person can spin 100 English hanks in the day, each hank containing 840 yards.

Carding of cotton, as a preparation for spinning, used formerly to be performed by the hand, with a single pair of cards, upon the knee: but this being a tedious method, ill suited to the rapid operations of the new spinning machines, other methods were contrived for affording a quicker and more adequate supply. The first improvement for this purpose was likewise made by Mr Hargrave; and consisted in applying two or three cards to the same board, and fixing them to a stool or stock; whence they obtained the name of *stock-cards*. With these, one woman could perform two or three times as much work as she could do before in the common way. A still more expeditious method of carding, however, by what are commonly called *cylinder-cards*, was soon afterwards invented, and is that which is now most commonly practised: but as several persons lay claim to this invention, it is not easy to determine to whom in particular the merit of it is due.

The next and most capital improvements which this branch of manufacture received were from Mr Arkwright, a native of Lancashire, now Sir Richard Arkwright of Cromford in Derbyshire. He first brought forward his new method of spinning cotton in 1768, for which he obtained a patent in 1769; he afterwards, in 1775, obtained a patent for engines which

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Cotton.

he had constructed to prepare the materials for spinning: though one of these patents, being challenged at law, was set aside some years before it expired. The result of Mr Arkwright's different inventions and improvements is a combination of machinery, by which cotton is *carded*, *roved*, and *spun*, with the utmost exactness and equality; and such a degree of perfection attained in spinning *warp*, as is not to be equalled in any other part of the world. To these improvements this country is entirely indebted for the great extent of its cotton manufactures; large buildings having been erected for that branch both in England and Scotland, many of which contain several thousands of spindles, each driven by one or more large water-wheels; and some of such extent as to spin at the rate of one thousand yards of twist or warp yarn in the minute.

Other machines have been invented at different times, and a variety of improvements made by different mechanics and manufacturers; one of which in particular we must not omit to mention. It is called a *Mule*, being a kind of mixture of machinery between the *warp*-machine of Mr Arkwright and the *wool*-machine or hand-jenny of Mr Hargrave; and was also invented in Lancashire. This machine bids fair to be of great use in spinning cotton yarn for muslins to a degree of fineness never before known in this country, being nearly equal in quality to those usually brought from India.

Cotton Mills, are large buildings with peculiar machinery for carding, roving, and spinning cotton: (see the preceding article.)—These were entirely unknown in this country before the different inventions and improvements of Messrs Arkwright and Hargrave; since which time great numbers have been erected in England, and several in Scotland.

The first erections of the kind were by Messrs Arkwright and Hargrave, both in the town of Nottingham, and both nearly at the same time. The engines were then driven by horses: but since that time they have been chiefly erected upon water-falls in different parts of the country; particularly the warp machines, which are better adapted for being driven by water than any other. The most extensive of these is in the village and neighbourhood of Cromford in Derbyshire, and under the immediate inspection of Sir Richard Arkwright. The first that was erected in Scotland was for Mr Peter Brotherston, under the inspection and direction of Mr John Hackett from Nottingham; and is in the neighbourhood of Pennycuik near Edinburgh. Since which time several have been erected in the neighbourhood of Glasgow, Paisley, Lanark, Perth, &c.

General State of the Cotton Manufactory. The facilities which the manufacturers of Great Britain had suddenly acquired, and the immense capitals which they have so recently laid out in expensive machinery and other heavy establishments for carrying on the cotton trade, are unparalleled in the annals of the world. Above one hundred and forty cotton-mills are now built in Great Britain, of which nearly two-thirds have been erected within these seven years. Besides these, there are above 20,500 hand-mills or jennies for spinning the shute for the twisted yarn spun by the water-mills.

Above a million of money was, within this time,

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Cotton. sunk in mills, hand engines, and other machines, including the grounds and necessary buildings.
 Expence of water-mills, - L. 715,000 0 0
 Ditto of hand-jennies, houses, buildings, and auxiliary machinery, supposed at least, - 285,000 0 0

Total, - L. 1,000,000 0 0

A power had been also created of working nearly two million of spindles; and men, women, and children were trained to this business, capable of carrying the cotton manufacture almost to any extent. In 1787, the power of spindles capable of being worked was estimated as follows:

In the water-mills, - - - 286,000
 In the jennies, - - - 1,665,100

Total spindles, 1,951,100

In the branches applicable to muslin and callico, it was calculated that employment was given to 100,000 men and women, and at least 60,000 children; many of the latter having been taken from different parishes and hospitals in Great Britain.

The quantity of the raw material of cotton wool consumed in this manufacture, which did not amount to 6,000,000 lb. in 1781, and was only about 11,000,000 lb. six years ago, had amounted in the year 1787 to the enormous height of 22,000,000 lb. and upwards; and the astonishing rapidity of this increase is in some measure to be attributed to the extension of these branches to the goods of India, particularly the calicoes and muslins.

British calicoes were first made in Lancashire about the year 1772, but the progress was slow till within these last 12 years. The quantity manufactured has since extended from about 50,000 to 1,000,000 of pieces made in the course of a single year.

British muslins were not successfully introduced until the year 1781, and were carried to no great extent until 1785, after which period the progress during two years became rapid beyond all example. The acquisition of cotton wool of a superior quality from Demerara and the Brazils, and the improvements made in the spinning fine yarns upon the mule jennies, had given a spring to this branch of the cotton manufacture, which extended it beyond what it was possible to have conceived. Above half a million pieces of muslin of different kinds, including shawls and handkerchiefs, were computed to be annually made in Great Britain; while the quantity not only increased daily with the new accession of powers that were bursting forth upon the country, but the quality was exceedingly improved; and since a yearly supply of about 300 bales of East Indian cotton has been obtained by the way of Ostend, yarns have been spun, and muslins have been wove, equal to any from India. Nothing, therefore, but a fine raw material appeared wanting to enable the British manufacturer to carry this branch to the greatest extent; and, of all others, it is that species of cotton goods which deserves most to be encouraged, because of the immense return it makes for labour more than any other branch of the cotton manufacture. East India cotton wool has been spun into one pound of yarn worth five guineas; and when wove into muslin, and afterwards ornamented by children in the tambour, has

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extended to the value of L. 15; yielding a return of 5,900 per cent. on the raw material.

But the state of the raw materials, and the progressive and astonishing increase of this manufacture, will be best explained by what follows:

	Cotton Wool used in the Manufacture.	Supposed Value when manufactured.
1781,	lb. 5,101,920	L. 2,000,000
1782,	11,206,810	3,900,000
1783,	9,546,179	3,200,000
1784,	11,280,238	3,950,000
1785,	17,992,888	6,000,000
1786,	19,151,867	6,500,000
1787,	22,600,000	7,500,000

Such was the progress of the British cotton manufacture till 1787; when, with establishments and mechanical powers capable of bringing forward immense quantities of goods into the consumption, this manufacture was checked by a great and sudden reduction of the prices of East India goods of the same species, which were sold above 20 per cent. on an average under the lowest prices at which the British manufacturer can afford to sell without loss.

This conduct in the East India Company quickly operated to the great prejudice of the British manufactures; and there is no saying how far these might be reduced, should that company be allowed to press goods upon the market at prices which have no relation to the original cost, and under circumstances where the just laws of competition cannot operate, and where every idea of protecting duties is annihilated in the effect of the general system.

It is believed, however, that the home-manufacture of this article, in all its different branches, has of late revived, and is likely to be carried on with greater advantage to the manufacturer than ever it was before.

Lavender COTTON. See SANTOLINA.

Philosophic COTTON, a name given to the flowers of zinc, on account of their white colour and resemblance to cotton.

Flax made to resemble COTTON. See FLAX.

Silk COTTON. See BOMBAX.

COTTON-Wood. See GNAPHALIUM.

COTTON (Sir Robert), a most eminent English antiquarian, descended from an ancient family, was born in 1570. In his 18th year he began to collect ancient records, charters, and other MSS. Camden, Selden, and Speed, acknowledged their obligations to him in their respective works. He was highly distinguished by queen Elizabeth, and by James I: who created him a baronet. He wrote many things himself; but our principal obligations to him are for his valuable library, consisting of curious manuscripts, &c. which he was forty years in collecting. At his death in 1631, he left the property of it to his family, though designed for public use. A large accession was made to this library by private benefactions before the death of the founder, and afterwards by the purchases of his heirs, and donations of others, who added to it a great number of books, chiefly relating to the history and antiquities of our own nation. An act of parliament was obtained, at the request of Sir John Cotton, in 1700, for preserving it after his decease, under the above denomination, for public use. It is now fixed in the British Museum. For statutes relating

Cotton to it, see 12 and 13 W. III. c. 5. and 5 Anne, cap. 30.

Cotton

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Cottus

COTTON (Charles), a burlesque poet, was descended of a good family, and lived in the reigns of Charles II. and James II. His most celebrated piece is *Scarronides*, or *Travestie* of the first and fourth books of the *Æneid*. But though, from the title, one would be apt to imagine it an imitation of Scarron's famous *Travestie* of the same author, yet, upon examination, it would be found greatly to excel not only that, but every other attempt of the same kind that hath been hitherto made in any language. He has also translated several of Lucian's dialogues, in the same manner, under the title of *the Scoffer Scoff'd*;—and written another poem of a more serious kind, entitled *the Wonders of the Peak*. The exact period of either Mr Cotton's birth or his death, is no-where recorded; but it is probable the latter happened about the time of the revolution. Neither is it better known what his circumstances were with respect to fortune; they appear, however, to have been easy, if one may judge from the turn of his writings, which is such as seems scarcely possible for any one to indulge whose mind was not perfectly at ease. Yet there is one anecdote told of him, which seems to show that his vein of humour could not restrain itself on any consideration, viz. that in consequence of a single couplet in his *Virgil Travestie*, wherein he has made mention of a peculiar kind of ruff worn by a grandmother of his who lived in the Peak, he lost an estate of L. 400 *per annum*; the old lady, whose humour and testy disposition he could by no means have been a stranger to, being never able to forgive the liberty he had taken with her; and having her fortune wholly at her disposal, although she had before made him her sole heir, altered her will, and gave it away to an absolute stranger.

COTTUS, or BULL-HEAD, in ichthyology, a genus belonging to the order of thoracici. The head is broader than the body, and the gill-membrane has six rays. There are six species; the most remarkable are,

1. The gobio, or river-bull head, is very common in all our clear brooks: it lies almost always at the bottom, either on the gravel or under a stone: it deposits its spawn in a hole which it forms among the gravel, and quits it with great reluctance. It feeds on water insects. This fish seldom exceeds the length of three inches and an half: the head is large, broad, flat, and thin at its circumference, being well adapted for insinuating itself under stones: on the middle part of the covers of the gills is a small crooked spine turning inwards. The eyes are very small: the irides yellow: the body grows slender towards the tail, and is very smooth. The colour of this fish is as disagreeable as its form, being dusky, mixed with a dirty yellow; the belly is whitish. The taste, however, is excellent.

2. The cataphractus, armed bull-head, or *poqge*, is very common on most of the British coasts. It seldom exceeds five inches and an half in length; and even seldom arrives at that size. The head is large, bony, and very rugged: the end of the nose is armed with four short upright spines: on the throat are a number of short white beards: the body is octogoeal, and co-

vered with a number of strong bony crusts, divided into several compartments, the ends of which project into a sharp point, and form several echinated lines along the back and sides from the head to the tail.

3. The scorpius, or father-lasher, is not uncommon on the rocky coasts of this island; it lurks under stones, and will take a bait. It seldom exceeds 8 or 9 inches in length. The head is large, and has a most formidable appearance, being armed with vast spines, which it can oppose to any enemy that attacks it, by swelling out its cheeks and gill-covers to a large size. The nose and space contiguous to the eyes are furnished with short sharp spines; the covers of the gills are terminated by exceeding long ones, which are both strong and very sharp pointed. The mouth is large; the jaws covered with very small teeth; and the roof of the mouth is furnished with a triangular spot of very minute teeth. This species is very frequent in the Newfoundland seas, where it is called *scolping*: it is also as common on the coast of Greenland, in deep water near the shore. It is a principal food of the natives, and the soup made of it is said to be agreeable as well as wholesome.

COTULA, MAY-WEED: A genus of the polygamia superflua order, belonging to the syngenesia class of plants. The receptacle is almost naked; the papus marginated; the florets of the disc quadrid; of the radius frequently none. There are six species, all of them herbaceous annuals, rising six or eight inches high, and adorned with yellow flowers. There are none of them natives of this country, and most of them require artificial heat.

COTULA, or *Cotyla*, a liquid measure in use among the ancients.

Fannius says, the cotyla was the same thing with the hemina, which was half a sextary.

*At cotylas, quas si placeat, disicisse licet
Heminas, recipit geminas sextarias unus.*

Chorier observes, that the cotyla was used as a dry measure as well as a liquid one; from the authority of Thucydides, who in one place mentions two cotylæ of wine, and in another two cotylæ of bread.

COTURNIX, in ornithology. See TETRAO.

COTYLEDON, NAVEL-WORT; a genus of the pentagynia order, belonging to the decandria class of plants; and in the natural method ranking under the 13th order, *Succulente*. The calyx is quinquefid; the corolla monopetalous; there are five nectariferous scales at the base of the germen, and five capsules. There are eight species, most of them hardy succulent perennials; though some require to be kept in a stove, as being natives of warm climates. They rise from half a foot to a yard and an half high, and are adorned with yellow flowers growing in umbels. They are easily propagated either by seed or cuttings of their branches.

COTYLEDONES, in anatomy, are certain glandular bodies, adhering to the chorion of some animals.

COTYLEDONES, in botany, the perishable porous side-lobes of the seed, which involve, and for some time furnish nourishment to, the embryo plant. See BOTANY, p. 435.

COTYTTO, the goddesses of all debauchery. Her festivals called *Cotyttia* were celebrated by the Athenians, Corinthians, Thracians, &c. during the night. Her priests were called *bapta*, and nothing but debauchery

Cotula

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Cotytra

chery and wantonness prevailed at the celebration. A festival of the same name was observed in Sicily, where the votaries of the goddesses carried about boughs hung with cakes and fruit, which it was lawful for any person to pluck off. It was a capital punishment to reveal whatever was seen or done at these sacred festivals. It cost Eupolis his life for an unseasonable reflection upon them. The goddesses Cotytto is supposed to be the same as Proserpine.

COUCH, in painting, denotes a lay, or impression of colour, whether in oil or water, wherewith the painter covers his canvas, wall, wainscot, or other matter to be painted.

The word is also used for a lay or impression on any thing, to make it firm and consistent, or to screen it from the weather.

Paintings are covered with a couch of varnish; a canvas to be painted must first have two couches of size, before the colours be laid; two or three couches of white lead are laid on wood, before the couch of gold be applied: the leather-gilders lay a couch of water and whites of eggs on the leather, before they apply the gold or silver leaf.

The gold wire-drawers also use the word *couch* for the gold or silver leaf wherewith they cover the mass to be gilded or silvered, before they draw it through the iron that is to give it its proper thickness.

The gilders use couch for the quantity of gold or silver leaves applied on the metals in gilding or silvering. Each couch of gold is but one leaf, or two at most, and each of silver three to gild: if the gilding be hatched, there are required from eight to twelve couches; and only three or four if it be without hatching. To silver there are required from four to ten couches, according to the beauty of the work.

Couch-Grass, in botany. See TRITICUM.

COUCHANT, in heraldry, is understood of a lion, or other beast, when lying down, but with his head raised; which distinguishes the posture of couchant from dormant, wherein he is supposed quite stretched out and asleep.

COUCHÉ, in heraldry, denotes any thing lying along: thus, chevron-couché, is a chevron lying sideways, with the two ends on each side of the shield, which should properly rest on the base.

COUCHER, or COURCHER, in our statutes, is used for a factor, or one that continues in some place or country for traffic; as formerly in Gascoign, for the buying of wines. Anno 37. Edw. III. c. 16.

COUCHER is also used for the general book in which any religious house or corporation register their particular acts. Anno 3 and 4 Edw. VI. c. 10.

COUCHING of a CATARACT, in surgery. See SURGERY-Index.

COVE, a small creek or bay, where boats and small vessels may ride at anchor, sheltered from the wind and sea.

COVENANT, in law, is the consent and agreement of two or more persons to do, or not to do, some act, or thing, contracted between them. Also it is the declaration the parties make, that they will stand to such agreement, relating to lands or other things; and is created by deed in writing, sealed and executed by the parties, or otherwise it may be implied in the contract as incident thereto. And if the persons do

not perform their covenants, a writ or action of covenant is the remedy to recover damages for the breach of them.

COVENANT, in ecclesiastical history, denotes a contract or convention agreed to by the Scotch in the year 1638, for maintaining their religion free from innovation. In 1581, the general assembly of Scotland drew up a confession of faith, or national covenant, condemning episcopal government, under the name of *hierarchy*, which was signed by James I. and which he enjoined on all his subjects. It was again subscribed in 1590 and 1596. The subscription was renewed in 1638, and the subscribers engaged by oath to maintain religion in the same state as it was in 1580, and to reject all innovations introduced since that time. This oath annexed to the confession of faith received the name of the *covenant*; as those who subscribed it were called *covenanters*.

COVENANT, in theology, is much used in connection with other terms; as, 1. *The Covenant of Grace* is that which is made between God and those who believe the gospel, whereby they declare their subjection to him, and he declares his acceptance of them and favour to them. The gospel is sometimes denominated a *covenant of grace*, in opposition to the Mosaic law. 2. *Covenant of Redemption* denotes, a mutual stipulation, tacit or express, between Christ and the Father, relating to the redemption of sinners by him, previous to any act on Christ's part under the character of Mediator. 3. *Covenant of Works* signifies, in the language of some divines, any covenant whereby God requires perfect obedience from his creatures, in such a manner as to make no express provision for the pardon of offences to be committed against the precepts of it, on the repentance of such supposed offenders, but pronounces a sentence of death upon them: such, they say, was the covenant made with Adam in a state of innocence, and that made with Israel at Mount Sinai.

Solemn League and COVENANT, was established in the year 1643, and formed a bond of union between Scotland and England. It was sworn and subscribed by many in both nations; who hereby solemnly abjured popery and prelacy, and combined together for their mutual defence. It was approved by the parliament and assembly at Westminster, and ratified by the general assembly of Scotland in 1645. King Charles II. disapproved of it when he surrendered himself to the Scots army in 1646; but in 1650 he declared his approbation both of this and the national covenant by a solemn oath; and in August of the same year, made a farther declaration at Dunfermline to the same purpose, which was also renewed on occasion of his coronation at Scone in 1651. The covenant was ratified by parliament in this year, and the subscription of it required by every member, without which the constitution of the parliament was declared null and void. It produced a series of distractions in the subsequent history of that country, and was voted illegal by parliament, and provision made against it. Stat. 14. Car. II. c. 4.

Ark of the COVENANT, in Jewish antiquity. See ARK.

COVENTRY, a town of Warwickshire, in England; situated in W. Long. 1. 26. N. Lat. 52. 25. It is an ancient place, and is supposed to derive its name

Coventry. from a convent formerly situated here. Leofric, earl of Mereia, who rebuilt the religious house after it had been destroyed by the Danes, and was lord of the place about the year 1040, is said, upon some provocation, to have loaded them with heavy taxes. Being importuned by his lady, Godiva, to remit them, he consented, upon condition that she should ride naked through the town, which he little imagined she would ever comply with. But he found himself mistaken: for she accepted the offer, and rode through the town with her long hair scattered all over her body; having first enjoined the citizens not to venture, on pain of death, to look out as she passed. It is said, however, that a certain taylor could not help peeping; and to this day there is an effigy of him at the window whence he looked. To commemorate this extraordinary transaction, and out of respect to the memory of their patroness, the citizens make a procession every year, with the figure of a naked woman on horseback. After Leofric's death, the earls of Chester became lords of the city, and granted it many privileges. At length it was annexed to the earldom of Cornwall; and growing considerable, had divers immunities and privileges conferred upon it by several kings; particularly that of a mayor and two bailiffs by Edward III.; and Henry VI. made it, in conjunction with some other towns and villages, a distinct county, independent of the county of Warwick. But afterwards Edward IV. for their disloyalty, deprived them of their liberties, which were not restored till they had paid a fine of 500 merks. By a charter from James I. an alderman is allotted to each ward, with the powers of the justices of the peace within the city and its liberties. The walls were ordered to be demolished at the restoration; and now nothing remains of them but the gates, which are very lofty. Coventry is noted for the two parliaments which were held in it; the one called the parliament of *Dunces*, and the other of *Devils*. The former was so called on account of the exclusion of the lawyers; and the attainders of the duke of York, the earls of Salisbury, Warwick, and March, procured the other the epithet of *Devils*. The town-house of Coventry is much admired for its painted windows representing several kings and others that have been benefactors to the city. The chief manufactures carried on here are tenmies and ribbands.

Coventry sends two members to parliament, and gives title of earl to an ancient family of the same name.— Coventry is a bishop's see. The bishoprick is said to have been founded by Oswy king of Mercia, in the year 656 or 657; and although it hath a double name, yet, like Bath and Wells, it is a single diocese. It was so extremely wealthy, that king Offa, by the favour of pope Adrian, constituted it an archiepiscopal see; but this title was laid aside on the death of that king. In 1075, Peter, the 34th bishop, removed the see to Chester. In 1102, Robert de Limesy, his immediate successor, removed it to Coventry; and Hugo Novant, the 41st bishop, removed it back to Litchfield, but with great opposition from the monks of Coventry. The dispute was finally settled in a manner nearly similar to that which is mentioned between Bath and Wells. Here it was agreed that the bishop should be styled from both places, and that Coventry should have the precedence; that they should choose the bi-

shop alternately; and that they should both make one chapter to the bishop, in which the prior of Coventry should be the chief man. Matters continued thus till the Reformation, when the priory of Coventry being dissolved by king Henry VIII. the style of the bishop continued as before. But an act of parliament passed, 33d of king Henry VIII. to make the dean and chapter of Litchfield one sole chapter to the bishop. This see hath given three faints to the church, and to the nation one lord chancellor, three lord treasurers, three presidents of Wales, one chancellor to the university of Cambridge, and one master of the Wardrobe. The old church built by king Oswy being taken down by Roger de Clinton, the 37th bishop, he built the beautiful fabric that now stands in 1148, and dedicated it to the Virgin Mary and St Chad. During the grand rebellion, the church suffered much; but, soon after the Restoration, it was repaired and beautified. This diocese contains the whole counties of Stafford and Derby (except two parishes of the former), the largest part of Warwickshire, and near only one half of Shropshire, in which are 555 parishes, of which 250 are impropriate. It hath four archdeacons, viz. Stafford, Derby, Coventry, and Shrewsbury. It is valued in the king's books at L. 559: 18: 2 $\frac{3}{4}$, and is computed to be worth annually L. 2800. The clergy's tenth is L. 590: 16: 11 $\frac{1}{4}$. To this cathedral belong a bishop, a dean, a precentor, a chancellor, a treasurer, four archdeacons, twenty-seven prebendaries, five priest vicars, seven lay clerks, or singing men, eight choristers, and other under officers and servants.

CO-VERSED SINE, in geometry, the remaining part of the diameter of a circle, after the versed sine is taken from it. See **GEOMETRY**.

COVERT, in law.—*Feme Covert* denotes a woman married, and so covered by, or under the protection of, her husband.

COVERT-way, or **CORRIDOR**, in fortification, a space of ground, level with the field on the edge of the ditch, three or four fathoms broad, ranging quite round the half moons and other works toward the country. It has a parapet raised on a level, together with its banquetts and glacis. See **FORTIFICATION**.

COVERTURE, in law, is applied to the state and condition of a married woman, who is under the power of her husband, and therefore called *femme covert*.

COUGH, in medicine. See (*Index* subjoined to) **MEDICINE**.

COUGH, in farristry. See **FARRISTRY**, § vi.

COUGH, called the huff, is a disease to which young bullocks are subject. In this disorder the wind-pipe and its branches are loaded with small taper worms. Farmers count the disease incurable; but fumigations with mercurials, as cinnabar, or with fetids, as tobacco, might prove serviceable.

COUHAGE, or **STINKING-BEANS**; a kind of kidney-beans imported from the East Indies, where they are used as a cure for the dropsy. The down growing on the outside of the pod is so pointed as, like a nettle, to sting the flesh, though not with so painful a sensation. This, by a corruption of the word, is called *cowitch*. The plant is a species of **DOLICHOS**.

COVIN, a deceitful compact or agreement between two or more to deceive or prejudice a third person:

Coving.
||
Council.

As, if a tenant for life conspire with another, that this other shall recover the land which the tenant holds, in prejudice of him in reversion. Dr Skinner takes the word to be a corruption of the Latin *conventum*, and therefore writes it *coven*. See CONSPIRACY.

COVING, in building, is when houses are built projecting over the ground-plot, and the turned projecture arched with timber, lathed and plastered.

COVINUS, among the ancients, a kind of chariot, in which the Gauls and Britons used to fight in battles.

COUL, or COWL. See COWL.

COULTER, in husbandry, an iron-instrument, fixed in the beam of a plough, and serving to cut the edge of each furrow. See AGRICULTURE.

COUNCIL, or COUNSEL, in a general sense, an assembly of divers considerable persons to concert measures relative to the state.

In Britain, the law, in order to assist the king in the discharge of his duties, the maintenance of his dignity, and the exertion of his prerogative, hath assigned him a diversity of councils to advise with.

1. The first of these is the high court of parliament. See PARLIAMENT.

2. The peers of the realm are by their birth hereditary counsellors of the crown; and may be called together by the king, to impart their advice in all matters of importance to the realm, either in time of parliament, or, which hath been their principal use, when there is no parliament in being. Accordingly, Bracton, speaking of the nobility of his time, says, they might properly be called "consules a consulendo; reges enim tales sibi associant ad consulendum." And in the law-books it is laid down, that the peers are created for two reasons: 1. *Ad consulendum*, 2. *Ad defendendum, regem*: for which reasons the law gives them certain great and high privileges; such as freedom from arrests, &c. even when no parliament is sitting; because the law intends, that they are always assisting the king with their counsel for the common-wealth, or keeping the realm in safety by their prowess and valour.

Instances of conventions of the peers, to advise the king, have been in former times very frequent; though now fallen into disuse, by reason of the more regular meetings of parliament. Sir Edward Coke gives us an extract of a record, 5 Henry IV. concerning an exchange of lands between the king and the earl of Northumberland, wherein the value of each was agreed to be settled, by advice of parliament (if any should be called before the feast of St Lucia), or otherwise by advice of the grand council of peers, which the king promises to assemble before the said feast, in case no parliament shall be called. Many other instances of this kind of meeting are to be found under our ancient kings: though the formal method of convoking them had been so long left off, that when king Charles I. in 1640, issued out writs under the great seal, to call a council of all the peers of England, to meet and attend his majesty at York, previous to the meeting of the long parliament, the earl of Clarendon mentions it as a new invention, not before heard of; that is, as he explains himself, so old, that it had not been practised in some hundreds of years. But though there had not for long before been an instance, nor has there been any since, of assembling them in so solemn a manner,

Blasph.
Comment.

yet in cases of emergency, our princes have at several times thought proper to call for, and consult as many of the nobility as could easily be brought together: as was particularly the case with king James II. after the landing of the prince of Orange; and with the prince of Orange himself, before he called the convention parliament which afterwards called him to the throne.

Besides this general meeting, it is usually looked upon to be the right of each particular peer of the realm, to demand an audience of the king, and to lay before him with decency and respect such matters as he shall judge of importance to the public weal. And therefore, in the reign of Edward II. it was made an article of impeachment in parliament against the two Hugh Spencers, father and son, for which they were banished the kingdom, "that they by their evil covin would not suffer the great men of the realm, the king's good counsellors, to speak with the king, or to come near him; but only in presence and hearing of said Hugh the father and Hugh the son, or one of them, and at their will, and according to such things as pleased them."

3. A third council belonging to the king, are, according to Sir Edward Coke, his judges of the courts of law, for law-matters. And this appears frequently in the English statutes, particularly 14 Edward III. c. 5. and in other books of law. So that when the king's council is mentioned generally, it must be defined, particularized, and understood, *secundum subjectam materiam*; "according to the subject matter:" and if the subject be of a legal nature, then by the king's council is understood his council for matters of law; namely, his judges. Therefore, when by statute 16 Richard II. c. 5. it was made a high offence to import into England any papal bulls, or other processes from Rome; and it was enacted, that the offenders should be attached by their bodies and brought before the king and his council to answer for such offence; here, by the expression of king's council, were understood the king's judges of his courts of justice, the subject-matter being legal: this being the general way of interpreting the word council.

4. But the principal council belonging to the king is his *privy council*, which is generally, by way of eminence, called *the council*. For an account of its constitution and powers, see the article *PRIVY-Council*.

Aulic Council. See AULIC.

Common Council, in the city of London, is a court wherein are made all bye-laws which bind the citizens. It consists, like the parliament, of two houses; an upper composed of the lord mayor and aldermen; and a lower, of a number of common-council men, chosen by the several wards, as representatives of the body of the citizens.

Council of War, an assembly of the principal officers of an army or fleet, occasionally called by the general or admiral to concert measures for their conduct with regard to sieges, retreats, engagements, &c.

Council, in church-history, an assembly of prelates and doctors, met for the regulating matters relating to the doctrine or discipline of the church.

National Council, is an assembly of prelates of a nation under their primate or patriarch.

Oecumenical or General Council, is an assembly which represents

Council.

Council,
Counsel.

represents the whole body of the universal church. The Romanists reckon eighteen of them; Bullinger, in his treatise de Conciliis, six; Dr Prideaux, seven; and bishop Beveridge has increased the number to eight, which, he says, are all the general councils which have ever been held since the time of the first Christian emperor. They are as follows: 1. The council of Nice, held in the reign of Constantine the Great, on account of the heresy of Arius. 2. The council of Constantinople, called under the reign and by the command of Theodosius the Great, for much the same end that the former council was summoned. 3. The council of Ephesus, convened by Theodosius the younger at the suit of Nestorius. 4. The council of Calcedon, held in the reign of Martianus, which approved of the Eutychian heresy. 5. The second council of Constantinople, assembled by the emperor Justinian, condemned the three chapters taken out of the book of Theodorus of Mopsuestia, having first decided that it was lawful to anathematize the dead. Some authors tell us, that they likewise condemned the several errors of Origen about the Trinity, the plurality of worlds, and pre-existence of souls. 6. The third council of Constantinople, held by the command of Constantius Pogonatus the emperor, in which they received the definitions of the five first general councils, and particularly that against Origen and Theodorus of Mopsuestia. 7. The second Nicene council. 8. The fourth council of Constantinople, assembled when Louis II. was emperor of the West. The regulations which they made are contained in twenty-seven canons, the heads of which are set down by M. du Pin, to whom the reader is referred.

COUNSEL, in a general sense, signifies advice or instruction how to behave in any difficult matter.

COUNSEL, or *Advocates*, in English courts of law, are of two species or degrees; BARRISTERS and SERJEANTS. See these articles; also ADVOCATE.

From both these degrees some are usually selected to be his majesty's counsel, learned in the law; the two principal of whom are called his *attorney-general*, and *solicitor general*. The first king's counsel, under the degree of serjeant, was Sir Francis Bacon, who was made so *honoris causa*, without either patent or fee: so that the first of the modern order (who are now the sworn servants of the crown, with a standing salary) seems to have been Sir Francis North, afterwards lord keeper of the Great Seal to king Charles II. These king's counsel answer, in some degree, to the advocates of the revenue, *advocati fisci*, among the Romans. For they must not be employed in any cause against the crown without special licence; in which restriction they agree with the advocates of the fisc: but, in the imperial law, the prohibition was carried still farther, and perhaps was more for the dignity of the sovereign; for, excepting some peculiar causes, the fiscal advocates were not permitted to be at all concerned in private suits between subject and subject. A custom has of late years prevailed of granting letters patent of precedence to such barristers as the crown thinks proper to honour with that mark of distinction: whereby they are intitled to such rank and pre-eminence as are assigned in their respective patents; sometimes next after the king's attorney-general, but usually next after his majesty's counsel next being. These, as well as the queen's attorney and solicitor-general, rank promiscu-

ously with the king's counsel; and, together with them, sit within the bar of their respective courts: but receive no salaries, and are not sworn; and therefore are at liberty to be retained in causes against the crown. And all other serjeants and barristers indiscriminately, (except in the court of common-pleas, where only serjeants are admitted), may take upon them the protection and defence of any *suitois*, whether plaintiff or defendant; who are therefore called their *clients*; like the dependents on the ancient Roman orators. These indeed practised *gratis*, for honour merely, or at most for the sake of gaining influence: and so likewise it is established with us, that a counsel can maintain no action for his fees; which are given, not as *locatio vel conductio*, but as *quiddam honorarium*; not as a salary or hire, but as a mere gratuity, which a counsellor cannot demand without doing wrong to his reputation; as is also laid down with regard to advocates in the civil law, whose *honorarium* was directed, by a decree of the senate, not to exceed in any case 10,000 sesterces, or about L. 80 of English money. And in order to encourage due freedom of speech in the lawful defence of their clients, and at the same time to check the unseemly licentiousness of prostitute and illiberal men (a few of whom may sometimes insinuate themselves even into the most honourable professions), it hath been holden that a counsel is not answerable for any matter by him spoken, relative to the cause in hand, and suggested in the client's instructions; altho' it should reflect upon the reputation of another, and even prove absolutely groundless; but if he mentions an untruth of his own invention, or even upon instructions, if it be impertinent to the cause in hand, he is then liable to an action from the party injured. And counsel guilty of deceit and collusion are punishable by the statute Westm. 1. 3 Edw. I. c. 28. with imprisonment for a year and a day, and perpetual silence in the courts: a punishment still sometimes inflicted for gross misdemeanours in practice.

COUNSELLOR, in general, a person who advises another: thus we say, a counsellor at law, a privy counsellor, &c.

COUNSELLOR at Law, a person retained by a client to plead his cause in a public court of judicature. See ADVOCATE, BARRISTER, COUNSEL, and SERJEANT.

Privy-COUNSELLOR. See PRIVY-COUNCIL.

COUNT, (COMES), a nobleman who possesses a domain erected into a county. See VISCOUNT.

English and Scottish counts we distinguish by the title of *earls*; foreign ones still retain their proper name. The dignity of a count is a medium between that of a duke and a baron—According to the modern use, most plenipotentiaries and ambassadors assume the title of counts, though they have no county; as the count d'Avaux, &c.

Anciently, all generals, counsellors, judges, and secretaries of cities under Charlemagne, were called *counts*; the distinguishing character of a duke and count being this, that the latter had but one town under him, but the former several.

A count has a right to bear on his arms a coronet, adorned with three precious stones, and surmounted with three large pearls, whereof those in the middle and extremities of the coronet advance above the rest.

Counsel
||
Count.

Blackst.
Comment.

Counts were originally lords of the court, or of the emperor's retinue, and had their name *comites*, *à comitendo*, or *à comendo*: hence those who were always in the palace, or at the emperor's side, were called *counts palatine*, or *comites à latere*. See PALATINE.

In the times of the commonwealth, *comites* among the Romans was a general name for all those who accompanied the prætorians and prætors into the provinces, there to serve the commonwealth; as the tribunes, præfects, scribes, &c.

Under the emperors, *comites* were the officers of the palace. The origin of what we now call *counts* seems owing to Augustus, who took several senators to be his *comites*, as Dion observes, *i. e.* to accompany him in his voyages and travels, and to assist him in the hearing of causes; which were thus judged with the same authority as in full senate. Gallienus seems to have abolished this council, by forbidding the senators being found in the armies: and none of his successors re-established it.

These counsellors of the emperor were really counts, *comites*, *i. e.* companions of the prince; and they sometimes took the title thereof, but always with the addition of the emperor's name whom they accompanied: so that it was rather a mark of their office than a title of dignity.—Constantine was the first who converted it into a dignity; and under him it was that the name was first given absolutely. The name once established, was in a little time indifferently conferred, not only on those who followed the court, and accompanied the emperor, but also on most kinds of officers; a long list whereof is given us by Du-Cange.

Eusebius tells us, that Constantine divided the counts into three classes: the first bore the title of *illustres*; the second that of *clarissimi*, and afterwards *speciales*; the third were called *perfectissimi*. Of the two first classes was the senate composed; those of the third had no place in the senate, but enjoyed several other of the privileges of senators.

There were counts who served on land, others at sea; some in a civil, some in a religious, and some in a legal capacity: as *comes ararii*, *comes sacrarum largitionum*, *comes sacri consistorii*, *comes curiæ*, *comes capellæ*, *comes archiatrorum*, *comes commerciorum*, *comes vestiarius*, *comes horreorum*, *comes opsoniorum* or *annonæ*, *comes domesticorum*, *comes equorum regionum* or *comes staluli*, *comes domorum*, *comes escubitorum*, *comes notariorum*, *comes legum* or *professor in jure*, *comes limitum* or *marcarum*, *comes portus Romæ*, *comes patrimonii*, &c.

The Franks, Germans, &c. passing into Gaul and Germany, did not abolish the form of the Roman government; and as the governors of cities and provinces were called *counts*, *comites*, and *dukes*, *duces*, they continued to be called so. They commanded in time of war; and in time of peace they administered justice. Thus, in the time of Charlemagne, counts were the ordinary judges and governors of the cities.

These counts of cities were beneath the dukes and counts who presided over provinces; the first being constituted in the particular cities under the jurisdiction of the latter. The counts of provinces were in nothing inferior to dukes, who themselves were only governors of provinces. Under the last of the second race of French kings, they got their dignity rendered hereditary, and even usurped the sovereignty when

Hugh Capet came to the crown: his authority was not sufficient to oppose their encroachments: and hence it is they date the privilege of wearing coronets in their arms; they assumed it then, as enjoying the rights of sovereigns in their particular districts or counties. But, by degrees, most of the counties became re-united to the crown.

The quality of count is now become very different from what it was anciently; being now no more than a title, which a king grants upon erecting a territory into a county, with a reserve of jurisdiction and sovereignty to himself. At first there was no clause in the patent of erection, intimating the reversion of the county to the crown in default of heirs male; but Charles IX. to prevent their being too numerous, ordained that duchies and counties, in default of heirs male, should return to the crown.

The point of precedence between counts and marquises has been formerly much controverted: the reason was, that there are counts who are peers of France, but no marquises: but the point is now given up, and marquises take place; though anciently, when counts were governors of provinces, they were on a level even with dukes.

William the Conqueror, as is observed by Camden, gave the dignity of counts in fee to his nobles; annexing it to this or that county or province, and allotting for their maintenance a certain proportion of money, arising from the prince's profits in the pleadings and forfeitures of the provinces. To this purpose he quotes an ancient record, thus: Hen. II. *Rex Angliæ his verbis comitem creavit; sciatis nos fecisse Hugonem Bigot comitem de Norf. &c. de tertio denarii de Norwich &c. Norfolk, sicut aliquis comes Angliæ, &c.*

The Germans call a count, *graaf*, or *graff*; which, according to a modern critic, properly signifies *judge*; and is derived from *grawio* or *grawio*, of *γράφω*, *I write*. They have several kinds of these counts or grafs; as landgraves, marchgraves, burg-graves, and palgrave, or counts palatine. These last are of two kinds; the former are of the number of princes, and have the investiture of a palatinate; the others have only the title of *count palatine* without the investiture of any palatinate. Some assert, that by publicly professing the imperial laws for twenty years, the person acquires the dignity of a count palatine; and there are instances of professors in law who have assumed the title accordingly: but there are others who question this right.

COUNT, in law, denotes the original declaration in a real action; as the declaration is in a personal one: the libellus of the civilians answers to both.—Yet, count and declaration are sometimes confounded, and used for each other; as, count in debt, count in appeal, &c.

COUNT-WHEEL, in the striking part of a clock, a wheel which moves round once in 12 or 24 hours. It is sometimes called the *locking-wheel*. See *CLOCK-Making*.

COUNTER, a term which enters into the composition of diverse words of our language, and generally implies opposition; but when applied to deeds, means an exact copy kept of the contrary party, and sometimes signed by both parties.

COUNTER-Changed, in heraldry, the intermixture, or opposition of any metal with a colour.

Counter
||
Counter-
poise.

COUNTER-Flory, in heraldry, is said of a tressure whose flower-de-luce are opposite to others. See HERALDRY.

COUNTER-Drawing, in painting, is the copying a design, or painting, by means of a fine linen-cloth, an oiled paper, or other transparent matter, where the strokes appearing through are followed with a pencil, with or without colour. Sometimes it is done on glass, and with frames or nets divided into squares with silk or with thread, and also by means of instruments invented for the purpose, as the parallelogram.

COUNTER-Ermine, in heraldry, is the contrary of ermine, being a black field with white spots.

COUNTERFEITS, in law, are persons that obtain any money or goods by counterfeit letters or false tokens, who being convicted before justices of assize or of the peace, &c. are to suffer such punishment as shall be thought fit to be inflicted under death, as imprisonments, pillory, &c.

COUNTER-FOIL, or **COUNTER-STOCK**, in the exchequer, that part of an ally which is kept by an officer of the court.

COUNTER-Guard, in fortification, is a work raised before the point of a bastion, consisting of two long faces parallel to the faces of the bastion, making a salient angle: they are sometimes of other shapes, or otherwise situated.

COUNTER-Light, or *Counter-jour*, a light opposite to any thing, which makes it appear to disadvantage. A single counter-light is sufficient to take away all the beauty of a fine painting.

COUNTER-March, in military affairs, a change of the face or wings of a battalion, by which means those that were in the front come to be in the rear. It also signifies returning, or marching back again.

COUNTER-Mine, in war, a well and gallery drove and sunk till it meet the enemy's mine to prevent its effect.

COUNTER-Paled, in heraldry, is when the escutcheon is divided into twelve pales parted per fesse, the two colours being counter-changed; so that the upper are of one colour and the lower of another.

COUNTER-Part, in music, denotes one part to be applied to another. Thus the bass is said to be a counter-part to the treble.

COUNTER-Passant, in heraldry, is when two lions are in a coat of arms, and the one seems to go quite the contrary way from the other.

COUNTER-Point, in music: a term derived from the Latin preposition *contra* and the verb *pungere*; because the musical characters by which the notes in each part are signified are placed in such a manner each with respect to each as to show how the parts answer one another. See COMPOSITION.

COUNTER-Pointed (*Contre-pointé*), in heraldry, is when two chevrons in one escutcheon meet in the points, the one rising as usual from the base, and the other inverted falling from the chief; so that they are counter to one another in the points. They may also be counter-pointed when they are founded upon the sides of the shield, and the points meet that way, called *counter-pointed in fesse*.

COUNTERPOISE, in the manege, is the liberty of the action and seat of a horse-man; so that in all the motions made by the horse, he does not incline his

body more to one side than to the other; but continues in the middle of the saddle, being equally on his stirrups, in order to give the horse the proper and seasonable aids.

COUNTER-POTENT (*Contre-potencé*), in heraldry, is reckoned a fur as well as vair and ermine; but composed of such pieces as represent the tops of crutches, called in French *potences*, and in old English *potents*.

COUNTER-Proof, in rolling-press printing, a print taken off from another fresh printed; which by being passed through the press, gives the figure of the former, but inverted. To counter-prove, is also to pass a design in black lead, or red chalk, through the press, after having moistened with a sponge both that and the paper on which the counter-proof is to be taken.

COUNTER-Quartered (*contre-ecartelé*), in heraldry, denotes the escutcheon, after being quartered, to have each quarter again divided into two.

COUNTER-Saliant, is when two beasts are borne in a coat leaping from each other directly the contrary way.

COUNTER-Scarp, in fortification, is properly the exterior talus or slope of the ditch; but it is often taken for the covered way and the glacis. In this sense we say, the enemy have lodged themselves on the counter-scarp. Angle of the counter-scarp, is that made by two sides of the counter-scarp meeting before the middle of the curtain.

COUNTER-Signing, the signing the writing of a superior in quality of secretary. Thus charters are signed by the king, and counter-signed by a secretary of state, or lord chancellor.

COUNTER-Time, in the manege, is the defence or resistance of a horse that interrupts his cadence, and the measure of his manege, occasioned either by a bad horseman or by the malice of the horse.

COUNTER, is also the name of a counting-board in a shop, and of a piece of metal with a stamp on it, used in playing at cards.

COUNTER of a Horse, that part of a horse's forehead which lies between the shoulders and under the neck,

COUNTERS in a Ship, are two. 1. The hollow arching from the gallery to the lower part of the straight piece of the stern, is called the *upper-counter*. 2. The lower counter is between the transom and the lower part of the gallery.

COUNTER, is also the name of two prisons in the city of London, viz. the Poultry and Woodstreet.

COUNTORS, **CONTOURS**, or **COUNTERS**, has been used for serjeants at law, retained to defend a cause, or to speak for their client in any court of law.

It is of these Chaucer speaks:

—A sheriff had he been, and a contour,
Was no where such a worthy vavasour.

They were anciently called *serjeant contours*.

COUNTRIES, among the miners, a term or appellation they give to their works under ground.

COUNTRY, among geographers, is used indifferently to denote either a kingdom, province, or lesser district. But its most frequent use is in contradistinction to town.

COUNTRY-Dance is of English origin, though now transplanted into almost all the countries and courts of

County. Europe. There is no established rule for the composition of tunes to this dance, because there is in music no kind of time whatever which may not be measured by the motions common in dancing; and there are few song tunes of any note within the last century, that have not been applied to country-dances.

COUNTY, in geography, originally signified the territory of a count or earl, but now it is used in the same sense with shire; the one word coming from the French, the other from the Saxon.—In this view, a county is a circuit or portion of the realm; into fifty-two of which, the whole land, England and Wales, is divided for its better government and the more easy administration of justice.

For the execution of the laws in the several counties, excepting Cumberland, Westmoreland, and Durham, every Michaelmas term officers are appointed, under the denomination of *sheriffs*. Other officers of the several counties are, a lord lieutenant, who has the command of the militia of the county; custodes rotulorum, justices of peace, bailiffs, high-constable, and coroner.

Of the fifty-two counties, there are three of special note, which are therefore termed *counties palatine*, as Lancaster, Chester, and Durham. See **PALATINE**.

COUNTY-Corporate, is a title given to several cities, or ancient boroughs, on which our monarchs have thought fit to bestow extraordinary privileges; annexing to them a particular territory, land, or jurisdiction; and making them counties of themselves, to be governed by their own sheriffs and magistrates.

COUNTY-Court, in English law, a court incident to the jurisdiction of the sheriff. It is not a court of record, but may hold pleas of debt or damages under the value of 40s. Over some of which causes these inferior courts have, by the express words of the statute of Gloucester, a jurisdiction totally exclusive of the king's superior courts. For in order to be intitled to sue an action of trespass for goods before the king's justiciars, the plaintiff is directed to make affidavit that the cause of action does really and *bone fide* amount to 40s. which affidavit is now unaccountably disused, except in the court of exchequer. The statute also 43 Eliz. c. 6. which gives the judges in many personal actions, where the jury assess less damages than 40s. a power to certify the same and abridge the plaintiff of his full costs, was also meant to prevent vexation by litigious plaintiffs; who, for purposes of mere oppression, might be inclinable to institute such suits in the superior courts for injuries of a trifling value. The county-court may also hold plea of many real actions, and of all personal actions to any amount, by virtue of a special writ called *justicies*; which is a writ empowering the sheriff for the sake of dispatch to do the same justice in his county-court, as might otherwise be had at Westminster. The freeholders of the county are the real judges in this court, and the sheriff is the ministerial officer. The great conflux of freeholders, which are supposed always to attend at the county-court (which Spelman calls *forum plebeie justitie et theatrum comitivae potestatis*), is the reason why all acts of parliament at the end of every session were wont to be there published by the sheriff; why all outlawries of absconding offenders are there proclaimed; and why all popular elections which the

freeholders are to make, as formerly of sheriffs and conservators of the peace, and still of coroners, verderors, and knights of the shire, must ever be made *in pleno comitatu*, or in full county-court. By the statute 2. Edw. VI. c. 25. no county-court shall be adjourned longer than for one month, consisting of 28 days. And this was also the ancient usage, as appears from the laws of king Edward the elder: *prepositus* (that is, the sheriff) *ad quartam circiter septimanam frequentem populi concionem celebrato; cuique jus dicitur; litesque singulas dirimito*. In those times the county-court was a court of great dignity and splendour, the bishop and the ealdorman (or earl), with the principal men of the shire, sitting therein to administer justice both in lay and ecclesiastical causes. But its dignity was much impaired, when the bishop was prohibited, and the earl neglected to attend it. And, in modern times, as proceedings are removeable from hence into the king's superior courts, by writ of *pone* or *recordare*, in the same manner as from hundred-courts and courts-baron; and as the same writ of false judgment may be had, in nature of a writ of error, this has occasioned the same difuse of bringing actions therein.

COUPAR, the name of a town in Scotland, capital of the county of Fife, situated about 10 miles west of St Andrew's: W. Long. 2. 40. N. Lat. 56. 20.—*Coupar* is also the name of a village in the shire of Angus, inhabited chiefly by weavers in the linen trade.

COUPED, in heraldry, is used to express the head, or any limb, of an animal, cut off from the trunk, smooth; distinguishing it from that which is called *erased*, that is, forcibly torn off, and therefore is ragged and uneven.

COUPED, is also used to signify such crosses, bars, bends, chevrons, &c. as do not touch the sides of the escutcheon, but are, as it were, cut off from them.

COUPEE, a motion in dancing, wherein one leg is a little bent, and suspended from the ground; and with the other a motion is made forwards.

The word in the original French signifies a *cut*.

COUPLE-CROSS, in heraldry, the fourth part of a chevron, never borne but in pairs, except there be a chevron between them, saith Guillim, though Bloom gives an instance to the contrary.

COUPLET, a division of a hymn, ode, song, &c. wherein an equal number, or equal measure, of verses, is found in each part; which divisions, in odes, are called *strophes*.—Couplet, by an abuse of the word, is frequently made to signify a couple of verses.

COURAGE, in ethics, is that quality of the mind, derived either from constitution or principle, or both, that enables men to encounter difficulties and dangers. See **FORTITUDE**.

COURANT, a French term synonymous with *current*, and properly signifies running. See **CURRENT**.

COURANT, is also a term in music and dancing; being used to express both the tune or air and the dance. With regard to the first, *courant*, or *current*, is a piece of music in triple time: the air of the courant is ordinarily noted in triples of minims; the parts to be repeated twice. It begins and ends when he who beats the measure falls his hand; in contradistinction from the faraband, which ordinarily ends when the hand is raised. With regard to dancing, the courant was long the most common of all the dances practised

Coupar
||
Courant.

Courap,
Courayer.

in England: it consists, essentially, of a time, a step, a balance, and a coupee; though it also admits of other motions. Formerly they leaped their steps; in which point, the courant differed from the low dance and pavades. There are simple courants and figured courants, all danced by two persons.

COURAP, the modern name for a distemper very common in Java and other parts of the East-Indies. It is a sort of herpes or itch on the arm-pits, groins, breast, and face: the itching is almost perpetual; and the scratching is followed by great pain and a discharge of matter, which makes the linen stick so to the skin as not easily to be separated without tearing off the crust. *Courap* is a general name for any sort of itch; but this distemper is thus called by way of eminence. It is so contagious that few escape it. For the cure, gentle and repeated purging is used, and externally the sublimite in a small quantity is a good topic.

COURAYER (PETER FRANCIS), a Roman Catholic clergyman, distinguished by great moderation, charity, and temper, concerning religious affairs, as well as by learning, was born at Vernon in Normandy, 1681. While canon regular and librarian of the abbey of St Genevieve at Paris, he applied to our archbishop Wake for the resolution of some doubts, concerning the episcopal succession in England, and the validity of our ordinations: he was encouraged to this by the friendly correspondence which had passed between the archbishop and M. du Pin of the Sorbonne. The archbishop sent him exact copies of the proper records; and on these he built his "Defence of English Ordinations," which was published in Holland, 1727. This exposing him to a prosecution in his own country, he took refuge in England; where he was well received, and presented the same year by the university of Oxford with a doctor's degree. As it is somewhat uncommon for a Roman Catholic clergyman to be admitted to degrees in divinity by Protestant universities, the curious may be gratified with a sight of the diploma, and the doctor's letter of thanks, in "The present State of the Republic of Letters, for June 1728. In 1736, he translated into French, and published, "Father Paul's History of the Council of Trent," in 2 vols. folio, and dedicated it to queen Caroline; who augmented to 200l. a pension of 100l. a year, which he had obtained before from the court. The learned Jer. Markland, in a letter to his friend Bowyer, September 1746, says, "Mr Clarke has given me F. Courayer's translation of the History of the Council of Trent; with whose preface I am so greatly pleased, that if he be no more a Papist in other tenets than he is in those he mentions (which are many, and of the most distinguished class), I dare say there are very few considerate Protestants who are not as good Catholics as he is." His works are many, and all in French: he translated Sleidan's "History of the Reformation." He died in 1776, after two days illness, at the age of 95; and was buried in the cloister of Westminster-abbey. In his will, dated Feb. 3d 1774, he declares, that he "dies a member of the Catholic church, but without approving of many of the opinions and superstitions which have been introduced into the Romish church, and taught in their schools and seminaries; and which they have insisted on as articles

of faith, though to him they appear to be not only not founded in truth, but also to be highly improbable." And his practice was conformable to this declaration; for at London he constantly went to mass, and at Ealing in the country, whither he often retired, as constantly attended the service of the parish church; declaring at all times, that he "had great satisfaction in the prayers of the church of England."

COURBARIL. See HYMENEAE.

COURIER, or CURRIER, (from the French *courir*, "to run,") a messenger sent post, or express, to carry dispatches.

Antiquity, too, had its couriers. We meet with two kinds: 1. Those who ran on foot, called by the Greeks *hemerodromi*, q. d. "couriers of a day." Pliny, Corn. Nepos, and Cæsar, mention some of these who would run 20, 30, 36, and in the circus even 40 leagues per day. 2. Riding couriers (*cursores equestrantes*), who changed horses, as the modern couriers do.

Xenophon attributes the first couriers to Cyrus. Herodotus says, they were very ordinary among the Persians, and that there was nothing in the world more swift than these kind of messengers. "That prince (says Xenophon) examined how far a horse would go in a day; and built stables, at such distances from each other, where he lodged horses, and persons to take care of them; and at each place kept a person always ready to take the packet, mount a fresh horse, and forward it to the next stage: and thus quite through his empire."

But it does not appear that either the Greeks or Romans had any regular fixed couriers till the time of Augustus: under that prince they travelled in cars; though it appears from Socrates they afterwards went on horseback. Under the western empire, they were called *viatores*; and under that of Constantinople, *cursores*: whence the modern name. See POST.

COURLAND, a duchy situated between E. Long. 21. 26. and between N. Lat. 56. 30. and 57. 30. It is bounded by the river Dwina, which divides it from Livonia, on the north; by Lithuania, on the east; by Samogitia, on the south; and by the Baltic sea on the west; being 130 miles long and 30 broad. This duchy was formerly independent, and elected their own duke; but is now subject to Russia.

COURSE (*route*), in navigation, the angle contained between the nearest meridian and that point of the compass upon which a ship sails in any particular direction.

COURSE, in architecture, denotes a continued range of stones, level, or of the same height, throughout the whole length of the building; and not interrupted by any aperture. It forms a parapet to the intermediate space between the body of the building and the wings.

Course of Plinths, is the continuity of a plinth of stone or plaster in the face of a building; to mark the separation of the stories.

COURSE is also used for the time ordinarily spent in learning the principles of a science, or the usual points and questions therein. Thus, a student is said to have finished his course in the humanity, in philosophy, &c.

Courbaril
||
Course.

COURSE is alſo uſed for the elements of an art exhibited and explained, either in writing or by actual experiment. Hence our courſes of philoſophy, anatomy, chemiſtry, mathematics, &c. probably ſo called as going throughout or running the whole length or courſe of the art, &c.

COURSES, a name by which the principal fails of a ſhip are diſtinguiſhed, viz. the main-fail, the fore-fail, and the mizen: the mizen-ſtay-fail and fore-fail are alſo ſometimes comprehended in this denomination; as are the main-ſtay-fails of all brigs and ſchooners. See SAIL.

COURSING, among ſportsmen. There are three ſeveral ſorts of courſes with gre-hounds: 1. At the hare; 2. At the fox; and, 3. At the deer.

For the *deer*, there are two ſorts of courſes; the one in the paddock, the other either in the foreſt or the purlieu. For the paddock courſe, there muſt be the gre-hound and the terrier, and the mongrel gre-hound, whoſe buſineſs it is to drive away the deer before the gre-hounds are ſlipped; a brace or a leaſh are the uſual number ſlipped at a time, ſeldom at the utmoſt more than two brace. In courſing the deer in the foreſt or purlieu, there are two ways in uſe: the one is courſing from wood to wood; and the other, upon the lawns cloſe by the keeper's lodge. In the courſing from wood to wood, the way is to throw in ſome young hounds into the wood to bring out the deer; and if any deer come out that is not weighty, or a deer or anſler which is buck, ſore, or ſorel, then you are not to ſlip your gre-hounds, which are held at the end of the wood, where the keepers, who can gueſs very well on theſe occaſions, expect that the deer will come out. If a proper deer come out, and it is ſuſpected that the brace or leaſh of gre-hounds ſlipped after him will not be able to kill him, it is proper to waylay him with a couple of freſh gre-hounds.

The courſing upon the lawn is the moſt agreeable of all other ways. When the keeper has notice of this, he will lodge a deer for the courſe; and then, by coming under the wind, the gre-hound may be brought near enough to be ſlipped for a fair courſe.

The beſt method of courſing the *hare*, is to go out and find a hare ſitting; which is eaſily done in the ſummer, by walking acroſs the lands, either ſtubble, fallow, or corn grounds, and caſting the eye up and down: for in ſummer they frequent thoſe places for fear of the ticks, which are common in the woods at that ſeaſon; and in autumn the rains falling from the trees offend them. The reſt of the year there is more trouble required; as the buſhes and thickets muſt be beat to rouse them, and oftentimes they will lie ſo cloſe, that they will not ſtir till the pole almoſt touches them: the ſportsmen are always pleaſed with this, as it promiſes a good courſe. If a hare lies near any cloſe or covert, and with her head that way, it is always to be expected that ſhe will take to that immediately on being put up; all the company are therefore to ride up and put themſelves between her and the covert before ſhe is put up, that ſhe may take the other way, and run upon open ground. When a hare is put up, it is always proper to give her ground, or *law*, as it is called; that is, to let her run 12 ſcore yards, or thereabouts, before the gre-hounds are ſlip-

ped at her; otherwiſe ſhe is killed too ſoon, the greater part of the ſport is thrown away, and the pleaſure of obſerving the ſeveral turnings and windings that the creature will make to get away is all loſt. A good ſportsman had rather ſee a hare ſave herſelf after a fair courſe, than ſee her murdered by the gre-hounds as ſoon as ſhe is up.

In courſing the *fox*, no other art is required, than ſtanding cloſe, and in a clear wind, on the outside of ſome grove where it is expected he will come out; and when he is come out, he muſt have head enough allowed him, otherwiſe he will return back to the covert. The ſloweſt gre-hound will be able to overtake him, after all the odds of diſtance neceſſary; and the only danger is the ſpoiling the dog by the fox, which too frequently happens. For this reaſon, no gre-hound of any value ſhould be run at this courſe; but the ſtrong, hard, bitter dogs, that will ſeize any thing.

The laws of courſing eſtabliſhed by the duke of Norfolk, and other ſportsmen of the kingdom of England, are theſe:

1. He that is choſen fewerer^e or letter-looſe of the dogs, ſhall receive the gre-hounds matched to run together into his leaſh as ſoon as he comes into the field; he is to march next to the hare-finder, or him who is to ſtart the hare, until he come to the form; and no horſeman or footman is to go before or ſide-ways, but all ſtraight behind, for the ſpace of about 40 yards.
2. A hare ought never to be courſed with more than a brace of gre-hounds.
3. The hare-finder is to give the hare three ſohoes before he puts her up from her form or feat, to the end that the dogs may be prepared and attend her ſtarting.
4. If there be not a particular danger of loſing the hare, ſhe ſhould have about twelve ſcore yards law.
5. The dog that gives the firſt turn, if after that there be neither cote, ſlip, nor wrench, wins the wager.
6. A go-by, or bearing the hare, is accounted equivalent to two turns.
7. If neither dog turns the hare, he that leads to the laſt covert wins.
8. If any dog turns the hare, ſerves himſelf, and turns her again, it is as much as a cote, and a cote is eſteemed as much as two turns.
9. If all the courſe be equal, he that bears the hare ſhall win; and if he be not borne, the courſe ſhall then be judged *dead*.
10. If a dog take a fall in his courſe, and yet perform his part, he may challenge the advantage of a turn more than he gave.
11. If a dog turn the hare, ſerve himſelf, and give divers cotes, and yet in the end ſhall ſtand ſtill in the field, the other dog, if he turns home to the covert, although he gives no other, ſhall be adjudged to win the wager.
12. If by miſfortune a dog be rid over in the courſe, that courſe ſhall be adjudged void, and he that did the miſchief is to make reparation to the owner.
13. If a dog gives the firſt and laſt turn, and there be no other advantage betwixt them, he that gives the odd turn wins.
14. A cote is when a gre-hound goes end ways by the ſide of his fellow, and gives the hare a turn.
15. A cote ſerves for two turns, and two trippings or jerkings for a cote; and if the hair turns not quite about, ſhe only *wrencheth*, in the ſportsman's phraſe.
16. If there be no cotes given by either of the gre-hounds, but one ſerves the other at turning, then he that gives the moſt turns wins the wager.
- 17.

Court.

Sometimes a hare does not turn, but wrenches; for she does not turn except she turns as it were round. In these cases, two wrenches stand for one turn. 18. He that comes in first at the death of the hare takes her up, and saves her from breaking; he cherishes the dogs, and cleanses their mouths from the wool; he is adjudged to have the hare for his pains. 19. Finally, those who are judges of the leash, must give their judgment before they depart out of the field, or else it is not to stand as valid.

COURT, an appendage to a house or habitation; consisting of a piece of ground inclosed with walls, but open upwards.

COURT is also used for the palace or place where a king or sovereign prince resides.

COURT, in a law sense, is defined to be a place wherein justice is judicially administered. And as, by our excellent constitution, the sole executive power of the laws is vested in the person of the king, it will follow that all courts of justice, which are the medium by which he administers the laws, are derived from the power of the crown. For whether created by act of parliament or letters patent, or subsisting by prescription (the only methods by which any court of judicature can exist), the king's consent in the two former is expressly, and in the latter impliedly, given. In all these courts, the king is supposed in contemplation of law to be always present; but as that is in fact impossible, he is there represented by his judges, whose power is only an emanation of the royal prerogative.

For the more speedy, universal, and impartial administration of justice between subject and subject, the law hath appointed a prodigious variety of courts, some with a more limited, others with a more extensive jurisdiction; some constituted to inquire only, others to hear and determine; some to determine in the first instance, others upon appeal and by way of review. See LAW, n^o xcvi. xcix. c. cxli. clvi. clviii. clviii. and the respective articles in the order of the alphabet. One distinction may be here mentioned, that runs throughout them all; viz. that some of them are courts of record, others not of record. A court of record is that where the acts and judicial proceedings are enrolled in parchment for a perpetual memorial and testimony: which rolls are called the records of the court, and are of such high and supereminent authority, that their truth is not to be called in question. For it is a settled rule and maxim, that nothing shall be averred against a record, nor shall any plea, or even proof, be admitted to the contrary. And if the existence of a record be denied, it shall be tried by nothing but itself; that is, upon bare inspection whether there be any such record or no; else there would be no end of disputes. But if there appear any mistake of the clerk in making up such record, the court will direct him to amend it. All courts of record are the king's courts, in right of his crown and royal dignity, and therefore no other court hath authority to fine or imprison; so that the very erection of a new jurisdiction with power of fine or imprisonment, makes it instantly a court of record.—A court not of record is the court of a private man; whom the law will not intrust with any discretionary power over the fortune or liberty of his fellow-subjects. Such are the courts-

baron incident to every manor, and other inferior jurisdictions: where the proceedings are not enrolled or recorded; but as well their existence as the truth of the matters therein contained shall, if disputed, be tried and determined by a jury. These courts can hold no plea of matters cognizable by the common law, unless under the value of 40s.; nor of any forcible injury whatsoever, nor having any process to arrest the person of the defendant.

In every court there must be at least three constituent parts, the *actor*, *reus*, and *judex*: the *actor*, or plaintiff, who complains of an injury done; the *reus*, or defendant, who is called upon to make satisfaction for it; and the *judex*, or judicial power, which is to examine the truth of the fact, to determine the law arising upon that fact, and, if any injury appears to have been done, to ascertain and by its officers to apply the remedy. It is also usual in the superior courts to have attorneys, and advocates or counsel, as assistants. See ATTORNEY and COUNSEL.

COURT-BARON, in English law, a court incident to every manor in the kingdom, to be holden by the steward within the said manor. This court-baron is of two natures: the one is a customary court, appertaining entirely to the copyholders, in which their estates are transferred by surrender and admittance, and other matters transacted relative to their tenures only. The other is a court of common law, and it is the court of the *barons*, by which name the freeholders were sometimes anciently called: for that it is held before the freeholders who owe suit and service to the manor, the steward being rather the registrar than the judge. These courts, though in their nature distinct, are equally confounded together. The court we are now considering, viz. the freeholder's court, was composed of the lord's tenants, who were the *pares* of each other, and were bound by their feudal tenure to assist their lord in the dispensation of domestic justice. This was formerly held every three weeks; and its most important business is to determine, by writ of right, all controversies relating to the right of lands within the manor. It may also hold plea of any personal actions, of debt, trespass on the case, or the like, where the debt or damages do not amount to 40s. Which is the same sum, or three marks, that bounded the jurisdiction of the ancient Gothic courts in their lowest instance, or *stierding courts*, so called because four were instituted within every superior district or hundred. But the proceedings on a writ of right may be removed into the county-court by a precept from the sheriff called a *tolt*, *quia tollit atque eximit causam e curia baronum*. And the proceedings in all other actions may be removed into the superior courts by the king's writs of *pone*, or *accedas ad curiam*, according to the nature of the suit. After judgment given, a writ also of *false judgment* lies to the courts at Westminster to rehear and review the cause, and not a writ of *error*; for this is not a court of record: and therefore, in some of these writs of removal, the first direction given is to cause the plea to be recorded, *recordari facias loquelam*.

COURT-MARTIAL, a court appointed for the punishing offences in officers, soldiers, and sailors, the powers of which are regulated by the mutiny-bill.

For other courts, see ADMIRALTY, ARCHES, BENCH, COUNTY,

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COUNTY, COMMON-*Pleas*, CHANCERY, ECCLESIASTICAL, DUCHY, FACULTY, REQUESTS, HUSTINGS, CHIVALRY, FOREST, STANNARY, STAR-*Chamber*, PREROGATIVE, UNIVERSITY, LEGATE, LEET, MAYOR, PIEPOUDRE, &c.

COURTESY, or CURTESY, of *England*; a certain tenure whereby a man marrying an heiress seized of lands of fee simple, or fee-tail general, or seized as heir of the tail special, and getteth a child by her that cometh alive into the world, though both it and his wife die forthwith; yet, if she were in possession, he shall keep the land during his life, and is called *tenant per legem Angliæ*, "or tenant by the courtesy of England;" because this privilege is not allowed in any country except Scotland, where it is called *curialitas Scotia*.

COURTESAN, a woman who prostitutes herself for hire, especially to people of superior rank. Lais, the famous Theban courtesan, stands on record for requiring no less than 10,000 crowns for a single night. Of all places in the world, Venice is that where courtesans abound the most. It is now 300 years since the senate, which had expelled them, was obliged to recall them; in order to provide for the security of women of honour, and to keep the nobles employed lest they should turn their heads to make innovations in the state.

COURTRAY, a town of the Austrian Netherlands, situated on the river Lys, about 23 miles south-west of Ghent, and 14 east of Ypres. E. Long. 3. 10. N. Lat. 50. 48.

COUSIN, a term of relation between the children of brothers and sisters, who in the first generation are called *cousin-germans*, in the second generation *second-cousins*, &c. If sprung from the relations of the father's side, they are denominated *paternal* cousins; if on the mother's, *maternal*.

The word is ordinarily derived from *consanguineus*; though Menage brings it from *congenius*, or *congenius*, q. d. *ex eodem genere*.

In the primitive times, it was allowed cousin-germans to marry, to prevent their making alliances in heathen families: but Theodosius the Great prohibited it, under pain of death; on pretence that they were, in some sort, brothers and sisters with regard to each other.

COUSIN (John), a celebrated French painter, who excelled in painting on glass. His picture of the Last Judgment, in the vestry of the Minims of the Wood of Vincennes, is much admired. He was also a good sculptor. He wrote several works on geometry and perspective; and died after the year 1689.

COUSU, in heraldry, signifies a piece of another colour or metal placed in the ordinary, as if it were sewed on, as the word imports. This is generally of colour upon colour, or metal upon metal, contrary to the general rule of heraldry.

COUTANCES, a port town of Normandy, and capital of Coutantin, in W. Long. 1. 32. Lat. 49. 10. This town, anciently called *Constantia* or *Cesedia*, is pleasantly situated among meadows and rivulets about six miles distant from the sea. By the remains of a Roman aqueduct, and other ancient ruins, it appears to be a place of great antiquity. It is the see of a bishop suffragan of Rome; and has a magnificent cathed-

ral, esteemed one of the finest pieces of Gothic architecture in Europe. The trade of this town is very inconsiderable, and the fortifications are quite demolished. They have several religious houses, and two parochial churches.

COUTHUTLAUGH, from the Saxon *couth*, "knowing" and *utlaugh*, "outlaw;" he that wittingly receives a man outlawed, and cherishes or conceals him: for which offence he was in ancient times subject to the same punishment with the outlaw himself.

COVERT, in heraldry, denotes something like a piece of hanging, or a pavilion falling over the top of a chief or other ordinary, so as not to hide, but only to be a covering to it.

COW, in zoology. See BOS.

Cow-Burner. See BUPRESTIS.

Sea-Cow, in zoology. See TRICHECUS.

Cow-Itch, or *Coubage*, in botany. See COUHAGE, and DOLICHOS.

Cow's-Lip, in botany. See PRIMULA.

COWARD, in heraldry, a term given to a lion borne in an escutcheon with his tail doubled, or turned in between his legs.

COWEL (Dr John), a learned and eminent civilian, born about the year 1554. In 1607 he compiled a *Law Dictionary*, which gave great offence to Sir Edward Coke and the common lawyers: so that they first accused him to James I. as asserting that the king's prerogative was in some cases limited; and when they failed in that attempt, they complained of him to the house of commons, as a betrayer of the rights of the people, by asserting that the king was not bound by the laws; for which he was committed to custody, and his book publicly burnt. He also published *Institutiones Juris Anglicani*, in the manner of Justinian's Institutes; and died of the operation for the stone, in 1611.

COWES, a town and harbour on the north-east coast of the Isle of Wight, in Hampshire. It has no market, but is the best place for trade in the whole island; but as it lies low, the air is accounted unhealthy. It is eight miles south-east of Portsmouth. W. Long. 1. 25. N. Lat. 50. 45.

COWL, or COUL, a sort of monkish habit worn by the Bernardines and Benedictines. The word is formed from *cucullus*, by confounding the two first syllables into one, as being the same twice repeated.— There are two kinds of cowls: the one white, very large, worn in ceremony, and when they assist at the office; the other black, worn on ordinary occasions, in the streets, &c.

F. Mabillon maintains the coul to be the same thing in its origin with the scapular. The author of the apology of the Emperor Henry IV. distinguishes two forms of cowls: the one a gown reaching to the feet, having sleeves, and a capuchin, used in ceremonies; the other a kind of hood to work in, called also a *scapular*, because it only covers the head and shoulders.

COWLEY (Abraham), an eminent poet, was born at London 1618. His father, who was a grocer, dying before he was born, his mother procured him to be admitted a king's scholar at Westminster. His first inclination to poetry arose on his lighting on Spencer's *Fairy Queen*, when he was but just able to read: and this inclination for

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Cowley. far improved in him, that at 13 he began to write several poems; a collection of which was published in 1613, when he was but 15. He has been represented as possessed of so bad a memory that his teachers could never bring him to retain the ordinary rules of grammar. But the fact was, as Dr Johnson notices, not that he could not learn or retain the rules; but that being able to perform his exercises without them, he spared himself the labour. In 1636 he was elected a scholar of Trinity College, Cambridge, and removed to that university. Here he went through all his exercises with a remarkable degree of reputation; and at the same time must have pursued his poetical turn with great eagerness, as it appears that the greatest part of his poems were written before he left that university. He had taken his degree of Master of Arts before 1643, when, in consequence of the turbulence of the times, he, among others, was ejected from the college: whereupon, retiring to Oxford, he entered himself of St John's college: and that very year, under the denomination of a *scholar of Oxford*, published a satire called the Puritan and the Papist. It is apparent, however, that he did not remain very long at Oxford: for his zeal to the royal cause engaging him in the service of the king, who was very sensible of his abilities, and by whom he was frequently employed, he attended his majesty in many of his journeys and expeditions, and gained not only that prince's esteem, but that of many other great personages, and in particular of Lord Falkland, one of the principal secretaries of state.

During the heat of the civil war, he was settled in the Earl of St Alban's family; and when the queen-mother was obliged to retire into France, he accompanied her thither, laboured strenuously in the affairs of the royal family, undertook several very dangerous journeys on their account, and was the principal instrument in maintaining an epistolary correspondence between the king and queen, whose letters he cyphered and decyphered with his own hand. His poems intitled *The Mistress*, were published at London in 1647; and his comedy called *The Guardian*, afterwards altered and published under the title of *Cutter of Coleman-street*, in 1650. In 1656 it was thought proper by those on whom Mr Cowley depended that he should come over into England, and, under pretence of privacy and retirement, should give notice of the posture of affairs in this nation. Upon his return he published a new edition of all his poems, consisting of four parts; viz. I. *Miscellanies*. II. *The Mistress*, or *Several Copies of Love-Verses*. III. *Pindarique Odes*, written in imitation of the Style and manner of Pindar. IV. *Davidic*, a sacred Poem of the troubles of David, in four books.

Soon after his arrival, however, he was seized, in the search after another gentleman of considerable note in the king's party: but although it was through mistake that he was taken, yet when the republicans found all their attempts of every kind to bring him over to their party proved ineffectual, he was committed to a severe confinement, and it was even with considerable difficulty that he obtained his liberty; when, venturing back to France, he remained there, in his former situation, till near the time of the king's re-

Cowley. turn. During his stay in England he wrote his *Two Books of Plants*, published first in 1662; to which he afterwards added four books more; and all six, together with his other Latin poems, were printed at London in 1678. It appears by Mr Wood's *Faisti Oxonienses*, that our poet was created doctor of physic at Oxford, December 2. 1657.

Soon after the restoration he became possessed of a very competent estate, through the favour of his principal friends the duke of Buckingham and the earl of St Alban's; and being now upwards of 40 years of age, he took up a resolution to pass the remainder of a life which had been a scene of tempest and tumult, in that situation which had ever been the object of his wishes, a studious retirement. His eagerness to get out of the bustle of a court and city made him less careful than he might have been in the choice of a healthful habitation in the country; by which means he found his solitude from the very beginning suit less with the constitution of his body than with his mind. His first rural residence was at Barn Elms, a place which, lying low, and being near a large river, was subject to a variety of breezes from land and water, and liable in the winter-time to great inconvenience from the dampness of the soil. The consequence of this Mr Cowley too soon experienced, by being seized with a dangerous and lingering fever. On his recovery from this he removed to Chertsey, a situation not much more healthy, where he had not been long before he was seized with another consuming disease. Having languished under this for some months, he at length got the better of it, and seemed pretty well recovered from the bad symptoms; when one day in the heat of summer 1667, staying too long in the fields to give some directions to his labourers, he caught a most violent cold, which was attended with a defluxion and stoppage in his breast; and for want of timely care, by treating it as a common cold, and refusing advice till it was past remedy, he departed this life on the 28th of July in that year, being the 49th of his age; and, on the 3d of August following, he was interred in Westminster-abbey, near the ashes of Chaucer and his beloved Spencer. He was a man of a very amiable character, as well as an admirable genius. King Charles II. on the news of his death, declared "that Mr Cowley had not left a better man behind him in England." A monument was erected to his memory by George Villiers duke of Buckingham in 1675.

Besides the works already mentioned, Mr Cowley wrote, among other things, A Proposition for the Advancement of Experimental Philosophy; A Discourse by way of Vision concerning the Government of Oliver Cromwell; and Several Discourses by way of Essays in prose and verse. Mr Cowley had designed also a Discourse concerning Style, and a Review of the Principles of the Primitive Christian Church, but was prevented by death. A spurious piece, intitled *The Iron Age*, was published under Mr Cowley's name during his absence; and, in Mr Dryden's *Miscellany Poems*, we find A Poem on the Civil War, said to be written by our author, but not extant in any edition of his works. An edition of his works was published by Dr Spratt, afterwards bishop of Rochester, who also prefixed to it an account of the author's

Cowley. thor's life. The reverend editor mentions, as very excellent of their kind, Mr Cowley's Letters to his Friends; none of which, however, were published.

The moral character of Mr Cowley appears, from every account of it, to have been very excellent. "He is represented by Dr Spratt (says Dr Johnson) as the most amiable of mankind; and this posthumous praise may be safely credited, as it has never been contradicted by envy or by faction."

As a poet, his merits have been variously estimated. Lord Clarendon has said he made a flight above all men; Addison, in his account of the English poets, that he improved upon the Theban bard; the duke of Buckingham upon his tomb-stone, that he was the English Pindar, the Horace, the Virgil, the delight, the glory, of his times. And with respect to the harshness of his numbers, the eloquent Spratt tells us, that if his verses in some places seem not as soft and flowing as one would have them, it was his choice and not his fault.

"Such (says Mr Knox) is the applause lavished on a writer who is now seldom read. That he could ever be esteemed as a pindaric poet, is a curious literary phenomenon. He totally mistook his own genius when he thought of imitating Pindar. He totally mistook the genius of Pindar, when he thought his own incoherent sentiments and numbers bore the least resemblance to the wild yet regular sublimity of the Theban. He neglected even those forms, the strophe, antistrophe, and epode, which even imitative dulness can copy. Sublime imagery, vehement pathos, poetic fire, which constitute the essence of the Pindaric ode, are incompatible with witty conceits, accurate antitheses, and vulgar expression. All these imply the coolness of deliberate composition, or the meanness of a little mind; both of them most repugnant to the truly Pindaric ode, in which all is rapturous and noble. Wit of any kind would be improperly displayed in such composition; but to increase the absurdity, the wit of Cowley is often false. That he had a taste for Latin poetry, and wrote in it with elegance, the well known epitaph on himself, upon his retirement, and an admirable imitation of Horace, are full proofs. But surely his rhetorical biographer makes use of the figure hyperbole, when he affirms that Cowley has excelled the Romans themselves. He was inferior to many a writer of less fame in the *Musa Anglicana*. But still he had great merit; and I must confess I have read his Latin verses with more pleasure than any of his English can afford." *Essays*, vol. ii. p. 363—365.

To Cowley's compositions in prose Mr Knox hath paid a very honourable testimony. He says, that in this department he is an elegant, a pleasing, a judicious writer; and that it is much to be lamented that he did not devote a greater part of his time to a kind of writing which appeared natural to him, and in which he excelled.

Dr Joseph Warton observes, that it is no caricature of Cowley to represent him as being possessed of a strained affectation of striving to be witty upon all occasions. "It is painful (adds this excellent critic) to censure a writer of so amiable a mind, such integrity of manners, and such a sweetness of temper. His fancy was brilliant, strong, and sprightly; but his taste

false and unclassical, even though he had much learning."

Dr Beattie has characterised Cowley in the following terms. "I know not whether any nation ever produced a more singular genius than Cowley. He abounds in tender thoughts, beautiful lines, and emphatical expressions. His wit is inexhaustible, and his learning extensive; but his taste is generally barbarous, and seems to have been formed upon such models as Donne, Martial, and the worst parts of Ovid: nor is it possible to read his longer poems with pleasure, while we retain any relish for the simplicity of ancient composition. If this author's ideas had been fewer, his conceits would have been less frequent; so that in one respect learning may be said to have hurt his genius. Yet it does not appear that Greek and Latin did him any harm; for his imitations of Anacreon are almost the only parts of him that are now remembered or read. His Davids, and his translations of Pindar, are destitute of harmony, simplicity, and every other classical grace."

But the works of this celebrated poet have been nowhere so amply criticised as in his Life by Dr Johnson. After a particular examination of the different pieces, the Doctor, in taking a general review of Cowley's poetry, observes, That "he wrote with abundant fertility, but negligent or unskilful selection; with much thought, but with little imagery; that he is never pathetic, and rarely sublime, but always either ingenious or learned, either acute or profound." Of his prose he speaks with great approbation. "No author (says he) ever kept his verse and his prose at a greater distance from each other. His thoughts are natural, and his style has a smooth and placid equability, which has never yet obtained its due commendation. Nothing is far-sought or hard-laboured; but all is easy without feebleness, and familiar without grossness." Upon the whole, he concludes as follows: "It may be affirmed, without any encomiastic fervour, that he brought to his poetic labours a mind replete with learning, and that his passages are embellished with all the ornaments which books could supply; that he was the first who imparted to English numbers the enthusiasm of the greater ode and the gaiety of the less; that he was qualified for sprightly sallies and for lofty flights; that he was among those who freed translation from servility, and, instead of following his author at a distance, walked by his side; and that if he left versification yet improvable, he left likewise from time to time such specimens of excellence as enabled succeeding poets to improve it."

So many of Cowley's productions being now esteemed scarcely worthy of a perusal, while others of them are distinguished by their beauty, Dr Hurd (the present bishop of Worcester) thought proper to make a selection of them, which he published in 1772, under the title of *Select Works of Mr Abraham Cowley*, in two volumes; with a Preface and Notes by the Editor.

COX (Richard), a learned prelate, and principal pillar of the Reformation, was born at Whaddon in Buckinghamshire, of low parentage, in the year 1499. From Eaton school he obtained a scholarship in King's-college in Cambridge, of which he became a fellow in

Cox.

1510: he was thence invited to Oxford by Cardinal Wolsey, and was there made one of the junior canons of Cardinal College. In 1525 he was incorporated bachelor; and the following year took the degree of master of arts in the same university. In this situation he became remarkable for his learning and poetical abilities; but his attachment to the opinions of Luther rendered him hateful to his superiors, who stripped him of his preferment, and threw him into prison on a suspicion of heresy. Being, however, soon released, he was chosen master of Eaton school, which flourished remarkably under his care. In 1537 he commenced doctor of divinity at Cambridge; in 1540 was made archdeacon of Ely; and the following year prebendary of that cathedral, on its being new founded by king Henry VIII. In 1546 he was made dean of Christ-church, Oxford. By the recommendation of Archbishop Cranmer and Bishop Goodrich, to the latter of whom he had been chaplain, he not only obtained the above preferments, but was chosen preceptor to Prince Edward; on whose accession to the throne he became a favourite at court, was sworn of the privy council, and made king's almoner. In 1547 he was elected chancellor of Oxford; in 1548 canon of Windsor; and the next year dean of Westminster. About this time he was appointed one of the commissioners to visit the university of Oxford; in which office his zeal for reformation was so excessive, that he destroyed a number of curious and valuable books, for no better reason than because they were written by Roman Catholics. On the accession of Queen Mary he was stripped of all his preferments and committed to the Marshalsea. He was, however, soon released, and immediately left the kingdom. Having resided some time at Strasburg with his intimate friend Peter Martyr, on the death of Queen Mary he returned to England, and, with other divines, was appointed to revise the liturgy. He often preached before the queen; and in 1559 was preferred to the see of Ely, which he continued to enjoy upwards of 21 years. He was, however, no favourite with the queen: the reason assigned for which was, his zealous opposition to her retaining the crucifix and wax-candles on the altar of the royal chapel; also his strenuous defence of the marriage of the clergy, which her majesty always disapproved. He died on the 22d of July 1581, aged 81. He was a man of considerable learning, a zealous and rigid bulwark of the church of England, and an implacable enemy both to Papists and Puritans. In a letter to Archbishop Parker, he advises him to proceed vigorously in reclaiming or *punishing* the Puritans, and not to be discouraged at the frown of those court-favourites who protected them; assuring him that he might expect the blessing of God on his *pious* labours to free the church from their dangerous attempts, and to establish uniformity.—This zealous reformer we find had not totally lost sight of the popish text, *compel them to come in*: but a stronger proof of his implacability and self-importance appears in his letter to the lord treasurer Burleigh, in which he warmly expostulates with the council for interposing in behalf of the Puritans, or meddling in affairs of the church, admonishing them to keep their own sphere. Such language from a bishop would make a modern privy council stare. His works are, 1. Two Latin Orations on the Dispute

between Dr Tresham and Peter Martyr, Lond. 1549, 4to. 2. Liturgy of the Church of England; in compiling, and afterwards correcting which, he was principally concerned. 3. The Lord's Prayer in verse, commonly printed at the end of David's Psalms by Sternhold and Hopkins. 4. Translation of the four Gospels, the Acts of the Apostles, and the Epistle to the Romans, in the new translation of the Bible in the reign of Queen Elizabeth. 5. Resolutions of some Questions concerning the Sacrament, in the Collection of Records at the end of Burnet's History of the Reformation. 6. Several Letters to the Queen and others, published in Strype's Annals of the Reformation. He is also said to have been concerned in the declaration concerning the divine institution of bishops, and to have assisted Lilye in his Grammar.

COXWOLD, a town in the North-riding of Yorkshire, 14 miles north of York. W. Long. 1. 10. N. Lat. 54. 16.

COYPEL (Anthony), an excellent French painter, born at Paris in 1661. Noel Coypel, his father, being chosen by M. Colbert to be director of the academy at Rome, he took his son with him into Italy, where Anthony Coypel formed himself on the works of the greatest masters, and on his return to France was made first painter to the Duke of Orleans. That prince employed him in painting the grand gallery of the royal palace, and allowed him a pension. In 1714, he was director of the Academy of Painting and Sculpture. In 1715, he was made first painter to the French king, and was ennobled on account of his merit. He died in 1722. M. Coypel, his son, also excelled in the same art.

COZENING; tricking, or defrauding.—In law, it denotes an offence where any thing is done deceitfully, whether belonging to contracts or not, which cannot be properly termed by any special name.

COZUMEL, an island near the western coast of Yucatan, where Cortez landed and refreshed his troops before entering upon the conquest of Mexico. W. Long. 89. 0. and N. Lat. 13. 0.

CRAB, in zoology. See CANCER.

CRAB's Claws, in the materia medica, are the tips of the claws of the common crab broken off at the verge of the black part, so much of the extremity of the claws only being allowed to be used in medicine as is tinged with this colour. The blackness, however, is only superficial; they are of a greyish white within, and when levigated furnish a tolerable white powder.

Crab's claws are of the number of the alkaline absorbents, but they are superior to the generality of them in some degree, as they are found on a chemical analysis to contain a volatile urinous salt.

CRAB's Eyes, in pharmacy, are a strong concretion in the head of the cray-fish. They are rounded on one side, and depressed and sinuated on the other, considerably heavy, moderately hard, and without smell. We have them from Holland, Muscovy, Poland, Denmark, Sweden, and many other places.

Crab's eyes are much used both in the shop-medicines and extemporaneous prescriptions, being accounted not only absorbent and drying, but also discussive and diuretic.

CRAB-Lice, a troublesome kind of vermin, which
 Rick

Coxwold
||
Crab.

Crab,
Cracatoa.

stick so fast with their claws to the skin as to render it difficult to dislodge them. Being viewed with a glass they nearly resemble the small crab-fish; whence they obtained their popular name. They are also called *pluctule*, *morpiones*, *petole*, and *peffolate*: they usually infest the arm-pits and *puenda*. They will be quickly destroyed, and drop off dead, upon the application of a rag wet with the milk of sublimate. This sort of vermin is reckoned to prognosticate speedy mortality to those whom they abandon without being removed by medicine.

CRAB, a sort of wooden pillar, whose lower end, being let down through a ship's decks, rests upon a socket like the capstern; and having in its upper end three or four holes, at different heights, through the middle of it, one above another, into which long bars are thrust, whose length is nearly equal to the breadth of the deck. It is employed to wind in the cable, or to purchase any other weighty matter which requires a great mechanical power. This differs from a capstern, as not being furnished with a *drum-head*, and by having the bars to go entirely through it, reaching from one side of the deck to the other; whereas those of the capstern, which are superior in number, reach only about eight inches or a foot into the drum-head, according to the size thereof. This machine is represented in Plate CXXVII. n^o 4. See also **CAPSTERN**.

CRAB-YAWS, a name in Jamaica for a kind of ulcer on the soles of the feet, with hard callous lips, so hard that it is difficult to cut them. The *ungt. carul. fort.* is their cure.

CRACATOA, the most southerly of a cluster of islands lying in the entrance of the straits of Sunda in the East-Indies. Its whole circumference does not exceed nine miles; and off its north-eastern extremity is a small island forming a road, in which Captain Cook anchored when visiting this island on his last voyage. On the southern part of the small island is a reef of rocks, within which is a tolerable shelter against all northerly winds, there being 27 fathoms water in the mid channel, and 18 near the reef. Between the two islands there is a narrow passage for boats. The shore that constitutes the west side of the road runs in a north-westerly direction, having a bank of coral running into the sea for a little way; so that it is difficult for boats to land except at the time of high water; but the anchoring ground is very good and free from rocks. In the inland parts the ground is elevated, rising on all sides gradually from the sea, and is entirely covered with wood, excepting a few spots which are cleared by the inhabitants for sowing rice. The climate is reckoned very healthy in comparison with the neighbouring countries, but is very thinly inhabited. There are an abundance of turtle on the coral reefs; but other refreshments are scarce, and sold at an exorbitant price. Water is not plentiful: Captain Cook was obliged to supply himself from a small spring opposite to the southern extremity of the small island above mentioned. To the southward is a hot spring, whose waters are used as a bath by the inhabitants. The road where the *Resolution* anchored lies in S. Lat. 8. 6. and by observation, in 105. 36. E. Long. by the time-keeper in 104. 48. The variation of the compass one degree W. On the full and

change days it is high water at seven o'clock in the morning, and the tide rises three feet two inches perpendicular. Crackow.

CRACKOW, a city of Poland, situated in a palatinate of the same name, E. Long. 20. 16. N. Lat. 50. 8. It was formerly the capital of Poland, where the kings were elected and crowned, and was once almost the centre of the Polish dominions, but is now a frontier town; a proof how much the power of this republic has been contracted.

Crackow stands in an extensive plain, watered by the Vistula, which is broad but shallow: the city and its suburbs occupy a vast track of ground, but are so badly peopled, that they scarcely contain 16,000 inhabitants. The great square in the middle of the town is very spacious, and has several well-built houses, once richly furnished and well inhabited, but most of them now either untenanted or in a state of melancholy decay. Many of the streets are broad and handsome; but almost every building bears the most striking marks of ruined grandeur: the churches alone seem to have preserved their original splendor. The devastation of this unfortunate town was begun by the Swedes at the commencement of the present century, when it was besieged and taken by Charles XII. but the mischiefs it suffered from that ravager of the north were far less destructive than those it experienced during the late dreadful commotions, when it underwent repeated sieges, and was alternately in possession of the Russians and Confederates. The effects of cannon, grape, and musket shot, are still discernible on the walls and houses. In a word, Crackow exhibits the remains of ancient magnificence, and looks like a great capital in ruins: from the number of fallen and falling houses one would imagine it had lately been sacked, and that the enemy had left it only yesterday. The town is surrounded with high walls of brick, strengthened by round and square towers of whimsical shapes, in the ancient style of fortification: these walls were built by Venceslaus king of Bohemia during the short period in which he reigned over Poland.

The university of Crackow was formerly, and not unjustly, called the mother of Polish literature, as it principally supplied the other seminaries with professors and men of learning; but its lustre has been greatly obscured by the removal of the royal residence to Warsaw, and still more by the late intestine convulsions. In this city the art of printing was first introduced into Poland by Haller; and one of the earliest books was the Constitutions and Statutes compiled by Casimir the Great, and afterwards augmented by his successors. The characters are Gothic, the same which were universally used at the invention of printing: the great initial letters are wanting, which shows that they were probably painted and afterwards worn away. The year in which this compilation was printed is not positively known; but its publication was certainly anterior to 1496, as it does not contain the statutes passed by John Albert in that year. The most flourishing period of the university was under Sigismund Augustus in the 16th century, when several of the German reformers fled from the persecutions of the emperor Charles V. and found an asylum in this city. They gave to the world several versions of the sacred writings,

Crackow.

tings, and other theological publications, which diffused the reformed religion over great part of Poland. The protection which Sigismund Augustus afforded to men of learning of all denominations, and the universal toleration which he extended to every sect of Christians, created a suspicion that he was secretly inclined to the new church; and it was even reported that he intended to renounce the catholic faith, and publicly profess the reformed religion.

Towards the southern part of the town, near the Vistula, rises a small eminence or rock, upon the top of which is built the palace, surrounded with brick walls and old towers, which form a kind of citadel to the town. This palace owes its origin to Ladislaus Jaghelon; but little of the ancient structure now appears, as the greatest part was demolished by Charles XII. in 1702, when he entered this town in triumph after the battle of Cliflow. It has been since repaired: the remains of the old palace consist of a few apartments, which are left in their ancient state as they existed in the last century. This palace was formerly the residence of the kings of Poland, who, from the time of Ladislaus Loketec, have been crowned at Crackow. The Polish and German historians differ concerning the time when the title of king was first claimed by the sovereigns of this country; but the most probable account is, according to Mr Coxe, that in 1295 Premislaus assumed the regal title, and was inaugurated at Gnesna by the archbishop of that diocese. He was succeeded by Ladislaus Loketec, who offending the Poles by his capricious and tyrannical conduct, was deposed before he was crowned; and Venceslaus king of Bohemia, who had married Richsa daughter of Premislaus, being elected in his stead, was in 1300 consecrated at Gnesna. Ladislaus, after flying from his country and undergoing a series of calamitous adventures, was at length brought to a sense of his misconduct. Having regained the affection of his subjects, he was restored, in the lifetime of Venceslaus, to part of his dominions; and he recovered them all upon the demise of that monarch in the year 1305: he governed, however, for some years without the title of king; but at length in 1320 was crowned at Crackow, to which place he transferred the ceremony of the coronation; and afterwards enacted, that for the future his successors should be inaugurated in the cathedral of this city.

Since that period all the sovereigns have been consecrated at Crackow, excepting the present king. Previous to his election a decree was issued by the diet of convocation, that the coronation should be solemnized for this turn at Warsaw, without prejudice in future to the ancient right of Crackow; a proviso calculated to satisfy the populace, but which will not probably prevent any future sovereign from being crowned at Warsaw, now become the capital of Poland and the residence of its kings. The diadem and other regalia used at the coronation are still kept in the palace of Crackow, under so many keys, and with such care, that it was impossible to obtain a sight of them.

Adjoining to the palace stands the cathedral, also within the walls of the citadel. Here all the sovereigns, from the time of Ladislaus Loketec, have been interred, a few only excepted, viz. Louis and Ladislaus III. who were kings of Hungary as well as of Poland, and whose bodies were deposited in Hungary;

Alexander, who died and was buried at Vilna; Henry of Valois, interred in France; and the late monarch Augustus III. The sepulchres of the kings of Poland are not distinguished by any peculiar magnificence: their figures are carved in marble of no extraordinary workmanship, and some are without inscriptions.

The bishop of Crackow is the first in the kingdom, duke of Saveria, and very often a cardinal. His revenues are larger than those of his metropolitan the archbishop of Gnesna, and are computed to amount to 40,000 dollars *per annum*.

CRADLE, a well known machine in which infants are rocked to sleep.

It denotes also that part of the stock of a cross-bow where the bullet is put.

CRADLE, in surgery, a case in which a broken leg is laid after being set.

CRADLE, in engraving, is the name of an instrument used in scraping mezzotintos and preparing the plate. It is formed of steel, resembling a chissel with one sloping side, upon which are cut hollow lines very near each other, and at equal distances. The acting part of this tool is made circular, and the corners are rounded. After being properly tempered, it must be sharpened on the whetstone. There are various sizes of this instrument.

CRADLE, among shipwrights, a frame placed under the bottom of a ship, in order to conduct her smoothly and steadily into the water when she is going to be launched; at which time it supports her weight while she slides down the descent or sloping passage called *the ways*, which are for this purpose daubed with soap and tallow. See Plate CL.

CRAFT, a general name for all sorts of vessels employed to load or discharge merchant ships, or to carry alongside or return the stores of men of war. Such are lighters, hoys, barges, prames, &c. See those articles.

CRAKE, or CORN-CRAKE. See RALLUS.

CRAIL, or CAREIL, a parliament town of Scotland, situated on the sea-coast of the county of Fife, about seven miles south-east of St Andrew's. W. Long. 2. 20. and N. Lat. 56. 17.

CRAMBE, SEA-CABBAGE, SEA-BEACH KALE, or SEA-COLEWORT, in botany: A genus of the siliquosa order, belonging to the tetradynamia class of plants; and in the natural method ranking under the 39th order, *Siliquosæ*. The four longer filaments are forked at top, with an anthera only on one point of each; the fruit a dry, globose, and deciduous berry. There are three species, all of them herbaceous esculents with perennial roots, producing annually large leaves resembling those of cabbage spreading on the ground, with strong flower-stalks and yellowish flowers. Only one of the species is a native of Britain. It grows wild on the shores of many of the maritime counties of England, but is cultivated in many gardens as a choice esculent; and the young robust shoots of its leaves and flower-stalks, as they issue forth from the earth after the manner of asparagus shoots, are then in the greatest perfection for use. At this period they appear white as if blanched, and when boiled eat exceeding sweet and tender. Its principal season for use is in April and May. This plant may also be employed in the pleasure-ground as a flowering perennial, for the stalks

Cradle
||
Crambe.

Crameria stalks divide into fine branchy heads of flowers. It is propagated by seeds sown in any common light earth in autumn or spring, where the plants are to remain, which, when two years old, will produce shoots fit for use, will multiply exceedingly by the roots, and continue for many years.

CRAMERIA, in botany, a genus of the monogynia order, belonging to the tetrandria class of plants. There is no calyx; the corolla has four petals; the superior nectary is trifid, the inferior biphyllous; the fruit is a dry, monospermous, and echinated berry.

CRAMOND, **OVER** and **NETHER**, two villages about four miles west of Edinburgh; of which only the last deserves notice, as having been once a famous naval station of the Romans. It is situated at the influx of the river Almon into the Forth. Three Roman roads meet at this place, which was called by them *Alaterva*, and whither they brought their grain for the support of their troops. The village contains about 300 inhabitants. Here are the remains of a bath and fudatory; and many altars, medals, &c. have been dug up.

CRAMP, a kind of numbness or convulsion, occasioned by a thick viscid vapour entering the membranes of the muscles, which contracts or extends the neck, arms, legs, &c. with a violent but transitory pain; being usually driven off with friction alone. The word comes from the German *krampfe*, which signifies the same.

A glass of tar water, to be drank night and morning, has been recommended; and a rod of brimstone, when held in the hand, has given present relief.

CRAMP-Fish, or *Torpedo*. See **RAJA**.

CRAMP-Iron, or *Cramps*, a piece of iron bent at each end, which serves to fasten together pieces of wood, stones, or other things.

CRAMPONEE, in heraldry, an epithet given to a cross which has at each end a cramp or square piece coming from it; that from the arm in chief towards the sinister angle, that from the arm on that side downwards, that from the arm in base towards the dexter side, and that from the dexter arm upwards.

CRANAGE, the liberty of using a crane at a wharf, and also the money paid for drawing up wares out of a ship, &c. with a crane.

CRANE, in ornithology. See **ARDEA**.

CRANE, in mechanics, a machine used in building for raising large stones and other weights. See **MECHANICS**.

CRANE's Bill, in botany. See **GERANIUM**.

CRANE-Fly, in zoology, a species of **TIPULA**.

CRANGANOR, a Dutch factory on the Malabar coast in the East Indies, seated in E. Long. 75. 5. N. Lat. 10. 0. See **COCHIN**.

CRANIOLARIA, in botany: A genus of the angiospermia order, belonging to the didynamia class of plants; and in the natural method ranking under the 40th order, *Personate*. The calyx of the flower is double, the under one tetraphyllous, the upper one a monophyllous spathe; the tube of the corolla very long; the capsule almost the same with that of the *martynia*; which see. There are two species, both natives of hot climates, and neither of them possessed of any remarkable property.

CRANIUM, in anatomy, an assemblage of several bones which cover and enclose the brain and cerebel-

lum, popularly called the *skull*. See **ANATOMY**, n^o 11. The word comes from the Greek κρηνιον, of κρηνη, *galea*, "helmet;" because it serves to defend the brain like a head-piece. Pezron, again, derives κρηνιον from the Celtic *cren*, because of its roundness.

CRANK, a contrivance in machines, in manner of an elbow, only of a square form, projecting out from an axis or spindle; and serving, by its rotation, to raise and fall the pistons of engines for raising water or the like.

CRANK, in sea-language. A ship is said to be *crank-sided*, when, for want of a sufficient quantity of ballast or cargo, she cannot bear her sails, or can bear but small sail, for fear of oversetting.—She is said to be *crank by the ground*, when her floor is so narrow that she cannot be brought on ground without danger.

CRANK is also an iron brace which supports the lantern on the poop-quarters, &c.

CRANMER (Thomas), a celebrated archbishop, reformer, and martyr, was the son of Thomas Cranmer, Esq; of Aflaston in Nottinghamshire, where our author was born in 1489. At the age of 14, he was admitted a student of Jesus' College, Cambridge, of which he afterwards became fellow; but marrying the relation of an inn-keeper's wife, he lost his fellowship and quitted the college. On the death of his wife he was re-admitted fellow of Jesus' College. In 1523 he took the degree of doctor of divinity, and was made theological lecturer and examiner. The plague being at Cambridge, he retired to the house of a relation at Waltham Abbey, where, meeting with Fox the king's almoner, and Gardiner the secretary, he gave his opinion concerning King Henry's marriage with Catharine much to the satisfaction of his majesty. This opinion was, that instead of disputing about the validity of the King's marriage with Catharine, they should reduce the matter to this simple question, "Whether a man may marry his brother's wife or no?" When the King was told of it, he said, "This fellow has got the right sow by the ear." He then sent for him to court, made him one of his chaplains, and ordered him to write in vindication of the divorce in agitation. This book having quieted the tender conscience of the King, he was desirous that all Europe should be convinced of the illegality of his marriage with Queen Catharine; and for that purpose sent Cranmer to France, Italy, and Germany, to dispute the matter with the divines of those countries. At Nuremberg Cranmer married a second wife. Being returned to England, in March 1533 he was consecrated archbishop of Canterbury; in May following he pronounced the sentence of divorce between the King and Queen; and soon after married the amorous monarch to Ann Boleyn. Being now at the head of the church, he exerted himself in the business of the Reformation. The Bible was translated into English, and monasteries dissolved principally by his means.

In 1536 the royal conscience again required the assistance of our archbishop: in this year he divorced the King from Ann Boleyn. In 1537 he visited his diocese, and endeavoured to abolish the superstitious observation of holidays. In 1539 he and some of the bishops fell under the King's displeasure, because they could not be brought to give their consent in parliament that the monasteries should be suppressed for the King's sole use.

Cranmer.

He also strenuously opposed the act for the six articles in the house of lords, speaking three days against it; and upon the passing of that statute sent away his wife into Germany. In 1540 he was one of the commissioners for inspecting into matters of religion, and explaining some of its chief doctrines. The result of their commission was the book intitled *A necessary Erudition of any Christian Man*. After Lord Cromwell's death (in whose behalf he had written to the King), he retired and lived in great privacy, meddling not at all with state affairs. In 1541 he gave orders, pursuant to the King's directions, for taking away superstitious shrines; and, exchanging Bishopsbourn for Bekebourn, united the latter to his diocese. In 1542 he procured the "Act for the advancement of true religion and the abolishment of the contrary," which moderated the rigour of the six articles. But the year following, some enemies preferring accusations against him, he had like to have been ruined, had not the King interposed in his behalf. His majesty continued afterwards to protect him from his enemies; and at his death appointed him one of the executors of his will, and one of the regents of the kingdom. In 1546 he crowned young Edward, during whose short reign he promoted the reformation to the utmost of his power; and was particularly instrumental in composing, correcting, and establishing the liturgy by act of parliament. He had also a share in compiling the thirty-nine articles of religion.

In 1553 he opposed the new settlement of the crown upon Lady Jane Gray, and would no way be concerned in that affair (though at last, through many importunities, he was prevailed upon to set his hand to it); neither would he join in any of Dudley's ambitious projects. Upon Queen Mary's accession to the throne, he was committed to the Tower; partly for setting his hand to the instrument of Lady Jane's succession, and partly for the public offer he had made a little before of justifying openly the religious proceedings of the late king. Some of his friends, foreseeing the storm that was likely to fall upon him, advised him to fly, but he absolutely refused. In the ensuing parliament, on November the 3d, he was attainted, and at Guildhall found guilty of high treason; whereupon the fruits of his archbishopric were sequestered. In April 1554, he and Ridley and Latimer were removed to Oxford, in order for a public disputation with the Papists; which was accordingly held there towards the middle of the month, with great noise, triumph, and impudent confidence on the Papists side, and with as much gravity, learning, modesty, and convincing sufficiency on the side of the Protestant bishops. The 20th of April, two days after the end of these disputations, Cranmer and the two others were brought before the commissioners, and asked, Whether they would subscribe (to Popery)? which they unanimously refusing, were condemned as heretics. From this sentence the Archbishop appealed to the just judgment of the Almighty; and wrote to the council, giving them an account of the disputation, and desiring the Queen's pardon for his treason, which it seems was not yet remitted. By the convocation which met this year, his Defence of the true and catholic Doctrine of the Sacrament of the Body and Blood of our Saviour Christ was ordered to be burnt. Some of his friends petitioned the Queen in his behalf;

putting her in mind how he had once preserved her in her father's time by his earnest intercessions with him for her, so that she had reason to believe he loved her, and would speak the truth to her more than all the rest of the clergy. All endeavours in his behalf, however, were ineffectual; and the Archbishop being degraded and most ignominiously treated, was at last flattered and terrified into an insincere recantation and renunciation of the Protestant faith. But this triumph was not sufficient to gratify the pious vengeance of the Romish Mary. On the 24th of Feb. 1556, a writ was signed for the burning of Cranmer; and on the 24th March, which was the fatal day, he was brought to St Mary's church, Cambridge, and placed on a kind of stage over against the pulpit, where Dr Cole provost of Eton was appointed to preach a sermon on the occasion. While Cole was haranguing, the unfortunate Cranmer expressed great inward confusion; often lifting up his hands and eyes to heaven, and frequently pouring out floods of tears. At the end of the sermon, when Cole desired him to make an open profession of his faith, as he had promised him he would, he first prayed in the most fervent manner; then made an exhortation to the people present, not to set their minds upon the world, to obey the King and Queen, to love each other, and to be charitable. After this he made a confession of his faith, beginning with the creed, and concluding with these words: "And I believe every word and sentence taught by our Saviour Jesus Christ, his apostles, and prophets; in the Old and New Testament. — And now (added he) I come to the great thing that so much troubleth my conscience more than any thing I ever did or said in my whole life; and that is the setting abroad a writing contrary to the truth, which I here now renounce as things written with my hand contrary to the truth which I thought in my heart; and written for fear of death, and to save my life if it might be: that is, all such bills and papers which I have written or signed with my hand since my degradation, wherein I have written many things untrue. And so far as my hand offended, writing contrary to my heart, my hand shall first be punished; for, may I come to the fire, it shall be first burned. As for the pope, I refuse him, as Christ's enemy and antichrist, with all his false doctrine. And as for the sacrament, I believe as I have taught in my book against the Bishop of Winchester." Thunderstruck as it were with this unexpected declaration, the enraged Popish crowd admonished him not to dissemble. "Ah! (replied he with tears), since I lived hitherto, I have been a hater of falsehood and a lover of simplicity, and never before this time have I dissembled." Whereupon they pulled him off the stage with the utmost fury, and hurried him to the place of his martyrdom over against Baliol College; where he put off his clothes in haste, and standing in his shirt, and without shoes, was fastened with a chain to the stake. Some pressing him to agree to his former recantation, he answered, showing his hand, "This is the hand that wrote it, and therefore it shall first suffer punishment." Fire being applied to him, he stretched out his right hand into the flame, and held it there unmoved (except that once with it he wiped his face) till it was consumed; crying with a loud voice, "This hand hath offended;" and often repeating, "This unworthy

Cranmer.

Cranmer. thy right hand." At last, the fire getting up, he soon expired, never stirring or crying out all the while; only keeping his eyes fixed to heaven, and repeating more than once, "Lord Jesus receive my spirit." Such was the end of the renowned Thomas Cranmer, in the 67th year of his age.

It was noticed above, that after the passing of the act for the six articles, Archbishop Cranmer sent his wife into Germany. But she afterwards returned again to England; and Mr Strype informs us, that "in the time of King Edward, when the marriage of the clergy was allowed, he brought her forth, and lived openly with her." Mr Gilpin says, "he left behind him a widow and children; but as he always kept his family in obscurity for prudential reasons, we know little about them. They had been kindly provided for by Henry VIII.; who, without any solicitation from the Primate himself, gave him a considerable grant from the Abbey of Walbeck in Nottinghamshire, which his family enjoyed after his decease. King Edward made some addition to his private fortune; and his heirs were restored in blood by an act of parliament in the reign of Elizabeth."

Archbishop Cranmer wrote a great number of books: many of them he published himself; and many of them still remain in MSS. viz. two folio volumes in the king's library, several letters in the Cotton collection, &c.

Mr Gilpin remarks, That "the character of the Archbishop hath been equally the subject of exaggerated praise and of undeserved censure. The most indefensible parts of the Archbishop's character are the readiness with which he sometimes concurred in the unjustifiable proceedings of Henry VIII. and the instances wherein he showed himself to be actuated by intolerant principles.

"He first recommended himself to Henry by the zeal which he displayed in promoting the King's divorce from Queen Catharine. As to this, it may be allowed, that Dr Cranmer might think the marriage wrong: but though it possibly might be a point of conscience with the King, it could however be none with him; and there was manifestly a difference between advising not to do a thing, and advising to undo it when already done, at least in a matter of so disputable a nature. On the other hand, to repudiate a woman with whom the King had cohabited near 20 years as his wife, and to illegitimate a daughter, bred up in the highest expectations, and now marriageable, were acts of such cruelty, that it seems to indicate a want of feeling to be in any degree necessary to them. To this may be added, that the notoriety of the King's passion for Ann Boleyn, which all men believed to be, if not the first mover, at least the principal spring of his pretended scruples, threw a very indelicate imputation on all who had any concern in the affair. No serious churchman, one would imagine, could be fond of the idea of administering to the King's passions. It is with concern, therefore, that we see a man of Dr Cranmer's integrity and simplicity of manners acting so much out of character as to compound an affair of this kind, if not with his conscience, at least with all delicacy of sentiment; and to parade through Europe, in the quality of an ambassador, defending every where the King's *pious intentions*. But the cause (continues

Mr Gilpin) animated him. With the illegality of the King's marriage, he endeavoured virtually to establish the insufficiency of the pope's dispensation; and the latter was an argument so near his heart, that it seems to have added merit to the former. We cannot indeed account for his embarking so zealously in this business without supposing his principal motive was to free his country from the tyranny of Rome, to which this step very evidently led. So desirable an end would in some degree, he might imagine, sanctify the means."

Of two of the instances of persecution in which Archbishop Cranmer was concerned, Mr Gilpin gives the following account. "Joan Bocher and George Paris were accused, though at different times; one for denying the humanity of Christ, the other for denying his divinity. They were both tried and condemned to the stake; and the Archbishop not only consented to these acts of blood, but even persuaded the aversion of the young King into a compliance. 'Your majesty must distinguish (said he, informing his royal pupil's conscience) between common opinions and such as are the essential articles of faith. These latter we must on no account suffer to be opposed.'" Mr Gilpin justly observes, that "nothing even plausible can be suggested in defence of the Archbishop on this occasion, except only that the spirit of Popery was not yet wholly repressed." These instances of injustice and barbarity were indeed totally indefensible, and a great disgrace to Cranmer and to all who were concerned in them. It does not appear that he endeavoured to promote the death of Lambert; but, as Mr Gilpin observes, it were to be wished he had rid his hands of the disputation likewise. The public disputation, in which Cranmer bore some part, proved the means of bringing Lambert to the stake.

One of the most honourable transactions of Archbishop Cranmer's life, was the firm stand that he made against the act of the six articles. This act was so strongly supported by the King, that even the Protestants in parliament made little opposition to it. But Cranmer opposed it with great zeal and steadiness. "The good Archbishop (says Mr Gilpin) never appeared in a more truly Christian light than on this occasion. In the midst of so general a defection (for there were numbers in the house who had hitherto shown great forwardness in reformation) he alone made a stand. Three days he maintained his ground, and baffled the arguments of all opposers. But argument was not their weapon, and the Archbishop saw himself obliged to sink under superior power. Henry ordered him to leave the house. The Primate refused: 'It was God's business (he said), and not man's.' And when he could do no more, he boldly entered his protest. Such an instance of fortitude is sufficient to wipe off many of those courtly stains which have fastened on his memory."

His behaviour in the case of the Duke of Norfolk was also intitled to great commendation. "The last act of this reign (says Mr Gilpin) was an act of blood, and gave the Archbishop a noble opportunity of showing how well he had learned that great Christian lesson of forgiving an enemy. Almost without the shadow of justice, Henry had given directions to have the Duke of Norfolk attainted by an act of parliament. The King's mandate stood in lieu of guilt, and the bill passed.

Cranmer.

Cranmer. passed the house with great ease. No man, except the Bishop of Winchester, had been so great an enemy to the Archbishop as the Duke of Norfolk. He had always thwarted the Primate's measures, and oftener than once had practised against his life. How many would have seen with secret pleasure the workings of Providence against so rancorous an enemy; satisfied in having themselves no hand in his unjust fate! But the Archbishop saw the affair in another light: he saw it with horror; and although the King had in a particular manner interested himself in this business, the Primate opposed the bill with all his might; and when his opposition was vain, he left the house with indignation, and retired to Croydon."

He was indeed remarkable for the placability of his temper, and for showing kindness to those by whom he had been greatly injured. Hence it is mentioned in Shakespeare's Henry VIII. as a common saying concerning him:

"Do my Lord of Canterbury
But one shrewd turn, and he's your friend for ever."

Archbishop Cranmer was a great friend and patron of learned foreigners who had been persecuted for their attachment to the principles of the Reformation. Mr Gilpin says, "the suffering professors of Protestantism, who were scattered in great numbers about the various countries of Europe, were always sure of an asylum with him. His palace at Lambeth might be called a seminary of learned men; the greater part of whom persecution had driven from home. Here, among other celebrated reformers, Martyr, Bucer, Ales, Phage, found sanctuary. Martyr, Bucer, and Phage, were liberally pensioned by the Archbishop till he could otherwise provide for them. It was his wish to fix them in the two universities, where he hoped their great knowledge and spirit of inquiry would forward his designs of restoring learning; and he at length obtained professorships for them all. Bucer and Phage were settled at Cambridge; where they only showed what might have been expected from them, both dying within a few months after their arrival. But at Oxford Martyr acted a very conspicuous part, and contributed to introduce among the students there a very liberal mode of thinking.

Of the learning of Archbishop Cranmer, Mr Gilpin remarks, that "it was chiefly confined to his profession. He had applied himself in Cambridge to the study of the Greek and Hebrew languages; which, though esteemed at that time as the mark of heresy, appeared to him the only sources of attaining a critical knowledge of the Scriptures. He had so accurately studied canon law, that he was esteemed the best canonist in England; and his reading in theology was so extensive, and his collections from the Fathers so very voluminous, that there were few points in which he was not accurately informed, and in which he could not give the opinions of the several ages of the church from the times of the Apostles. He was a sensible writer, rather nervous than elegant. His writings were entirely confined to the great controversy which then subsisted, and contain the whole sum of the theological learning of those times. His library was filled with a very noble collection of books, and was open to all men of letters.

Mr Gilpin, after remarking that Archbishop Cran-

mer preached often wherever he visited, says, "In his sermons to the people he was very plain and instructive; insisting chiefly on the essentials of Christianity. The subjects of his sermons, for the most part, were from whence salvation is to be fetched, and on whom the confidence of man ought to lean. They insisted much on doctrines of faith and works; and taught what the fruits of faith were, and what place was to be given to works; they instructed men in the duties they owed their neighbour, and that every one was our neighbour to whom we might any way do good; they declared what men ought to think of themselves after they had done all; and, lastly, what promises Christ hath made, and who they are to whom he will make them good. Thus he brought in the true preaching of the Gospel, altogether different from the ordinary way of preaching in those days; which was to treat concerning saints, to tell legendary tales of them, and to report miracles wrought for the confirmation of transubstantiation and other Popish corruptions. And such a heat of conviction accompanied his sermons, that the people departed from them with minds possessed of a great hatred of vice, and burning with a desire of virtue."

He was a great economist of his time. Mr Gilpin says, "he rose commonly at five o'clock, and continued in his study till nine. These early hours, he would say, were the only hours he could call his own. After breakfast he generally spent the remainder of the morning either in public or private business. His chapel-hour was eleven, and his dinner-hour twelve. After dinner he spent an hour either in conversation with his friends, in playing at chess, or in, what he liked better, overlooking a chess-board. He then retired again to his study till his chapel-bell rang at five. After prayers, he generally walked till six, which was in those times the hour of supper. His evening meal was sparing. Often he ate nothing; and when that was the case, it was his usual custom, as he sat down to table, to draw on a pair of gloves; which was as much as to say, that his hands had nothing to do. After supper, he spent an hour in walking and another in his study, retiring to his bedchamber about nine. This was his usual mode of living when he was most vacant, but very often his afternoons as well as his mornings were engaged in business. He generally, however, contrived, if possible, even in the busiest day, to devote some proportion of his time to his books besides the morning. And Mr Fox tells us, he always accustomed himself to read and write in a standing posture; esteeming constant sitting very pernicious to a studious man."

Mr Gilpin also observes, "that he was a very amiable master in his family, and admirably preserved the difficult medium between indulgence and restraint. He had, according to the custom of the times, a very numerous retinue, among whom the most exact order was observed. Every week the steward of his household held a kind of court in the great hall of his palace; in which all family affairs were settled, servants wages were paid, complaints were heard, and faults examined. Delinquents were publicly rebuked, and after the third admonition discharged. His hospitality and charities were great and noble; equal to his station, greater often than his abilities. A plentiful

Cranney || **Crape.** ful table was among the virtues of those days. His was always bountifully covered. In an upper room was spread his own, where he seldom wanted company of the first distinction. Here a great many learned foreigners were daily entertained, and partook of his bounty. In his great hall a long table was plentifully covered every day for guests and strangers of a lower rank; at the upper end of which were three smaller tables, designed for his own officers and inferior gentlemen. Among other instances of the Archbishop's charity, we have one recorded which was truly noble. After the destruction of monasteries, and before hospitals were erected, the nation saw no species of greater misery than that of wounded and disbanded soldiers. For the use of such miserable objects as were landed on the southern coasts of the island, the Archbishop fitted up his manor-house of Beckesburn in Kent. He formed it indeed into a complete hospital; appointing a physician, a surgeon, nurses, and every thing proper, as well for food as physic. Nor did his charity stop here. Each man, on his recovery, was furnished with money to carry him home, in proportion to the distance of his abode."

To conclude with the character given by Mr Hume: "Archbishop Cranmer was undoubtedly a man of merit; possessed of learning and capacity; and adorned with candour, sincerity, and beneficence, and all those virtues which were fitted to render him useful and amiable in society. His moral qualities procured him universal respect; and the courage of his martyrdom, though he fell short of the rigid inflexibility observed in many, made him the hero of the Protestant party."

CRANNY, in glass-making, an iron instrument wherewith the necks of glasses are formed.

CRANTARA, among the ancient Britons, was a sort of military signal used for collecting the distant and scattered warriors to the standard of their chief. A prince having immediate occasion for the assistance of his followers to repel some sudden invasion or engage in some expedition, besides striking the shield and sounding the horn to give warning to those who were within hearing, he sent the crantara, or a stick burnt at the end and dipped in the blood of a goat, by a swift messenger, to the nearest hamlet, where he delivered it without saying one word but the name of the place of rendezvous. This crantara, which was well understood to denounce destruction by fire and sword to all who did not obey this summons, was carried with great rapidity from village to village; and the prince in a little time found himself surrounded by all his warriors ready to obey his commands.

CRANTOR, a Greek philosopher and poet, was born at Solos in Cilicia. He left his native country where he was admired; went to Athens, and there studied with Polemon under Xenocrates. He was considered as one of the chief supporters of the Platonic sect; and was the first who wrote commentaries upon Plato's works. He flourished 270 years before Christ.

CRAPE, a light transparent stuff, in manner of gauze; made of raw silk gummed and twisted on the mill; woven without crossing, and much used in mourning.

Crapes are either craped, *i. e.* crisped, or smooth; the first double, expressing a closer mourning; the

latter single, used for that less deep. Note, White is reserved for young people, or those devoted to virginity. The silk destined for the first is more twisted than that for the second; it being the greater or less degree of twisting, especially of the warp, which produces the crisping given it when taken out of the loom, steeped in clear water, and rubbed with a piece of wax for the purpose.

Crapes are all dyed raw. The invention of this stuff came originally from Bologna: but the chief manufacture of it is said to be at Lyons.

History tells us, that St Bathilda, queen of France, made fine crape (*crepa*) of gold and silver, to lay over the body of St Eloy. The Bollandists own they cannot find what this *crepa* was. Binet says, it was a frame to cover the body of the saint: but others, with reason, take it to be a transparent stuff, through which the body might be seen; and that this was the *crepa* whence our word crape was formed.

CRAPULA, among physicians; a term for SURFEIT.

CRASHAW (Richard), who was in his lifetime honoured with the friendship of Cowley, and since his death by the praise of Mr Pope, who condescended both to read his poems and to borrow from them; was the son of William Crashaw, an eminent divine, and educated at the Charter-house near London. He was then sent to Pembroke hall in Cambridge, and was afterwards of Peter-house, where he was fellow; in both which colleges he was distinguished for his Latin and English poetry. Afterwards he was ejected from his fellowship, together with many others, for denying the covenant in the time of the rebellion; and he changed his religion, being by catholic artifices perverted to the church of Rome; not converted, but rather, as Pope says, *outwitted*. He went to Paris, in hopes of recommending himself to some preferment there; but being a mere scholar, was incapable of executing the new plan he had formed. There he fell into great distress, which Cowley the poet hearing of in 1646, very kindly sought him out, gave him all the assistance he could, and at last got him recommended to Henrietta Maria queen of England, then residing at Paris. Obtaining from her letters of recommendation, he travelled into Italy; and by virtue of those letters became secretary to a cardinal at Rome, and at last one of the canons or chaplains of the rich church of our lady at Loretto, some miles distance from thence, where he died and was buried about 1650. Before he left England he wrote certain poems, entitled, *Steps to the Temple*; "because (says Wood) he led his life in the temple of God, in St Mary's church near to his college. There, as we learn from the preface to these poems, he lodged under Tertullian's roof of angels. There he made his nest more gladly than David's swallow near the house of God; where, like a primitive saint, he offered more prayers in the night than others usually offer in the day. There he penned the said poems called *Steps to the Temple for happy Souls to climb to Heaven by*. To the said Steps are joined other poems called *The Delights of the Muses*, wherein are several Latin poems; which, though of a mere human mixture, yet they are sweet as they are innocent. He hath also written *Carmen Deo nostro*, being hymns and other sacred poems, addressed to the counts of Denbigh. He was excellent in five languages besides

Crapula,
Crashaw.

Craſſus
||
Craſſius
besides his mother tongue, namely, Hebrew, Greek, Latin, Italian, and Spanish.

CRASIS (from *κραννυμι*, to mix), the temper of the blood peculiar to every constitution.

CRASIS, in grammar, is a figure whereby two different letters are either contracted into one long letter or a diphthong. Such, e. g. is *οπισ* for *οπις*; *αλθη* for *αληθια*, &c. *τυχος* for *τυχοεις*, &c. where *i* and *a* are contracted into *i*; *e* and *a* into *e*; and *e* and *o* into *u*.

CRASSAMENTUM, in physic, the thick red or fibrous part of the blood, otherwise called *cruor*, in contradistinction to the serum or aqueous part.

CRASSULA, LESSER ORPINE, or LIVE-EVER: A genus of the pentagynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 13th order, *Succulentæ*. The calyx is pentaphyllous; the petals five, with five nectariferous scales at the base of the germs, and five capsules. Their are 17 species, all of them natives of warm climates. Several of them are cultivated in this country, but require the assistance of artificial heat for their preservation. They rise from one foot to six or eight in height, and are ornamented with oblong, thick, succulent leaves, and funnel-shaped pentapetalous flowers of a scarlet, white, or greenish colour. They are propagated by off-sets or cuttings; and must be potted in light sandy compost, retained in a sunny part of the green-house all winter, and very sparingly watered. In summer they may be placed in the full air in a sheltered place, and in dry weather watered twice a week.

CRASSUS (M. Licinius), a celebrated Roman, surnamed *Rich* on account of his opulence. At first he was very circumscribed in his circumstances, but by educating slaves and selling them at a high price he soon enriched himself. The cruelties of Cinna obliged him to leave Rome, and he retired to Spain, where he remained concealed for 8 months. After Cinna's death he passed into Africa, and thence to Italy, where he served Sylla and ingratiated himself in his favour. When the Gladiators with Spartacus at their head had spread an universal alarm in Italy and defeated some of the Roman generals, Crassus was sent against them. A battle was fought, in which Crassus slaughtered 12,000 of the slaves, and by this decisive blow soon put an end to the war, and was honoured with an *ovatio* at his return. He was soon after made consul with Pompey in the year of Rome 682, and in this high office he displayed his opulence by entertaining the populace at 10,000 tables. He was afterwards Censor, and formed the first triumvirate with Pompey and Cæsar. As his love of riches was more predominant than that of glory, Crassus never imitated the ambitious conduct of his colleagues, but was satisfied with the province of Syria, which seemed to promise an inexhaustible source of wealth. With hopes of enlarging his possessions he set off from Rome, though the omens proved unfavourable, and every thing seemed to threaten his ruin. He crossed the Euphrates, and forgetful of the rich cities of Babylon and Selucia, he hastened to make himself master of Parthia. He was betrayed in his march by the delay of Artavasdes, king of Armenia, and the perfidy of Ariamnes. He was met in a large plain by Surena the general of the forces of Orodes king of Parthia, and a battle was

fought in which 20,000 Romans were killed and 10,000 taken prisoners. The darkness of the night favoured the escape of the rest; and Crassus, forced by the mutiny and turbulence of his soldiers, and the treachery of his guides, trusted himself to the general of the enemy on pretence of proposing terms of accommodation, and he was killed. His head was cut off and sent to Orodes, who poured melted gold down his throat, and insulted his misfortunes. Though he has been called avaricious, yet he showed himself always ready of lending money to his friends without interest. He was fond of philosophy, and his knowledge of history was great and extensive.

CRATÆGUS, WILD-SERVICE TREE, HAWTHORN, &c.: A genus of the digynia order, belonging to the icofandria class of plants; and in the natural method ranking under the 36th order, *Pomaceæ*. The calyx is quinquefid; the petals five; the berry inferior, dispersuous. There are ten species, all of the tree and shrub kind, hardy and deciduous. Those most valuable for economical and ornamental purposes in gardening are the following.

1. The oxycanthus, hawthorn, or white-thorn, grows naturally all over Europe. In the state in which we are used to observe it, it is nothing better than a tall, uncouth, irregular shrub; but trained up as a standard, it swells to a large timber size, with a tall stem and a full spreading head. The standard hawthorn, whether we view its flowers in the spring, its foliage in the summer, or its fruit in the autumn and winter, is one of the most ornamental plants, standing singly, that can be scattered over a park or lawn. Its uses will be explained under the article **HEDGES**.

In order to propagate a quantity of quick, one method is generally practised; namely, first burying the haws, and taking them up to sow the October following; though, says Hanbury, there is another way more preferable; namely, to prepare the beds, and sow the haws soon after they are gathered. Whoever pursues the former method, having gathered what quantity of haws will answer his purpose, should in some bye-corner of the kitchen-garden or nursery dig an hole or pit capacious enough to receive them; some of the earth which came out of the hole, after the haws are put in it, should be laid upon them; and being thus carefully covered down, they may remain there till October. Then, having ground well dug, and cleared of the roots of all troublesome weeds, and the mould being fit for working, the beds should be made for the haws. Four feet is a very good width for these beds, as they may be easily reached over to be weeded; and if the alleys between be each one foot and a half wide, they will be of a good size. The beds being marked out with a line, sufficient mould must be raked out to cover the haws an inch and an half deep. This being done, and the bottom of the beds being made level and even, the haws should be sown, and afterwards gently tapped down with the back of the spade; and then the fine mould, which had been raked out of the beds, must be thrown over them, covering them an inch and a half deep. In the spring the plants will come up, and in the summer following should be kept clear of weeds; though it does sometimes happen, that few of them will appear till the second spring after sowing. Sometimes the

Cratægus. young plants are planted out from the feed-beds at one, two, or three years old; but the best plants are obtained by transplanting them into fresh mould the first or second year, letting them remain in the nursery two or three years longer. The practice of the London nurserymen is this: The strongest of the feed-bed plants having been drawn at two or three years old for sale, they clear the beds entirely by drawing the remaining weak underling plants, and transplanting them into fresh beds in this manner, which they call *bedding them*: The ground having been trenched, and the tips of the plants as well as the lower fibres of their roots having been taken off with a sharp knife, they strain a line along one side of the bed; and by chopping with a spade by the side of the line, leave a cleft or drill of a depth proportioned to the length of the plants to be laid in; and drawing the loose mould somewhat towards them, leave the side of the drill next to the line with a smooth polished face. Against this face the plants are set up, leaning towards the line, about three inches asunder, leaving their heads about an inch above the mould, and placing their roots at such a depth as to bury their stems from two to three inches deeper than they stood in the feed-bed. The loose mould being returned and pressed gently to the roots with the foot, the line is removed, and another row planted in the same manner about a foot from the first.

The common hawthorn sports in the following varieties: The large scarlet hawthorn; the yellow hawthorn; the white hawthorn; the maple-leaved hawthorn; the double-blossomed hawthorn; the Glastonbury thorn. The large scarlet hawthorn is no more than a beautiful variety of the common haw. It is exceedingly large, oblong, perfectly smooth, and of a bright scarlet; and from the additional splendor it acquires by the berries, it is propagated to cause variety in plantations for observation and pleasure. Yellow haw is a most exquisite plant. The buds at their first coming out in the spring are of a fine yellow, and the fruit is of the colour of gold. The tree is a great bearer, and retains its fruit all winter, causing a delightful effect in plantations of any kind. It was originally brought from Virginia, is greatly admired, and no collection of hardy trees should be without it. White haw is but a paltry tree compared with the former. It hardly ever grows to the height of the common hawthorn, is an indifferent bearer, and the fruit is small and a very bad white. Maple-leaved hawthorn will grow to be near twenty feet high, and has very few thorns. The leaves are larger than the common hawthorn, resemble those of the maple, and are of a whitish-green colour. The flowers are produced in large bunches in June, and are succeeded by remarkable fruit, of a shining red, which looks beautiful in the winter. Double-blossomed hawthorn produces a full flower, and is one of the sweetest ornaments in the spring. Nature seems to have peculiarly designed this sort for the pleasure-garden; for though it be the common hawthorn only with the flowers doubled, yet it may be kept down to what size the owner pleases; so that it is not only suitable for wilderness-quarters, shrubberies, and the like, but is also useful for small gardens, where a tree or two only are admitted. These beautiful double flowers come out

in large bunches in May, and the tree is so good a bearer that it will often appear covered with them. Their colour at their first appearance is a delicate white: They afterwards die to a faint red colour, and are frequently succeeded by small imperfect fruit: Glastonbury thorn differs in no respect from the common hawthorn, only that it sometimes flowers in the winter. It is said to have originally been the staff of Joseph of Arimathea, that noble counsellor who buried Christ. He, according to the tradition of the abbey of Glastonbury, attended by eleven companions, came over into Britain, and founded, in honour of the Blessed Virgin, the first Christian church in this isle. As a proof of his mission, he is said to have stuck his staff into the ground, which immediately shot forth and bloomed. This tree is said to have blossomed on Christmas-day ever since, and is universally distinguished by the name of the *Glastonbury thorn*. Hanbury says, I have many plants that were originally propagated from this thorn: and they often flower in the winter, but there is no exact time of their flowering; for in fine seasons they will sometimes be in blow before Christmas, sometimes they afford their blossoms in February, and sometimes it so happens that they will be out on Christmas-day.

2. The azarolus, or azarole thorn, is a native of Italy and the south of France. It will grow to be fifteen or sixteen feet high. The leaves are large, nearly trifid, ferrated and obtuse. The flowers are large, come out in May, and in the different varieties are succeeded by fruit of different size, shape, and relish. The principal varieties of this species are: The azarole with strong thorns; the azarole with no thorns; the jagged-leaved azarole; the oriental medlar.

3. The aria theophracti, called the *white-leaf-tree*, is a native of most of the cold countries of Europe. It will grow to be more than twenty feet high. This tree is engaging at all times of the year, and catches the attention even in the winter; for then we see it stand, though naked of leaves, with a fine strait stem, with smooth branches, spotted with white, at the end of which are the buds, swelled for the next year's shoot, giving the tree a bold and fine appearance. In the spring the leaves come out of course, and look delightfully, having their upper surface green and the lower white. Their figure is oval; they are unequally ferrated, about three inches long, and half as wide. Several strong nerves run from the mid-rib to the border, and they are placed alternately on the branches, which appear as if powdered with the finest meal. The flowers are produced at the end of the branches in May: they are white, grow in large bunches, having mealy footstalks; and are succeeded by red berries, which will be ripe in autumn.

4. The terminalis, wild service, or maple-leaved service, is a large growing tree, native of England, Germany, Switzerland, and Burgundy. It will arrive to near fifty feet, and is worth propagating for the sake of the timber, which is very white and hard. This tree grows naturally in several woods in England; and it is the fruit of this species that is tied in bunches and exposed for sale in the autumn: It is gathered in the woods, and by some persons is much liked. The leaves in some degree resemble those of the maple-tree in shape; their upper surface is a fine green, their un-

Cratægus. der hoary; and they grow alternately on the branches. The flowers come out in May, exhibiting themselves in large clusters at the ends of the branches: They are white, and are succeeded by the aforesaid eatable fruit, which when ripe is of a brown colour, and about the size of a large haw.

5. The coccinea, or Virginian azarole, is a native of Virginia and Canada. It will grow to be near twenty feet high. The stem is robust, and covered with a light-coloured bark. The branches are produced without order, are of a dark brown colour, and possessed of a few long sharp thorns. The leaves are spear-shaped, oval, smooth, and ferrated; of a thickish consistence, and often remain on the tree the greatest part of the winter. Each separate flower is large; but as few of them grow together, the umbels they form are rather small. They come out in May, and are succeeded by large dark-red-coloured fruit, which ripens late in the autumn. The varieties of this species are: The pear-leaved thorn; the plum-leaved thorn with very long strong spines and large fruit; the plum-leaved thorn with short spines and small fruit.

6. The crus galli, or cockspur thorn, is a native of Virginia and Canada, and grows to about twenty feet high. It rises with an upright stem, irregularly sending forth branches, which are smooth, and of a brownish colour, spotted thinly with small white spots. It is armed with thorns that resemble the spurs of cocks, which gained it the appellation of cockspur thorn. In winter the leaf-buds appear large, turgid, and have a bold and pleasant look among others of different appearances. In summer this tree is very delightful. The leaves are oval, angular, ferrated, smooth, and bend backwards. They are about four inches long, and three and a half broad; have five or six pair of strong nerves running from the mid rib to the border; and die to a brownish-red colour in the autumn. The flowers are produced in very large umbels, making a noble show in May; and are succeeded by large fruit of a bright red colour, which have a good effect in the winter. The principal varieties of this species are: The cockspur hawthorn with many thorns; the cockspur hawthorn with no thorns; the cockspur with eatable fruit. "The latter was sent me (says Hanbury) from America with that name, and I have raised some trees of the seed; but they have not yet produced any fruit, so that I cannot pretend to say how far it may be desirable; though I have been informed it is relished in America by some of the inhabitants there.

7. The tomentosa, gooseberry-leaved Virginia hawthorn, grows to about seven or eight feet high. The branches are slender, and closely set with sharp thorns. The leaves are cuneiform, oval, ferrated, and hairy underneath. The flowers are small, and of a white colour: They are produced from the sides of the branches about the end of May; and are succeeded by yellow fruit, which ripens late in autumn. There is a variety of this called the *Carolina Hawthorn*, which has longer and whiter leaves, larger flowers and fruit, and no thorns.

8. The viridis, or green-leaved Virginia hawthorn, has the stem and branches altogether destitute of thorns. The leaves are lanceolate, oval, nearly trilobate, ferrated, smooth, and green on both sides. The flowers are white, moderately large, come out the end of May,

and are succeeded by a roundish fruit, which will be ripe late in the autumn.

The respective species are all propagated by sowing of the seeds; and the varieties are continued by budding them upon stocks of the white thorn. This latter method is generally practised for all the sorts; though when good seeds can be procured, the largest and most beautiful plants are raised that way. 1. In order to raise them from seeds, let these be sown soon after they are ripe, in beds of fresh, light, rich earth. Let alleys be left between the beds, for the convenience of weeding, and let the seeds be covered over with fine mould about an inch deep. The summer following the beds must be kept clean of weeds, and probably some few plants will appear: But this is not common in any of the sorts; for they generally lie till the second spring after sowing before they come up. At the time they make their appearance they must be watered if the weather proves dry; and this should be occasionally repeated all summer. They should also be constantly kept clean from weeds; and in the autumn the strongest may be drawn out, and set in the nursery-ground, a foot asunder, in rows that are two feet distant from each other; while the weakest may remain until another year. During the time they are in the nursery, the ground between the rows should be dug every winter, and the weeds constantly hoed down in the summer; and this is all the trouble they will require until they are planted out for good, which may be in two, three, or more years, at the pleasure of the owner, or according to the purposes for which they are wanted. 2. These trees are easily propagated by budding also; they will all readily take on one another; but the usual stocks are those of the common hawthorn. In order to have these the best for the purpose, the haws should be got from the largest trees, such as have the fewest thorns and largest leaves. After they are come up, and have stood one year in the seed-bed, the strongest should be planted out in the nursery, a foot asunder and two feet distant in the rows; and the second summer after many of them will be fit for working. The end of July is the best time for this business; and cloudy weather, night and morning, are always preferable to the heat of the day. Having worked all the different sorts into these stocks, they may be let alone until the latter end of September, when the bass matting should be taken off. In the winter the ground between the rows should be dug; and in the spring the stock should be headed about half a foot above the bud. The young shoots the stocks will always attempt to put out, should be as constantly rubbed off; for these would in proportion starve the bud and stop its progress. With this care several of the sorts have been known to shoot six feet by the autumn; and as they will be liable to be blown out of their sockets by the high winds which often happen in the summer, they should be slightly tied to the top of the stock that is left on for the purpose, and this will help to preserve them.

CRATCHES, in the manege, a swelling on the pastern, under the fetlock, and sometimes under the hoof; for which reason it is distinguished into the finew cratches, which affect the finew, and those upon the coronet, called *quitter-bones*.

CRATER, *Cup*, in astronomy, a constellation of

Crater
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Cratippus.

of the southern hemisphere; whose stars, in Ptolemy's Catalogue, are seven; in Tycho's, eight; in Hevelius's, ten; in the Britannic Catalogue, thirty-one.

CRATER is also used to signify the mouth or opening of a volcano or burning mountain, from whence the fire is discharged. See VOLCANO.

CRATES, of Thebes, a famous philosopher, was the disciple of Diogenes the Cynic. It is said that he threw all his money into the sea, that he might the more freely apply himself to the study of philosophy. Others assert that he placed it in another person's hands, with orders to give it to his children if they should happen to be fools: For (said Crates), if they should be philosophers, they will have no need of it: in which case it was to be given to the people. He flourished about 328 years before Christ.

He ought not to be confounded with Crates, a famous academic philosopher, the disciple and friend of Polemon. This last Crates had Arcesilaus and other celebrated philosophers for his disciples; and flourished about 300 years before Christ.

CRATEVA, the GARLIC PEAR: A genus of the monogonia order, belonging to the dodecandria class of plants; and in the natural method ranking under the 25th order, *Putamineæ*. The corolla is tetrapetalous; the calyx quadrid; the berry inferior dispermous. There are two species, both of them natives of several parts of India. They are both of the tree kind; and are chiefly distinguished by their fruit. The tapia, or garlic pear, has a smooth round fruit about the size of an orange, with a hard brown shell or cover, which incloses a mealy pulp, filled with kidney-shaped seeds. It hath a strong smell of garlic, and communicates the same to such animals as feed upon it. The tender buds from the young branches being bruised and applied to the naked skin, will blister as effectually as cantharides. It rises to the height of about 30 feet. The other grows to the size of a very large tree, with trifoliate leaves, sawed on the edges. The flowers have the smell of roses, and are succeeded by an oblong fruit of the size of an apple, covered with a very hard bony shell, and containing a soft fleshy pulp, having the taste of quinces. From the flowers of this plant is obtained by distillation a water highly odoriferous and cordial. The pulpy part of the fruit is prepared into various kinds of marmalades, which are exceedingly agreeable to the taste, and are much used by the grandees in those countries where the trees are native; they are also reckoned serviceable in dysenteries. Both species may be propagated in this country by seeds. These are to be sown upon a hot-bed in the spring; and when the plants come up, they are to be treated in the manner directed for the ANNONA.

CRATINUS, an ancient comic poet, of whom we should scarcely have known any thing, had not Quintilian, Horace, and Persius, mentioned him, Eupolis, and Aristophanes, as the great masters of what we call the ancient comedy. It is gathered that he died in the 87th Olympiad. Suidas tells us that he wrote 21 plays, and that he was splendid and bright in his characters.

CRATIPPUS, a celebrated peripatetic philosopher, was a native of Mitylene, where he taught philosophy; but at length went to Athens, where Brutus and the son of Cicero were his disciples. Pompey

went to see him after the battle of Pharsalia, and proposed to him his difficulties in relation to the belief of a Providence; when Cratippus comforted him, and by forcible arguments answered his objections. He wrote some pieces about divination: and is supposed to be the same with him whom Tertullian, in his book *De Anima*, has ranked among the writers upon dreams.

CRATO, a small town of Portugal, in the province of Alentejo, with a rich priory. It is the chief commandery which the knights of Malta have in Portugal. W. Long. 8. 12. N. Lat. 38. 50.

CRAVAN, a town of France, in Burgundy, remarkable for its good wine, and for a battle fought there between the English and French. It is seated near the confluence of the rivers Cure and Yonne. E. Long. 3. 30. N. Lat. 47. 42.

CRAVEN, or CRAVENT, a word of reproach, used in trials by battel. See BATTLE.

CRAX, in ornithology, the curassou, a genus of birds, belonging to the order of gallinæ. The base of the beak of each mandible is covered with wax; and the feathers of the head are curled. There are five species, viz. 1. The alecator, or Indian hen of Sloane, is about the size of a small turkey. It is black, with a white belly. A yellow wax covers about one half of each mandible; the tongue is entire; the temples are bare and black; the tail is roundish, and consists of 14 prime feathers; the legs are strong, and of a dusky brown colour. They are frequent at Guiana; and are called *powese* by the natives from their cry, which is somewhat similar; are pretty numerous in the woods, and make no small part of the food of the planters, being supplied therewith by the Indian hunters; and their flesh is reckoned delicate, much like that of a turkey. They are easily brought up tame, and are frequently found in the Dutch settlements of Berbice, Essequebo, and Demerary. They are called at Brasil by the name of *curassou*. It is found in the warm parts of America. 2. The rubra, or Peruvian hen, is red, with a bluish head: it is a native of Peru. These birds are natives of Mexico Plate CLI. and Peru. They feed on fruits, and perch of nights on trees: the flesh is white; and esteemed very good food. They are frequently kept tame in our menageries in England, and readily mix with other poultry, feeding on bread and grain; but this climate is not near warm enough for their nature, they not being able to bear the dampness of the grass of our meadows, which renders them subject to have their toes rot off. They will often live in this state some time; and in one instance which Mr Latham saw, the whole of one foot was gone, and but part of one toe left on the other, before the creature died. 3. The mitu, or Brasilian pheasant, is black, with a dusky belly, and red wax: it is a native of Guinea and Brazil. 4. The globicera, has a yellow protuberance between the nostrils, and is of a bluish-black colour: it is likewise a native of Brazil. 5. The pauxi, or Mexican pheasant of Brissonius, is of a bluish colour, with blue wax, and the tip of the tail and belly white: it is a native of Mexico.

CRAY-FISH, or CRAW-FISH. See CANCER.

The flesh of cray-fish is cooling, moistening, and adapted to nourish such as labour under atrophies. There are various methods of preparing these animals; they may be either boiled or fried, and then taken out

Crato
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Cray-fish.

Cray-fish,
Crayer.

of their shells, and made up in variety of dishes: but no parts of them are eatable except their claws and tails. Preparations and broths of cray-fish are celebrated not only for a palatable aliment, but also for answering some medicinal intentions, as being of a moistening quality, and sheathing up and correcting acrimony. The broth is prepared of four or five cray fish, which having their heads cut off, and their intestines extracted, are to be bruised and boiled in the broth of flesh or poultry, until they become sufficiently red; after which the liquor is to be strained off and seasoned, as the case may require. This broth may be rendered still more medicinal by the addition of herbs, snails, or other substances; according to the intention of the physician. Their flesh is accounted best in the summer months.

The delicate flavour of these fish depends in a great measure on their food. When they have well-tasted food, their flesh preserves the relish of it: but when they feed on other things, they are often rendered of no value, by the flavour communicated to their flesh by them. There are great quantities of these fish in the river Obra, on the borders of Silesia; but the people find them scarce eatable, because of a bitter aromatic flavour, very disagreeable in food. It has been since observed, that the *calamus aromaticus* grows in vast abundance on the banks of that river, and that these creatures feed very greedily upon its roots. These have a very remarkable bitterness mixed with their aromatic flavour, while fresh, which goes off very much in the drying; and on comparing the taste of these roots with that of the cray fish, there remains no doubt of the one being owing to the other.

They abound in the river Don in Muscovy, where they are laid in heaps to putrefy; after which the stones called *crab's eyes* are picked out. These animals are very greedy of flesh, and flock in great numbers about carcasses thrown into the water where they are, and never leave it while any remains. They also feed on dead frogs when they come into their way. In Switzerland there are some cray-fish which are red while they are alive, and others bluish. Some kinds of them also will never become red, even by boiling, but continue blackish.

The cray fish discharges itself of its stomach, and, as M. Geoffroy thinks, of its intestines too. These, as they putrefy and dissolve, serve for food to the animal; during the time of the reformation, the old stomach seems to be the first food the new one digests. It is only at this time that the stones are found called *crab's eyes*; they begin to be formed when the old stomach is destroyed, and are afterwards wrapped up in the new one, where they decrease by degrees till they entirely disappear.

CRAYER (Caspar de), was born at Antwerp in 1585, and was a disciple of Raphael Coxis, the son of that Coxis who had studied under Raphael; but he soon showed such proofs of genius, and of an elevated capacity, that he far surpassed his master, and therefore quitted him. Afterwards he made judicious observations on the particular excellencies of the most renowned masters to which he had any access; and taking nature for his constant director and guide, he formed for himself a manner that was exceedingly pleasing. The first work which established him in the favour of the court at Brussels, was a portrait of Cardinal Fer-

dinand, brother to the King of Spain, which he painted at full length, and as large as life. In that picture he succeeded so happily, that it was sent to Madrid, and received there with such concurrent approbation of the king and the whole court, that it laid the foundation of the fame and fortune of Crayer. For the king, as an acknowledgment of the painter's merit, sent him a gold chain with a medal; and added, as a farther instance of his favour, an appointment for a considerable pension. But nothing places the talents of Crayer in a stronger light, than the testimony of so excellent an artist as Rubens. That great man went to Antwerp particularly to visit Crayer, and to see his work; and after examining attentively a picture of his painting, in the refectory of the abbey of Afslegheim, he publicly declared that no painter could surpass Crayer. Nor was this master less distinguished by Vandyck, who always expressed a real esteem and friendship for him, and painted his portrait. He had somewhat less fire in his compositions than Rubens, but his design is frequently more correct. His composition generally consisted of a small number of figures; and with discreet judgment, he avoided the encumbering his design with superfluous particulars, or loading his subject with any thing that seemed not to contribute to its elegance or probability. He grouped his figures with singular skill, and his expressions have all the truth of nature. There is a remarkable variety in his draperies, and an equal degree of simplicity in their folds; and as to his colouring, it is admirable. Of all his cotemporary painters, he was accounted to approach nearest to Vandyck, not only in history but in portrait. He principally painted religious subjects, and was continually at work; and although he lived to a great age, yet his temperance and constant regularity preserved to him the full use of all his faculties; and to the last month of his life his pencil retained the same force and freedom which it possessed in his most vigorous time. The subject of that picture which was so honoured by the approbation of Rubens is the Centurion alighting from his horse to prostrate himself at the feet of our Saviour. It is a capital design of Crayer; and although it consists of a great number of figures, the harmony and union are well preserved.

CRAYON, a general name for all coloured stones, earths, or other minerals and substances, used in designing or painting in paste; whether they have been beaten and reduced to a paste, or are used in their primitive consistence, after sawing or cutting them into long narrow slips. In this last manner are red crayons made, of blood-stone or red chalk; black ones, of charcoal and black lead. Crayons of all other colours are compositions of earths reduced to paste.

CRAYON-Painting. Whether the painter works with oil-colours, water-colours, or crayons, the grand object of his pursuit is still the same: a just imitation of nature. But each species has its peculiar rules and methods. Painting with crayons requires in many respects a treatment different from painting in oil-colours; because all colours used dry are in their nature of a much warmer complexion than when wet with oils, &c. For this reason, in order to produce a rich picture, a much greater portion of what painters term *cooling tints* must be applied in crayon painting than would be judicious to use in oils. Without any danger of a mistake, it is to be supposed, the not

Crayon
Crayon

Crayon. being acquainted with this observation is one great cause why so many oil-painters have no better success when they attempt crayon-painting. On the contrary, crayon-painters being so much used to those teints which are of a cold nature when used wet, are apt to introduce them too much when they paint with oils, which is seldom productive of a good effect.

We shall now endeavour to give the student some directions towards the attainment of excellence in this art.

Of the Application of the Crayons, with some previous Dispositions. The student must provide himself with some strong blue paper, the thicker the better, if the grain is not too coarse or knotty, though it is almost impossible to get any entirely free from knots. The knots should be levelled with a penknife or razor, otherwise they will prove exceedingly troublesome. After this is done, the paper must be pasted very smooth on a linen cloth, previously strained on a deal frame, the size according to the artist's pleasure: on this the picture is to be executed; but it is most eligible not to paste the paper on till the whole subject is first dead-coloured. The method of doing this is very easy, by laying the paper with the dead-colour on its face, upon a smooth board or table, when, by means of a brush, the backside of the paper must be covered with paste; the frame, with the strained cloth, must then be laid on the pasted side of the paper; after which turn the painted side uppermost, and lay a piece of clean paper upon it, to prevent smearing it: this being done, it may be stroked gently over with the hand; by which means all the air between the cloth and the paper will be forced out.

When the paste is perfectly dry, the student may proceed with the painting. The advantages arising from pasting the paper on the frame according to this method, after the picture is begun, are very great, as the crayons will adhere much better than any other way; which will enable the student to finish the picture with a firmer body of colour and greater lustre.

When the painters want to make a very correct copy of a picture, they generally make use of tiffany or black gauze, strained tight on a frame, which they lay flat on the subject to be imitated, and with a piece of sketching chalk trace all the outlines on the tiffany. They then lay the canvas to be painted on flat upon the floor, placing the tiffany with the chalked lines upon it, and with an handkerchief brush the whole over; this presents the exact outlines of the picture on the canvas. The crayon-painter may also make use of this method when the subject of his imitation is in oils; but in copying a crayon-picture, he must have recourse to the following method, on account of the glass.

The picture being placed upon the easel, let the outlines be drawn on the glass with a small camel's hair pencil dipped in lake, ground thin with oils, which must be done with great exactness. After this is accomplished, take a sheet of paper of the same size and place it on the glass, stroking over all the lines with the hand, by which means the colour will adhere to the paper, which must be pierced with pin-holes pretty close to each other. The paper intended to be used for the painting must next be laid upon a table, and the pierced paper placed upon it; then with some fine-pounded charcoal, tied up in a piece of lawn, rub over the pierced lines, which will give an exact outline; but great care must be taken not to brush this

off till the whole is drawn over with sketching chalk, which is a composition made of whiting and tobacco-pipe clay, rolled like the crayons, and pointed at each end. *Crayon.*

When a student paints immediately from the life, it will be most prudent to make a correct drawing of the outlines on another paper, the size of the picture he is going to paint, which he may trace by the preceding method, because erroneous strokes of the sketching chalk (which are not to be avoided without great expensiveness) will prevent the crayons from adhering to the paper, owing to a certain greasy quality in the composition.

The student will find the sitting posture, with the box of crayons in his lap, the most convenient method for him to paint. The part of the picture he is immediately painting should be rather below his face; for, if it is placed too high, the arm will be fatigued. Let the windows of the room where he paints be darkened, at least to the height of six feet from the ground; and the subject to be painted should be situated in such a manner, that the light may fall with every advantage on the face, avoiding too much shadow, which seldom has a good effect in portrait-painting, especially if the face he paints from has any degree of delicacy.

Before he begins to paint, let him be attentive to his subject, and appropriate the action or attitude proper to the age of the subject: if a child, let it be childish; if a young lady, express more vivacity than in the majestic beauty of a middle-aged woman, who also should not be expressed with the same gravity as a person far advanced in years. Let the embellishments of the picture, and introduction of birds, animals, &c. be regulated by the rules of propriety and consistency.

The features of the face being correctly drawn with chalks, let the student take a crayon of pure carmine, and carefully draw the nostril and edge of the nose next the shadow; then, with the faintest carmine teint, lay in the highest light upon the nose and forehead, which must be executed broad. He is then to proceed gradually with the second teint, and the succeeding ones, till he arrives at the shadows, which must be covered brilliant, enriched with much lake, carmine, and deep green. This method will at first offensively strike the eye, from its crude appearance; but in the finishing, it will be a good foundation to produce a pleasing effect, colours being much more easily sullied when too bright, than when the first colouring is dull, to raise the picture into a brilliant state. The several pearly teints discernible in fine complexions must be imitated with blue verditer and white, which answers to the ultramarine teints used in oils. But if the parts of the face where these teints appear are in shadow, the crayons composed of black and white must be substituted in their place.

Though all the face when first coloured should be laid in as brilliant as possible, yet each part should be kept in its proper tone; by which means the rotundity of the face will be preserved.

Let the student be careful when he begins the eyes to draw them with a crayon inclined to the carmine teint, of whatever colour the irises are of; he must lay them in brilliant, and at first not loaded with colour, but executed lightly: no notice is to be taken of the pupil yet. The student must let the light of the

Crayon. eye incline very much to the blue cast, cautiously avoiding a staring white appearance, (which, when once introduced, is seldom overcome), preserving a broad shadow thrown on its upper part, by the eyelash. A black and heavy tint is also to be avoided in the eye-brows; it is therefore best to execute them like a broad glowing shadow at first, on which, in the finishing, the hairs of the brow are to be painted; by which method of proceeding, the former tints will show themselves through, and produce the most pleasing effect.

The student should begin the lips with pure carmine and lake, and in the shadow use some carmine and black; the strong vermilion tints should be laid on afterwards. He must beware of executing them with stiff, harsh lines, gently intermixing each with the neighbouring colours, making the shadow beneath broad, and enriched with brilliant crayons. He must form the corner of the mouth with carmine, brown ochre, and greens, variously intermixed. If the hair is dark, he should preserve much of the lake and deep carmine tints therein; this may easily be overpowered by the warmer hair tints, which, as observed in painting the eye-brows, will produce a richer effect when the picture is finished; on the contrary, if this method is unknown or neglected, a poverty of colouring will be discernible.

After the student has covered over, or as artists term it, has dead-coloured the head, he is to sweeten the whole together, by rubbing it over with his finger, beginning at the strongest light upon the forehead, passing his finger very lightly, and uniting it with the next tint, which he must continue till the whole is sweetened together, often wiping his finger on a towel to prevent the colours being sullied. He must be cautious not to smooth or sweeten his picture too often, because it will give rise to a thin and scanty effect, and have more the appearance of a drawing than a solid painting; as nothing but a body of rich colours can constitute a rich effect. To avoid this (as the student finds it necessary to sweeten with the finger), he must commonly replenish the picture with more crayon.

When the head is brought to some degree of forwardness, let the back-ground be laid in, which must be treated in a different manner, covering it as thin as possible, and rubbing it into the paper with a leather stump. Near the face the paper should be almost free from colour, for this will do great service to the head, and by its thinness give both a soft and solid appearance. In the back ground also, no crayon that has whitening in its composition should be used, but chiefly such as are the most brilliant and the least adulterated. The ground being painted thin next the hair, will give the student an opportunity of painting the edges of the hair over in a light and free manner when he gives the finishing touches.

The student having proceeded thus far, the face, hair, and back-ground being entirely covered, he must carefully view the whole at some distance, remarking in what respect it is out of keeping, that is, what parts are too light and what too dark, being particularly attentive to the white or chalky appearances, which must be subdued with lake and carmine. The above method being properly put into execution, will produce

Crayon. the appearance of a painting principally composed of three colours, viz. carmine, black, and white, which is the best preparation a painter can make for the producing a fine crayon-picture.

The next step is, to complete the back-ground and the hair, as the dust, in painting these, will fall on the face, and would much injure it if that was completed first. From thence proceed to the forehead, finishing downward till the whole picture is completed.

In painting over the forehead the last time, begin the highest light with the most faint vermilion tint, in the same place where the faint carmine was first laid, keeping it broad in the same manner. In the next shade succeeding the lightest, the student must work in some light blue tints, composed of verditer and white, intermixing with them some of the deeper vermilion tints, sweetening them together with great caution, insensibly melting them into one another, increasing the proportion of each colour as his judgment shall direct. Some brilliant yellows may also be used, but sparingly; and towards the roots of the hair, strong verditer tints, intermixed with greens, will be of singular service. Cooling crayons, composed of black and white, should succeed these and melt into the hair. Beneath the eyes, the sweet pearly tints are to be preserved, composed of verditer and white, and under the nose, and on the temples, the same may be used; beneath the lips, tints of this kind also are proper, mixing them with the light greens and some vermilion.

In finishing the cheeks, let the pure lake clear them from any dust contracted from the other crayons; then with the lake may be intermixed the bright vermilion; and last of all (if the subject should require it), a few touches of the orange-coloured crayon, but with extreme caution; after, sweeten that part with the finger as little as possible, for fear of producing a heavy disagreeable effect on the cheeks: as the beauty of a crayon-picture consists in one colour showing itself through, or rather between, another: this the student cannot too often remark, it being the only method of imitating beautiful complexions.

The eye is the most difficult feature to execute in crayons, as every part must be expressed with the utmost nicety, to appear finished; at the same time that the painter must preserve its breadth and solidity while he is particularizing the parts. To accomplish this, it will be a good general rule for the student to use his crayon in sweetening as much, and his finger as little, as possible. When he wants a point to touch a small part with, he may break off a little of his crayon against the box, which will produce a corner fit to work with in the minutest parts. If the eye-lashes are dark, he must use some of the carmine and brown ochre, and the crayon of carmine and black; and with these he may also touch the iris of the eye (if brown or hazel), making a broad shadow, caused by the eye-lash. Red tints of vermilion, carmine, and lake, will execute the corners of the eye properly; but if the eye-lids are too red, they will have a disagreeable sore appearance. The pupil of the eye must be made of pure lamp-black: between this and the lower part of the iris, the light will catch very strong, but it must not be made too sudden, but be gently diffused round the pu-
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pill till it is lost in shade. When the eye-balls are sufficiently prepared, the shining speck must be made with a pure white crayon, which should be first broken to a point, and then laid on firm; but as it is possible they may be defective in neatness, they should be corrected with a pin, taking off the redundant parts, by which means they may be formed as neat as can be required.

The difficulty, with respect to the nose, is to preserve the lines properly determined, and at the same time so artfully blended into the cheek, as to express its projection, and yet no real line to be perceptible upon a close examination; in some circumstances it should be quite blended with the cheek, which appears behind it, and determined entirely with a slight touch of red chalk. The shadow caused by the nose is generally the darkest in the whole face, partaking of no reflection from its surrounding parts. Carmine and brown ochre, carmine and black, and such brilliant crayons, will compose it best.

The student having before prepared the lips with the strongest lake and carmine, &c. must with these colours make them completely correct; and when finishing, introduce the strong vermilions, but with great caution, as they are extremely predominant. This, if properly touched, will give the lips an appearance equal, if not superior, to those executed in oils, notwithstanding the seeming superiority the latter has, by means of glazing (A), of which the former is entirely destitute.

When the student paints the neck, he should avoid expressing the muscles too strong in the stem, nor should the bones appear too evident on the chest, as both have an unpleasing effect, denoting a violent agitation of the body; a circumstance seldom necessary to express in portrait-painting. The most necessary part to be expressed, and which should ever be observed, (even in the most delicate subjects), is a strong marking just above the place where the collar bones unite; and if the head is much thrown over the shoulders, some notice should be taken of the large muscle that rises from behind the ear, and is inserted into the pit between the collar bones. All inferior muscles should be, in general, quite avoided. The student will find this caution necessary, as most subjects, especially thin persons, have the muscles of the neck much more evident than would be judicious to imitate. As few necks are too long, it may be necessary to give some addition to the stem, a fault on the other side being quite unpardonable, nothing being more ungraceful than a short neck. In colouring the neck, let the student preserve the stem of a pearly hue, and the light not so strong as on the chest. If any part of the breast appears, its transparency must also be expressed by pearly tints; but the upper part of the chest should be coloured with beautiful vermilions delicately blended with the other.

Of the Drapery. Dark blue, purple, black, pink, and all kinds of red draperies also, should be first tinged with carmine, which will render the colours much more brilliant than any other method; over this should

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be laid on the paper the middle teint (a medium between the light and dark teints, of which the drapery is to be painted), except the dark masses of shadow, which should be laid on at first as deep as possible; these, sweetened with the finger, being destitute of the smaller folds, will exhibit a masterly breadth, which the lesser folds, when added, ought by no means to destroy. With the light and dark teints, the smaller parts are next to be made with freedom, executing as much with the crayon, and as little with the finger as possible; in each fold touching the last stroke with the crayon, which stroke the finger must never touch. In the case of reflections, the simple touch of the crayon will be too harsh, therefore fingering will be necessary afterwards, as reflected lights are always more gentle than those which are direct. With respect to reflections in general, they must always partake of the same colour as the object reflecting, but in the case of single figures, it may be useful to make some particular observations.

In a blue drapery, let the reflections be of a greenish cast; in green draperies, make them of a yellow teint; in yellow, of an orange; in orange, reflect a reddish cast; in all reds, something of their own nature, but inclined to the yellow: black should have a reddish reflection; the reflection of a reddish teint will also prevent purples to the best advantage.

Of whatever colour the drapery is, the reflection on the face must partake thereof, otherwise the picture, like paintings on glass, will have but a gaudy effect.

Linen, lace, fur, &c. should be touched spiritedly with the crayon, fingering very little, except the latter; and the last touches, even of this, like all other parts, should be executed by the crayon, without sweetening with the finger.

The methods above recommended have been practised by the most celebrated crayon-painters, whose works have been held in public estimation; but the knowledge of, and ability to execute, each separate part with brilliancy and truth, will be found very insufficient to constitute a complete painter, without his judgment enables him to unite them with each other, by correctness of drawing, propriety of light and shadow, and harmony of colouring. In order to accomplish this, the student should carefully avoid finishing one part in particular, till he has properly considered the connection it is to have with the rest. The neglect of this is the principal reason why the performances of indifferent painters are so destitute of what is termed breadth, so conspicuously beautiful in the works of great masters. It must be granted, that this observation relates more particularly to large compositions, where a diversity of figures requires such a judicious disposition, that each may assist in the combination of a kind of universal harmony; yet, even in portrait-painting, the student should be particularly attentive to observe this idea of breadth, if he is desirous of acquiring that importance and dignity which constitutes excellence in painting.

Of the Materials. The perfection of the crayons consists,

(A) The method with which painters in oils express transparency in the lips is, by painting them first with light vermilion tints, and, when dry, touching them over with pure lake.

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sifts, in a great measure, in their softness; for it is impossible to execute a brilliant picture with them if they are otherwise; on which account great care should be observed in the preparing them, to prevent their being hard. In all compositions, flake-white and white-lead should be wholly rejected, because the slightest touch with either of these will unavoidably turn black.

The usual objection to crayon-paintings is, that they are subject to change; but whenever this happens, it is entirely owing to an injudicious use of the above-mentioned whites, which will stand only in oils. To obviate the bad effects arising from the use of such crayons, let the student make use of common whiting prepared in the following manner.

Take a large vessel of water, put the whiting into it, and mix them well together; let this stand about half a minute, then pour off the top into another vessel, and throw the gritty sediment away; let what is prepared rest about a minute, and then pour it off as before, which will purify the whiting and render it free from all dirt and grittiness. When this is done, let the whiting settle, and then pour the water from it; after which, lay it on the chalk to dry, and keep it for use, either for white crayons, or the purpose of preparing tints with other colours, for with this all other tints may be safely prepared. If the student chooses to make crayons of the whiting immediately after it is washed, it is not necessary to dry it on the chalk, for it may be mixed instantly with any other colour, which will save considerable trouble. All colours of a heavy or gritty nature, especially blue verditer, must be purified by washing after this method.

The student must be provided with a large, flexible pallet-knife, a large stone and muller to levigate the colours, two or three large pieces of chalk to absorb the moisture from the colours after they are levigated, a piece of flat glass to prevent the moisture from being absorbed too much, till the colours are rolled into form, and vessels for water, spirits, &c. as necessity and convenience shall direct.

I. REDS. It is rather difficult to procure either good carmine or good lake. Good carmine is inclined to the vermilion tint, and good lake to the carmine tint. The carmine crayons are prepared in the following manner.

1. Carmine. As their texture is inclinable to hardness, instead of grinding and rolling them, take a sufficient quantity of carmine, lay it upon the grinding-stone, mix it with a levigating knife with spirits of wine till it becomes smooth and even. The chalk-stone being ready, lay the colour upon it to absorb the spirit; but be careful that it is laid on in a proper shape for painting. If it is levigated too thin, the crayons will be too flat; and if too thick, it will occasion a waste of colour, by their adhering to the pallet-knife; but practice will render the proper degree of consistency familiar. The simple colour being prepared, the next step is to compose the different tints by a mixture with whiting; the proportion to be observed consisting of 20 gradations to one, which may be clearly understood by the following directions. Take some of the simple colour, and levigate it with spirits of wine, adding about one part of washed whiting to three parts of carmine, of which, when properly incorporated, make

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two parcels. The next gradation should be composed of equal quantities of carmine and whiting, of which four crayons may be made. The third composition should have one fourth carmine and three fourths whiting; of this make six crayons, which will be a good proportion with the rest. The last tint should be made of whiting, very faintly tinged with carmine, of which make about eight crayons, which will complete the above-mentioned proportion. As these compound tints are levigated, they are to be laid immediately upon the chalk, that the moisture may be absorbed to the proper degree of dryness for forming into crayons, which may be known by its losing the greater part of its adhesive quality when taken into the hand: if the consistency is found to be right, it may be then laid upon the glass, which having no pores will prevent the moisture from becoming too dry before it is convenient to form it into crayons, otherwise the crayons would be full of cracks and very brittle, which will be a great inconvenience when they are used in painting.

2. Lake. This is a colour very apt to be hard; to prevent which the student must observe the following particulars. Take about half the quantity of lake intended for the crayons and grind it very fine with spirits of wine; let it dry, and then pulverize it, which is easily done if the lake is good; then take the other half, and grind it with spirits, after which mix it with the pulverized lake, and lay it out directly in crayons on the chalk. This colour will not bear rolling. The simple colour being thus prepared, proceed with the compound crayons as directed before, and in the same degrees of gradation as the carmine tints.

3. Vermilion. The best is inclined to the carmine tint. Nothing is required to prepare this colour more than to mix it on the stone with soft water or spirits, after which it may be rolled into crayons. The different tints are produced by a mixture of the simple colour with whiting, according to the proportions already given.

II. BLUES. **1. Prussian blue** is a colour very apt to bind, and is rendered soft with more difficulty than carmine and lake. The same method of preparation is to be followed with this as directed with respect to lake, only it is necessary to grind a larger quantity of the pure colour, as it is chiefly used for painting draperies. The different tints may be made according to necessity, or the fancy of the painter. **2. Blue-verditer** is a colour naturally gritty, and therefore it is necessary to wash it well. Its particles are so coarse as to require some binding matter to unite them, otherwise the crayons will never adhere together. To accomplish this, take a quantity sufficient to form two or three crayons, to which add a piece of slacked plaster of Paris about the size of a pea; mix these well together, and form the crayons upon the chalk. This blue is extremely brilliant, and will be of great use in heightening draperies, &c. The tints must be formed with whiting as directed in the former instances, and are highly serviceable for painting flesh, to produce those pearly tints so beautiful in crayon-pictures. It is not necessary to mix the compounds with spirits, as clear water will be sufficient.

III. GREENS. Brilliant-greens are produced with great difficulty. In Switzerland, they have a method

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of

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of making them far superior to ours. We usually take yellow ochre, and after grinding it with spirits, mix it with the powder of Prussian blue, then temper it with a knife, and lay the crayons on the chalk, without rolling them. Instead of this, some use king's yellow mixed with Prussian blue, and others brown ochre and Prussian blue. The crayons made of the two last may be rolled. Various teints may be produced by these colours, according to fancy or necessity; some to partake more of the blue, and others of the yellow.

IV. **YELLOWS.** 1. King's-yellow is the most useful and the most brilliant, levigated with spirits of wine, and compose the different teints as before directed. Yellow ochre and Naples yellow ground with spirits will make useful crayons. 2. Orange is produced with king's-yellow and vermilion ground together with spirits, and the teints formed as in other cases, but no great quantity of them is required.

V. **BROWNS.** 1. Cullen's-earth is a fine dark brown. After six or eight of the simple crayons are prepared, several rich compound teints may be produced from it, by a mixture with carmine, in various degrees. Black, carmine, and this colour, mixed together, make useful teints for painting hair; several gradations may be produced from each of these by a mixture with whiting. Roman or brown ochre is an excellent colour, either simple or compounded with carmine. Whiting tinged in several degrees with either of these, will prove very serviceable in painting. 2. Umber may be treated in just the same manner, only it is necessary to levigate it with spirit of wine.

VI. **PURPLES.** Prussian blue ground with spirits and mixed with pulverized lake, will produce a good purple. Carmine thus mixed with Prussian blue, will produce a purple something different from the former. Various teints may be made from either of these compounds by a mixture with whiting.

VII. **BLACK.** 1. Lamp-black is the only black that can be used with safety, as all others are subject to mildew; but as good lamp-black is very scarce, the student will, perhaps, find it most expedient to make it himself; the process of which is as follows: Provide a tin cone, fix it over a lamp at such a height that the flame may just reach the cone for the foot to gather within it. When a sufficient quantity is collected, take it out, and burn all the grease from it in a crucible. It must then be ground with spirits, and laid on the chalk to absorb the moisture. Various grey teints may be formed from this by a mixture with whiting, as mentioned in former instances.— 2. Vermilion mixed with carmine: this is a composition of great use, and teints made from this with whiting will be found to be very serviceable. 3. Carmine and black is another good compound, of which five or six gradations should be made, some partaking more of the black, and others having the carmine most predominant, besides several teints by a mixture with whiting. 4. Vermilion and black is also a very useful compound, from which several different teints should be made. 5. Prussian blue and black is another good compound, and will be found of singular service in painting draperies.

It is impossible to lay down rules for the forming
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every tint necessary in composing a set of crayons, there being many accidental compositions, entirely dependent on fancy and opinion. The student should make it a rule to save theavings of his colours: for of these he may form various teints, which will occasionally be useful.

Of rolling the crayons, and disposing them for painting. The different compositions of colours must be cut into a proper magnitude, after they are prepared, in order to be rolled into pastils, for the convenience of using them. Each crayon should be formed in the left hand with the ball of the right, first formed cylindrically, and then tapered at each end. If the composition is too dry, dip the finger in water; if too wet, the composition must be laid upon the chalk again to absorb more of the moisture. The crayons should be rolled as quick as possible; and when finished, must be laid upon the chalk again, to absorb all remaining moisture. After the gradation of teints from one colour are formed, the stone should be well scraped and cleaned with water before it is used for another colour.

When the set of crayons is completed according to the rules prescribed, they should be arranged in classes for the convenience of painting with them. Some thin drawers, divided into a number of partitions, is the most convenient method of disposing them properly. The crayons should be deposited according to the several gradations of light. The bottom of the partitions must be covered with bran, as a bed for the colours; because it not only preserves them clean, but prevents their breaking.

The box made use of when the student paints, should be about a foot square, with nine partitions. In the upper corner, on the left hand (supposing the box to be in the lap when he paints), let him place the black and grey crayons, those being the most seldom used; in the second partition, the blues; in the third, the greens and browns; in the first partition on the left hand of the second row, the carmines, lakes, vermilions, and all deep reds; the yellows and orange in the middle, and the pearly teints next; and as these last are of a very delicate nature, they must be kept very clean, that the gradations of colour may be easily distinguished: in the lowest row, let the first partition contain a piece of fine linen rag to wipe the crayons with while they are using; the second, all the pure lake and vermilion teints; and the other partition may contain those teints which, from their complex nature, cannot be classed with any of the former.

CRAZE-MILL, or CRAZING-Mill, a mill in all respects like a grist-mill to grind corn, and is so called by the tin-miners, who use it to grind their tin, which is yet too great, after trampling.

CREAM, a general name applicable to all substances that separate from a liquor, and are collected upon its surface; but is more particularly applied to the following.

CREAM of Lime, is that part of the lime which had been dissolved in the water in its caustic state, but having again attracted some fixed air from the atmosphere, becomes incapable of solution, and therefore separates from the water in the mild state of chalk or limestone.

CREAM of Milk, generally called simple cream, is the
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most oily part of the milk; which being naturally only mixed, and not dissolved in the rest, soon separates from them, as being specifically lighter; after which it collects on the surface; from which it is generally skimmed, to complete the disengagement of the oily from the caseous and ferous parts that is to make butter*. Cream of milk is not only an agreeable aliment when recent, but is also useful in medicine as a lenient, when applied to tethers and erysipelas attended with pain and proceeding from an acrid humour.

*See Butter,
Milk, and
Cheese.

CREAM of Tartar. See CHEMISTRY, n° 886.

CREAT, in the manege, an usher to a riding master; or a gentleman bred in the academy, with intent to make himself capable of teaching the art of riding the great horse.

CREATION, in its primary import, seems to signify the bringing into being something which did not before exist. The term is therefore most generally applied to the original production of the materials whereof the visible world is composed. It is also, however, used in a secondary or subordinate sense, to denote those subsequent operations of the Deity upon the matter so produced, by which the whole system of nature and all the primitive genera of things received their form, qualities, and laws.

There is no subject concerning which there have been more disputes than this of creation. It is certain that none of the ancient philosophers had the smallest idea of its being possible to produce a substance out of nothing, or that even the power of the Deity himself could work without any materials to work upon. Hence some of them, among whom was Aristotle, asserted that the world was eternal both as to its matter and form. Others, though they believed that the gods had given the world its form, yet imagined the materials whereof it is composed to have been eternal. Indeed the opinions of the ancients, who had not had the benefit of revelation, were on this head so confused and contradictory, that nothing of any consequence can be deduced from them. The freethinkers of our own and of former ages have denied the possibility of creation, as being a contradiction to reason; and of consequence have taken the opportunity from thence to discredit revelation. On the other hand, many defenders of the sacred writings have asserted, that creation out of nothing, so far from being a contradiction to reason, is not only probable, but demonstrably certain. Nay, some have gone so far as to say, that from the very inspection of the visible system of nature, we are able to infer that it was once in a state of non-existence. It would be impossible for us, however, to enter into the multiplicity of arguments used on both sides; nor can we pretend to settle it, as the subject is confessedly above human comprehension.

What
works of
creation
God is
known to
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formed.

As to the works of creation which the Deity is known to us to have performed; all other beings, beside himself, are his creatures. Men and other animals that inhabit the earth and the seas, all the immense varieties of herbs and plants of which the vegetable kingdom consists; the globe of the earth, and the expanse of the ocean; these we know to have been produced by his power. Besides the terrestrial world which we inhabit, we see many other material bodies disposed around it in the wide extent of space. The moon, which is in a particular manner connected with

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our earth, and even dependent upon it; the sun, and the other planets with their satellites, which, like the earth, circulate round the sun, and appear to derive from him light and heat; those bodies which we call fixed stars, and consider as illuminating and cherishing with heat each its peculiar system of planets; and the comets which at certain periods surprize us with their appearance, and the nature of whose connection with the general system of nature, or with any particular system of planets, we cannot pretend to have fully discovered;—these are so many more of the Deity's works, from the contemplation of which we cannot but conceive the most awful ideas of his creative power.

Matter, however, whatever the varieties of form under which it is made to appear, the relative disposition of its parts, or the motions communicated to it, is but an inferior part of the works of creation. We believe ourselves to be animated with a much higher principle than brute matter; in viewing the manners and economy of the lower animals, we can scarce avoid acknowledging even them to consist of something more than various modifications of matter and motion: The other planetary bodies which seem to be in circumstances nearly analogous to those of our earth, are surely, as well as it, destined for the habitations of rational, intelligent beings. The existence of intelligences of an higher order than man, though infinitely below the Deity, appears extremely probable:—Of those spiritual beings called Angels we have express intimation in scripture; (see the article ANGELS.) Such are our notions concerning the existence of beings essentially distinct from matter, and in their nature far superior to it: these, too, must be the creatures of the Deity, and of his works of creation the noblest part. But the limits of creation we must not pretend to define. How far the regions of space extend, or how they are filled, we know not. How the planetary worlds, the sun and the fixed stars, are occupied, we do not pretend to have ascertained. We are even ignorant how wide a diversity of forms, what an infinity of living animated beings may inhabit our own globe. So confined is our knowledge of creation; yet so grand, so awful, that part which our narrow understandings can comprehend!

Concerning the periods of time at which the Deity executed his several works of creation, it cannot be pretended that mankind have had opportunities of receiving very particular information. From viewing the phenomena of nature, and considering the general laws by which they are regulated, we cannot draw any conclusive or even plausible inference with respect to the precise period at which the universe must have begun to exist. We know not, nor can we hope to ascertain, whether the different systems of planets circulating round our sun and the other fixed stars, were all created at one period, or each at a different period. We cannot even determine, from any thing that appears on the face of nature, whether our earth was not created at a later period than any of her fellow planets which revolve round the same sun. Astronomers are, from time to time, making new discoveries in the heavens; and it is impossible to say whether some of these successive discoveries may not be owing to successive creations.

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The period
of time at
which God
executed
his works
of creation

Philosophers have, indeed, formed some curious conjectures.

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jectures concerning the antiquity of the earth, from the appearances of its surface, and from the nature and disposition of its interior strata. The beds of lava in the neighbourhood of volcanoes have afforded ground for some calculations, which, though they do not fix the period of the earth's origin, are yet thought to prove that period to have been much more remote than the earliest age of sacred or profane history. * In the neighbourhood of mount Ætna, or on the sides of that extensive mountain, there are beds of lava covered over with a considerable thickness of earth; and at least another, again, which, though known from ancient monuments and historical records to have issued from the volcano at least 2000 years ago, is still almost entirely destitute of soil and vegetation: in one place a pit has been cut through seven different strata of lava; and these have been found separated from each other by almost as many thick beds of rich earth. Now, from the fact, that a stratum of lava 2000 years old is yet scantily covered with earth, it has been inferred by the ingenious canon Recupero, who has laboured 30 years on the natural history of mount Ætna, that the lowest of these strata which have been found divided by so many beds of earth, must have been emitted from the volcanic crater at least 14000 years ago; and consequently that the age of the earth, whatever it may exceed this term of years, cannot possibly be less. Other facts of a similar nature likewise concur to justify this conjecture.

But all these facts are as nothing in comparison with the long series which would be requisite to establish such a conjecture as an incontrovertible truth. And, besides, any evidence which they can be supposed to afford, may be very easily explained away. The bed of lava which in the course of 2000 years has scarce acquired a covering of earth, is confessed to stand in a situation in which it is exposed to the spray of the sea, and to all the violence of winds and rains. In such a situation, it cannot be thought that a thick bed of earth could, in any length of time, be formed on it: we might as well expect depth of soil and vigorous vegetation on the craggy cliffs of hills. In crevices here and there over it, in which the earth has been retained, there is a depth of soil which supports large trees. This fact, therefore, admits of no such inference as that which Recupero has pretended to deduce from it. The local circumstances, again, of the seven strata that have been pierced through, are very different. They are situated at Jaci Reale, in a situation where showers of ashes from the volcano must frequently fall; and where whatever falls must be naturally retained and accumulated:—so that seven beds of earth might be formed on these seven strata of lava much sooner than one thin layer could be formed on the stratum above mentioned. In other places, some of which are within the influence of the same awful volcano, and some adjacent to that of Vesuvius, soil is known to have accumulated on lava with the help of showers of ashes from the volcanoes, with sufficient rapidity to justify this supposition concerning the coverings of the strata at Jaci Reale. From the observation of these phenomena of volcanoes, therefore, no facts have been gained that can help us to determine with any certainty the earth's age. And so wide is the variety of circumstances to be here taken into ac-

count, that it cannot be hoped that this desideratum will be ever supplied from this quarter. See further the article EARTH; n^o 177 and 178.

But by examining the composition and arrangement of the interior strata of the globe, and by viewing the general appearance of its surface, the ingenuity of philosophers has, with better hopes, sought to guess at the length of time during which it must have existed. Observing the exuvia of sea and land animals deposited at profound depths under ground, and accompanied with vegetable bodies in a good state of preservation, as well as with oleaginous and bituminous substances which have in all probability been formed from vegetable bodies; and remarking at the same time with what confusion the other materials, composing the crust of this terrestrial ball, are, in various instances, not arranged, but cast together; they have concluded that the earth must have existed for many an age before the earliest events recorded in sacred or profane history, and must have undergone many a revolution, before it settled in its present state. Such at least are the ideas which Buffon and M. de Luc, and also Dr Hutton †, seem desirous to im-

press us with concerning its changes and antiquity.—It will be only doing justice to these philosophers to acknowledge, that they have collected, with amazing industry, almost every fact in the natural history of the earth that can serve to give plausibility to their conjectures. But still their facts, besides the inconsistency of many of them, are by far too scanty to warrant the conclusions which they have pretended to deduce from them. See the article EARTH

The voice of profane history is far from being decisive concerning the age of the world; nor is it to be expected that it should. When the earth first arose into existence, we can be at no loss to conceive that mankind were not spectators of the event: and we may naturally imagine that the first human beings who occupied it, would be too much busied in furnishing themselves with the immediate necessities and the conveniences of life, to think of curious researches into its origin, or even their own. Profane history is not, however, without accounts of the age of the earth and the origin of human society; but those accounts are various and contradictory.—Plato in his dialogue intitled *Critias*, mentions his celebrated Atalantis to have been buried in the ocean about 9000 years before the age in which he wrote. He asserts it to have been well known to the Egyptian priests and to the cotemporary inhabitants of Attica. The learned world, indeed, generally agree in regarding his accounts of that island as a fiction, which the author himself did not design to be understood in any other light: some, however, are more credulous, and others go so far as to acknowledge doubts: and, if the existence of such an island, at a period so distant, be admitted as a fact worthy of any credit, the age of the world may be reckoned as at least considerably more than 12,000 years. The pretensions of the Chinese represent the world as some hundreds of thousands of years older: and we are also told* that the astronomical records of the ancient Chaldæans carried back the origin of society to a very remote period; no less than 473,000 years. The Egyptian priests reckoned between Menes and Sethon 341 generations †. But these accounts

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† *Ed. Phil. Transf.* vol. i.

3
Accounts of the antiquity of the earth from profane history.

* *Universal Hist.* vol. i. Preface.

† *Herod.* l. ii c. 142.

† *Brydone's Tour thro' Sicily and Malta.*

Creation. are so discordant, and so slenderly supported by evidence, that we cannot hesitate to reject them all as false; the fables of historians scarce merit so much attention as the hypotheses of philosophers.

⁴
The era of the creation as stated in profane history.

When from profane we turn to sacred history, we may reasonably expect more accurate and more credible information concerning the antiquity of the globe. As the authenticity of the Holy Scriptures is so incontrovertibly established, wherever they afford evidence concerning any fact, that evidence must be regarded as decisive. A fact so important as the present may be thought highly worthy of a place in them. Unfortunately, however, even the sacred writings do not fix the era of the creation with sufficient accuracy; they leave us, in some measure, at a loss whether to extend what they say concerning that era to the whole contents of created space, or to confine it to our earth and its inhabitants: different copies give different dates; and even in the same copy, different parts relating the same events, either disagree or do not speak decisively with regard to the length of the time in which they passed.—In the beginning of the sixth chapter of the first book of Kings, the time which elapsed between the departure of the children of Israel from Egypt, and the period at which Solomon laid the foundation of his temple, is said to have been 480 years: And in the book of Judges again, the age of all the patriarchs amounts to 592 years. † The Hebrew copy of the bible, which we Christians for good reasons consider as the most authentic, dates the creation of the world 3944 years before the Christian era. The Samaritan bible, again, fixes the era of the creation 4305 years before the birth of Christ. And the Greek translation, known by the name of the *Septuagint* version of the bible, gives 5270 as the number of the years which intervened between those two periods. As many other different calculations of the years contained in the same intermediate space of time, might be formed upon other dates in the sacred volume, differing in the different copies. By comparing the various dates in the sacred writings, examining how these have come to disagree and to be diversified in different copies, endeavouring to reconcile the most authentic profane with sacred chronology, and eking out deficiency of dates and evidence with conjecture; some ingenious men have formed schemes of chronology, plausible indeed, but not supported by sufficient authorities, which they would gladly persuade us to receive in preference to any of those above mentioned. Usher makes out from the Hebrew bible 4004 years, as the term between the creation and the birth of Christ: Josephus, according to Dr Wills and Mr Whiston, makes it 4658 years; and M. Pezron, with the help of the *Septuagint*, extends it to 5872 years. Usher's system is the most generally received.

But though these different systems of chronology are so inconsistent and so slenderly supported, yet the differences among them are so inconsiderable in comparison with those which arise before us when we contemplate the chronology of the Chinese, the Chaldeans, and the Egyptians, and they agree so well with the general information of authentic history and with the appearances of nature and of society, that

they may be considered as nearly fixing the true period of the creation of the earth.

Profane history cannot be expected to contain an account of the first events which passed after the creation of the substances of which the universe consists. The conjectures of ancient philosophers on this subject cannot merit attention; for vague tradition, and the appearances of nature, the only data on which they could proceed in forming their conjectures, could admit of no fair inductions concerning those events; and besides, instead of listening to tradition, or examining the appearances of nature, they generally consulted imagination, and imagination alone, on such occasions. Here, therefore, we have nothing to hope but from the sacred writings. From them we may expect historical information, not to be obtained from any other source. What they communicate is communicated on divine authority; and it is only on such authority we can receive any accounts concerning the creation.

A few hints in the book of Job, afford the earliest information to be found in the scriptures concerning the creation of the world. "Where wast thou when I laid the foundations of the earth, when the morning stars sang together, and all the sons of God shouted for joy*?" "Behold, he put no trust in his servants, and his angels he charged with folly †." "And unto man, (or to Adam), he said, Behold, the fear of the Lord is wisdom, and to depart from evil is understanding ‡." These passages rather hint at than relate facts. But it has been inferred from them, that there were stars in the firmament, and angels in heaven, before the formation of our globe; that angels as well as man have fallen; and that other injunctions, besides that of abstaining from the forbidden fruit, were laid on Adam when he was first placed in Paradise ||. If the interpretation be admitted as just, the first of these facts may be considered as forming, as it were, a point with which our knowledge of the works of the Deity commences: the period of time at which the second event took place is not specified; and the precept to Adam must no doubt have been uttered after he was formed and inspired with intelligence. Yet with regard to the first of the above quotations from the book of Job, the only one that is of importance to us at present, it must be acknowledged, that it has been differently understood. The morning stars might sing together, and the sons of God shout for joy, on account both of their own creation and of the creation of the earth at one time; and yet Job, having been himself made a conscious being at a much later period, not be able to tell where he was at that era of exulting gratitude and congratulation.

Moses relates, that* "in the beginning God created the heavens and the earth. And the earth (continues account of he) was without form and void; and darkness was upon the face of the deep: and the spirit of God moved upon the face of the waters. And God said, Let there be light; and there was light. And God saw the light, that it was good: and God divided the light from the darkness. And God called the light day, and the darkness he called night: and the evening and the morning were the first day." During five succeeding days the work of creation was carried on. On the

Creation.

⁵
No information on this head to be obtained from any other source but sacred history.

⁶
Hints concerning the creation in the book of Job.

Chap. xxxviii. ver. 4 & 7. † Ch. iv. ver. 18. ‡ Ch. xxviii. ver. 28.

|| Milne's Lectures. Lect. I.

⁷
Mosaic account of the creation. Gen. i. 1.

† *Universal Hist.* vol. i. Preface.

Creation. the second day, a firmament was made to separate the waters, and that firmament called *heaven*: on the third day, the waters were collected into seas, and the land from which the waters retired caused to produce grass and trees and other plants: on the fourth day, lights were made to appear in the firmament; to enlighten the earth, to divide the day from the night, and to distinguish time into seasons and years: on the fifth day, the seas were peopled with whales and other fishes, and the air with fowls: on the sixth day, the earth was furnished with reptiles and quadrupeds of all kinds; and on the same day, the first human pair, the progenitors of all the human race, were created in God's own image

8 **Difficulties** occurring in the above account. Some difficulties occur in comparing this account of the creation with the laws which appear at present to regulate the system of nature. We find it hard to conceive how the earth, while yet a stranger to the influence of the sun, could experience the vicissitude of day and night; and are astonished at the rapidity with which trees and herbage first overspread its surface. The condition of matter when the earth was without form and void, and the operation of the spirit of God on the face of the waters, are equally mysterious.

9 **Attempts to solve those difficulties.** Dr Burnet's theory. Some ingenious men have eagerly laboured to remove these difficulties. Among these is Dr Burnet, whose theory of the earth has now been long considered as fanciful and ill-founded. He supposes all the celestial bodies, even the sun and all the other planets of the solar system, to have existed long before the earth. The chaos on which the spirit of God moved, consisted, according to him, of the first principles from which all terrestrial bodies have been formed. When those laws by which the material world is regulated first began to operate on the mass, he supposes that its grosser and heavier parts would sink towards the centre, and there form a solid ball. Around this solid ball two species of particles would still float together in confusion. Of these he thinks one, being more volatile, would by degrees make its escape from the other, would leave it still recumbent on the solid centre, and spread around it in an atmosphere. The middle stratum he composes of aqueous and oleaginous fluids; and he makes no doubt, that after the air had made its escape, the levity of the oleaginous fluids would enable them to rise above the aqueous, and dispose themselves next the surface of the liquid mass. On them he supposes the impure atmosphere to have then deposited a quantity of terrene particles, sufficient to form, by intermixture with the oils, a thick crust of rich earth for the production of plants and herbage, and to afford an habitation to animals. This delicate shell he was careful not to furrow with seas or load with mountains; either of these would have reduced all to confusion. Such is *his* earth; and after moulding it with so much ingenuity, and into so happy a form, he contents himself, without venturing to use the same freedoms with the remaining part of Moses's account of the creation.

10 **Objections to Dr Burnet's theory.** But Moses affords nothing that can be with any propriety used in the foundation of such a theory: he tells not whether the chaos consisted of those terrene, and aqueous, and oleaginous, and aerial particles which Dr Burnet finds in it; he confines not the seas within

a crust of earth; nor does he inform us that the scenery of nature was not diversified by hills and vales. Besides, the author of this theory has, without any evidence, supposed matter to have been originally under the influence of laws very different from those by which it is at present regulated. Oil, indeed, while fluid, floats above water: but in a concrete state, it sinks in water like other solid bodies. If reduced into that state by combination with terrene matters, sufficient to render the mixture proper for the nourishment and production of vegetables; its specific gravity will be still greater, and it will consequently sink so much the sooner. How a concrete substance, consisting of earth and oil, could float on water, appears an inexplicable enigma. But we need not here take farther pains in combating and triumphing over this theory, which has long since fallen and sunk to its grave.

11 **Mr Whiston's theory.** Mr Whiston treats both the scriptures and the laws of nature with greater reverence. Yet he certainly involves himself in no trifling difficulties in attempting to solve those which Moses presents. He supposes the sun, moon, and stars to be all more ancient than the earth. The chaos from which the earth was formed, he represents as having been originally the atmosphere of a comet. The six days of the creation he would persuade us to believe equal to six of our years: for he is of opinion, that the earth did not revolve daily round its axis, but only annually round its orbit, till after the fall of man.

On the first day or year, therefore, the more ponderous parts of the chaos were according to this theory conglomerated into an orb of earth, the clinks and interstices over that orb filled up with water, and the exterior part or atmosphere rarefied, so as to admit some faint glimmering of the rays of the sun.

On the second day, the atmosphere was diffused to its due extent around the earth, and reduced to a degree of rarity and purity which rendered it still more suitable for the transmission of light; the earth was still more consolidated; and the waters being almost entirely excluded from the interstices which they before occupied, were partly spread over the surface of the earth, and partly raised in vapour into the atmosphere or firmament.

On the third day, the earth's surface became so irregular, in one place rising into hills, in another sinking into vales, as to cause the waters, which were before equally diffused, to collect into seas and lakes, leaving large tracts of ground unoccupied. And no sooner was a part of the earth's surface left bare by the waters, than the general influence of the sun produced on it a rich covering of herbage, and all the different species of vegetables.

On the fourth day, the earth was rendered subject to the regular influence of the sun, moon, and stars.

On the fifth day or year, things were so far advanced, that fishes and fowls were now produced from the waters.

On the sixth day was the earth furnished with animals; and the lord of all the other animals, man, was now created.

12 **Objections to Mr Whiston's theory.** Such is Mr Whiston's account of the phenomena of the Mosaic creation. But he likewise assumes much more than can be reasonably granted. The atmosphere

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Creation. sphere of a comet could not well be the primitive chaos; it is not an obscure, but a pellucid fluid; and its exterior strata, if of the same nature with the matter of our earth, must be scorified by its near approaches to the sun. Had the earth not begun to move round its axis till after the work of creation was completed, the immoderate degrees of heat and cold which its different parts would have alternately felt, would in all probability have proved fatal to both plants and animals. Even the most artful interpretation of Moses's words cannot represent him as meaning to inform us that the sun and moon were created at different periods. But philosophy will scarce permit us to imagine that the moon was formed before the earth. And therefore we cannot upon good grounds agree with Mr Whiston, that the creation of the earth was later than that of the other bodies of the solar system.

¹³
M. de Luc's theory and objections. Among others who have endeavoured to explain the original formation of the earth, and the changes which it has undergone, is M. de Luc. This cosmologist, like Mr Whiston, thinks that the days of the creation were much longer periods of time than our present days. He seems to think that the earth had existed long before the Mosaic creation; but began at that era to experience new changes, and to be regulated by new laws: that all the different events described by Moses in his history of the creation, actually took place in the order in which he relates them; but that Moses's days are indefinite spaces of time, which must have been very long, but of which we cannot hope to ascertain the precise length. These are ingenious conjectures; but they do not appear necessary, nor are they justified by facts. For a fuller and more close investigation of this part of the subject, we must refer to the article EARTH: and shall now close the present article with a short explanation of what appears to us the most natural way of understanding Moses's account of the creation.

^{*} *Univ. Hist.* vol. i. p. 85. It has been conjectured*, with great probability, that the creation of which Moses is the historian, was neither confined to the earth alone, nor extended to the whole universe. The relation which all the planets of the solar system bear to the same illuminating body countenances the conjecture, that they, together with the luminary by which they are enlightened, were all created at one period: but it would perhaps be to conceive too meanly of the benevolence, wisdom, and active power of the Deity to suppose that before that period these had never been exerted in any work of creation. Yet even here we have not demonstrative evidence.

On the supposition that the whole solar system was created at once, which has at least the merit of doing no violence to the narrative of Moses, the creation of the sun and the other planets may be understood to have been carried on at the same time with the creation of the earth. In that case, even in the course of the first day, though not longer than our present days, those bodies might be reduced to such order, and their relative motions so far established, as to begin the distinction between light and darkness, day and night.

On the second day, we may naturally understand from Moses's narrative, that the atmosphere was purified, and the specific gravities of aqueous vapour and

atmospheric air so adjusted, as to render the latter capable of supporting the former.

On the third day the waters were first collected into lakes and seas: but in what manner, we cannot well determine. Some call in the operation of earthquakes; others tell us, that when the earth was first formed, the exterior strata were, at different parts over its surface, of different specific gravities; and that the more ponderous parts now sunk nearer the common centre, while the lighter parts still remaining equally remote from it as before, formed islands, continents, hills, and mountains. But these are mere fancies; and we have not facts to offer in their stead. On the latter part of this day vegetables were caused to spring up over the earth. Their growth must have been much more rapid than we ever behold it now: but by what particular act of supernatural power that might be effected, we should in vain inquire.

On the fourth day the sun, moon, and stars, were made to appear. But according to the conjecture which we have mentioned as plausible, though without ascribing to it the evidence of certain truth, those heavenly bodies are to be considered as having been created before this day. But they might now begin to exert their full influence on the earth in the same manner as they have since continued to do.

The creation of the inanimate world was now finished, and the earth prepared for the reception of animals. On the fifth day, therefore, were the living inhabitants of the air and the waters created.

On the sixth day the inferior animals inhabiting the earth were first created; and after that, the whole work was crowned by the creation of a male and a female of the human species. To the account of the creation of the animals, nothing certain can be added in explanation of Moses's narrative. No more but one pair of the human species were at first created: the same economy might possibly be observed in the creation of the inferior animals.

CREBILLON (Prosper Joliot de), a French writer of tragedy, and usually ranked after Corneille and Racine, was born at Dijon in 1674. He was originally destined to the profession of the law, and placed at Paris with that view; but the impetuosity of his passions rendering him unfit for business, he was urged by some friends, who discerned very well his natural turn, to attempt dramatic compositions. He complied, but not till after many refusals; and gave at length a tragedy, which met with great success. He then marched on in the career he had begun, but was checked by a fit of love for an apothecary's daughter; which fit of love ended in marriage. His father, doubly enraged at his son for thus surrendering himself to the two demons of Love and Poetry, disinherited him; but falling sick some years after, in 1707, he re-established him in all his rights, and died. Crebillon was, however, little better for his acquisitions, the greatest part being probably wasted before they came; and thus, though high in fame and at the prime of life, he still continued poor. He lost his wife in 1711, and fortune long frowned upon him, till at last he obtained a place in the French academy, and the employment of censor of the police. He was afterwards in good circumstances, and happy to the end of his life, which was a very long one; for he did not die

Creech,
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redit.

die till 1762, aged 88. He was much regretted and lamented, as old as he was; being a very worthy man, and of many and great virtues. He was of a temperment extremely robust, without which he could not have held out so long; for he eat prodigiously, and continued to the last so to do. He slept little, and lay as hard as if upon the floor; not from any pious principle of mortifying, but because he liked it. He was always furnished with about 30 dogs and cats; and used to smoak a good deal of tobacco, to keep his room sweet against their exhalations. Whenever he was ill, he used to manage himself according to his own fancy and feelings; for he always made a jest of physick and physicians. He was a dealer in *bons mots*. Being asked one day in full company, which of his works he thought the best? "I don't know (says he) which is my best production; but this (pointing to his son) is certainly my worst."

CRECY, CRESCY, or CRESSY. See CRESSY.

CREDENTIALS, letters of recommendation and power, especially such as are given to ambassadors or public ministers, by the prince or state that sends them to foreign courts.

CREDIBILITY, a species of evidence, less indeed than absolute certainty or demonstration, but greater than mere possibility: it is nearly allied to probability, and seems to be a mean between possibility and demonstration.

CREDIT, in commerce, a mutual trust or loan of merchandise or money, on the reputation of the probity and solvability of a dealer.

Credit is either public or private. Every trader ought to have some estate, stock, or portion of his own, sufficient to carry on the traffic he is engaged in: they should also keep their dealings within the extent of their capital, so that no disappointment in their returns may incapacitate them from supporting their credit. Yet traders of worth and judgment may sometimes lie under the necessity of borrowing money for carrying on their business to the best advantage; but then the borrower ought to be so just to his own reputation and to his creditors, as to be well assured that he has sufficient effects within his power to pay off his obligations in due time. But if a trader should borrow money to the extent of his credit, and launch out into trade so as to employ it with the same freedom as if it was his own proper stock, such a way of management is very precarious, and may be attended with dangerous consequences. Merchants ought never to purchase their goods for exportation upon long credit, with intent to discharge the debt by the return of the same goods; for this has an injurious influence on trade several ways: and if any merchant has occasion to make use of his credit, it should always be for the borrowing of money, but never for the buying of goods; nor is the large credit given to wholesale traders a prudential or justifiable practice in trade.

The public credit of a nation is said to run high when the commodities of that nation find a ready vent, are sold at a good price, and when dealers may be safely trusted with them: also when lands and houses find ready purchasers; when money is to be borrowed at a low interest; when people think it safe and advantageous to venture large stocks in trade; and when notes, mortgages, &c. will pass for money.

Letters of CREDIT, are those given to persons in whom a merchant, &c. can trust, to take money of his correspondent abroad, in case he happens to need it. Credit
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Creech.

CREDIT is also used for the currency which papers or bills have in the public or among dealers. In this sense credit is said to rise, when, in negotiating the shares of the company, they are received and sold at prices above *par*, or the standard of their first creation. Discredit is opposed to credit, and is used where money, bills, &c. fall below *par*.

CREDIT was also anciently a right which lords had over their vassals; consisting in this, that during a certain time they might oblige them to lend them money. In this sense, the Duke of Brittany had credit during fifteen days on his own subjects, and those of the bishop of Nantes; and the bishop had the same credit or right among his subjects and those of that prince.

CREDITON, a market-town in Devonshire, considerable for a good woollen manufactory: it is situated about 9 miles north-west of Exeter, in W. Long. 3. 50. and N. Lat. 50. 50.

CREDITOR, a person to whom any sum of money is due, either by obligation, promise, or otherwise. See DEBT.

CREDULITY denotes a weakness of mind, by reason of which a person yields his assent to propositions or facts, before he has considered their evidence.

CREECH (Thomas), eminent for his translations of ancient authors both in prose and verse, was son of Thomas Creech, and born near Sherborne in Dorsetshire in 1659. He was educated in grammar learning under Mr Curganven of Sherborne, to whom he afterwards dedicated a translation of one of Theocritus's Idylliums; and entered a commoner of Wadham college in Oxford in 1675. Wood tells us that his father was a gentleman; but Giles Jacob says, in his Lives and characters of English Poets, that his parents circumstances not being sufficient to afford him a liberal education, his disposition and capacity for learning raised him up a patron in Colonel Strangeways, whose generosity supplied that defect. Be that as it will, Creech distinguished himself much, and was accounted a good philosopher and poet, and a diligent student. June 13. 1683 he took the degree of master of arts, and not long after was elected probationer fellow of All-souls college; to which, Jacob observes, the great reputation acquired by his translation of Lucretius recommended him. Wood tells us, that upon this occasion he gave singular proofs of his classical learning and philosophy before his examiners. He also took the degree of B. D. on the 18th of March 1696. He now began to be well known by the works he published; but Father Nicéron observes, that they were of no great advantage to his fortune, since his circumstances were always indifferent. In 1699, having taken holy orders, he was presented by his college to the living of Welwyn in Hertfordshire; but this he had not long enjoyed before he put an end to his own life. The motives of this fatal catastrophe have been variously represented. The author of the *Nouvelles de la Republique des Lettres* informs us, that in the year 1700 Mr Creech fell in love with a woman who treated him with

Creed
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Creep(er).

with great neglect, though she was complainant enough to several others. This affront he could not bear, and resolved not to survive it. Whereupon he shut himself up in his study, where he hanged himself about the end of June 1700, and was found in that circumstance three days after. The Poetical Register says nothing of the particular manner of his death, but only that he unfortunately made away with himself in the year 1701; and ascribes this fatal catastrophe of Mr Creech's life to the moroseness of his temper, which made him less esteemed than his great merit deserved, and engaged him in frequent animosities and disputes upon that account. But from an original letter of Arthur Charlett, preserved in the Bodleian library, it has lately been discovered, that this unhappy event was owing to a very different cause. There was a fellow collegian of whom Creech frequently borrowed money; but repeating his applications too often, he met one day with such a cold reception, that he retired in a fit of gloomy disgust, and in three days was found hanging in his study. Creech's principal performances are, 1. A Translation of Lucretius. 2. A Translation of Horace; in which, however, he has omitted some few odes. 3. The Idylliums of Theocritus, with Rapin's Discourse of Pastorals. 4. A Translation of Manilius's Astronomicon. Besides translations of several parts of Virgil, Ovid, and Plutarch; printed in different collections.

CREED, a brief summary of the articles of a Christian's belief.

The most ancient form of creeds is that which goes under the name of the apostolic creed: besides this, there are several other ancient forms and scattered remains of creeds to be met with in the primitive records of the church. The first is the form of apostolical doctrine, collected by Origen; the second is a fragment of a creed preserved by Tertullian; the third remains of a creed is in the works of Cyprian; the fourth, a creed composed by Gregory Thaumaturgus, for the use of his own church; the fifth, the creed of Lucian the martyr; the sixth, the creed of the apostolical constitutions. Besides these scattered remains of the ancient creeds, there are extant some perfect forms, as those of Jerusalem, Cæsarea, Antioch, &c.

The most universal creeds are, the APOSTOLICAL, the ATHANASIAN, and the NICENE creeds. See these articles.

These three creeds are used in the public offices of the church of England; and subscription to them is required of the clergy, and of dissenting teachers properly qualified by the toleration act, as the eighth article declares that they may be proved by the surest testimonies of scripture.

CREEK, a part of a haven, where any thing is landed from the sea. So many landing-places as there are in a harbour or port, so many creeks there are. It is also said to be a shore or bank whereon the water beats, running in a small channel from any part of the sea; from the Latin *crepido*. This word is used in the stat. 4 Hen. IV. c. 20. and 5 Eliz. c. 5.

CREENGLES. See CRINGLE.

CREEPER, in ornithology. See CERTHIA.

CREEPER, in naval affairs, an instrument of iron resembling a grappling, having a *shank*, and four hooks or claws. It is used to throw into the bottom of any

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river or harbour, with a rope fastened to it, to hook and draw up any thing from the bottom which may have been lost. See Plate CL.

CRELLIUS (John), a famous Socinian, born in 1590, in a village near Noremberg. In 1612 he went into Poland, where the Unitarians had a school, in which he became professor of divinity, and minister at Crackow, where he died in 1632, aged 42. He was the author, 1. Of a famous Treatise against the Mystery of the Trinity; 2. Commentaries on a part of the New Testament; and other works. All of them are scarce.

CREMA, a city and bishop's see of Italy, capital of a district of the Milanese, called from it *Crema*: it stands almost in the middle between Milan and Mantua, in E. Long. 10. 15. and N. Lat. 45. 20.

CREMASTER, in anatomy, the name of a muscle of the testicle, of which there is one on each side. See ANATOMY, *Table of the Muscles*.

CREMATION is sometimes used for burning, particularly when applied to the ancient custom of burning the dead. This custom is well known to have prevailed among most eastern nations, and continued with their descendants after they had peopled the different parts of Europe. Hence we find it prevailing in Greece, Italy, Gaul, Britain, Germany, Sweden, Norway, and Denmark, till Christianity abolished it.

CREMONA (anc. geog.), a Roman colony, with municipal rights, settled beyond the Po, below the confluence of the Addua, on the report of Hannibal's march into Italy (Polybius): a town at this day still maintaining its name and flourishing state. It was an opulent and mercantile city; but suffered greatly in the civil wars of Augustus (Virgil). In the war with Vitellius, it was destroyed by the partizans of Vespasian; but was soon after rebuilt by the munificence of the citizens and exhortations of Vespasian, (Tacitus). Now capital of the Cremonese, in the duchy of Milan. E. Long. 10. 30. Lat. 45.

CRENATED, in botany. See BOTANY-Index.

CRENELLE, or IMBATTLED, in heraldry, is used when any honourable ordinary is drawn, like the battlements on a wall to defend men from the enemies shot. This attribute belongs to the arms of such as have defended castles for their prince or country, or of such as are skilled in architecture.

CRENOPHYLAX, in antiquity, a magistrate of Athens, who had the inspection of fountains.

CREODIBA, in the customs of the middle age, a robbery and murder committed in a wood, where the body of the person killed was burnt in order to prevent any discovery of the crime. The word, says Wendelinus, is compounded of *cruy* and *diven*, that is, "wood-robbers."

CREOLES, a name given to the families descended from the Spaniards who first settled at Mexico in America. These are much more numerous than the Spaniards properly so called, and the Mulattoes, which two other species of inhabitants they distinguish; and are excluded from all considerable employments.

CREON, king of Corinth, was son of Syphisus. He promised his daughter Glauce to Jason, who had repudiated Medea. To revenge the success of her rival, Medea sent her for a present a gown covered with poison. Glauce put it on, and was seized with sudden pain.

Crellius
||
Creon.

Creon
||
Crepita-
tion.

Her body took fire, and she expired in the greatest torments. The house also was consumed by the fire, and Creon and his family shared Glauce's fate.

CREON, son of Menœtius, was father to Jocasta, the wife and mother of Oedipus. At the death of Laius, who had married Jocasta, Creon ascended the vacant throne of Thebes. As the ravages of the Sphynx were intolerable, Creon offered his crown and daughter in marriage to him who could explain the enigmas which the monster proposed. Oedipus was happy in his explanations, and he ascended the throne of Thebes and married Jocasta without knowing that she was his mother, and by her he had two sons, Poly-nices and Eteocles. These two sons mutually agreed after their father's death to reign in the kingdom each a year alternately. Eteocles first ascended the throne by right of seniority; but when he was once in power he refused to resign at the appointed time, and his brother led against him an army of Argives to support his right. The war was decided by a single combat between the two brothers. They both killed one another, and Creon ascended the throne till Leodamus the son of Eteocles should be of a sufficient age to assume the reins of government. In his regal capacity he commanded that the Argives, and more particularly Polynices, who was the cause of all the bloodshed, should remain unburied. If this was in any manner disobeyed, the offenders were to be buried alive. Antigone the sister of Polynices transgressed, and was accordingly punished. Hæmon the son of Creon, who was passionately fond of Antigone, killed himself on her grave, when his father refused to grant her pardon. Creon was afterwards killed by Theseus, who had made war with him because he refused burial to the Argives.

CREPANÇE, in the manege, a chop or cratch in a horse's leg, given by the sponges of the shoes of one of the hinder feet crossing and striking against the other hinder foot. This cratch degenerates into an ulcer.

CREPIDÆ, among the Romans, a kind of slippers or shoes, which were always worn with the *pal-lium*, as the *calcei* were with the *toga*.

CREPIS, HAWK-WEED: A genus of the polygamia superflua order, belonging to the syngenesia class of plants; and in the natural method ranking under the 49th order, *Compositæ*. The receptacle is naked; the calyx calyculated with deciduous scales; the pappus feathery and stalked. There are 14 species, most of them herbaceous annuals, rising to the height of a foot or a foot and an half; and having their branches terminated by ligulated compound red and yellow flowers. These are very large, and consist of many flat florets spread over one another imbricatum, and when fully blown appear as if radiated. They are very conspicuous and beautiful: and appear in June, July, and August. They are succeeded by plenty of seed, which, if permitted to scatter on the ground, will produce a number of young plants without further trouble.

CREPITATION, that noise which some salts make over the fire in calcination, called also *detona-tion*.

CREPITATION is also used in surgery, for the noise made by the ends or pieces of bones, when the sur-

geon moves a limb to assure himself by his ear of the existence of a fracture.

CREPUNDIA, in antiquity, a term used to express such things as were exposed along with children, as rings, jewels, &c. serving as tokens whereby they afterwards might be known.

CREPUSCULUM, in astronomy, twilight; the time from the first dawn or appearance of the morning to the rising of the sun; and again, between the setting of the sun and the last remains of day.

Papias derives the word from *creperus*; which, he says, anciently signified *uncertain, doubtful*, q. d. *a dubious light*. The crepusculum is usually computed to begin and end when the sun is about 18 degrees below the horizon; for then the stars of the sixth magnitude disappear in the morning, and appear in the evening. It is of longer duration in the solstices than in the equinoxes, and longer in an oblique than in a right sphere.

The crepuscula are occasioned by the sun's rays refracted in our atmosphere, and reflected from the particles thereof to the eye. See TWILIGHT.

CRESCENT, the new moon, which, as it begins to recede from the sun, shows a little rim of light, terminating in points or horns, which are still increasing till it become full and round in the opposition. The word is formed from *creresco*, "I grow."

The term is also used for the same figure of the moon in its wane or decrease, but improperly; because the points or horns are then turned towards the west, whereas they look to the east in the just crescent.

CRESCENT, in heraldry, is a bearing in form of a half moon. The Ottomans bear sinople, a crescent montant, argent.

The crescent is frequently used as a difference in coat-armour, to distinguish it for that of a second brother or junior family.

The figure of the crescent is the Turkish symbol; or rather is that of the city Byzantium, which bore this device from all antiquity; as appears from medals struck in honour of Augustus, Trajan, &c.

The crescent is sometimes montant, i. e. its points look towards the top of the chief, which is its most ordinary representation; whence some contend, that the crescent, absolutely so called, implies that situation; though other authors blazon it montant, when the horns are towards the dexter-side of the escutcheon, in which position others call it *incroissant*.

Crescents are said to be *adossed*, when their backs or thickest parts are turned towards each other; their points looking to the sides of the shield. *Crescent inverted*, is that whose points look towards the bottom; *turned crescents*, are placed like those adossed; the difference is, that all their points look to the dexter-side of the shield: *conturned crescents*, on the contrary, look to the sinister side: *affronted* or *appointed crescents*, are contrary to the adossed, the points looking towards each other.

CRESCENT is also the name of a military order, instituted by Rhenus of Anjou, King of Sicily, &c. in 1448; so called from the badge or symbol thereof, a crescent of gold enamelled. What gave occasion to this establishment was, that Rhenus took for his device a crescent, with the word *lox*, "praise," which, in

Crepundia
||
Crescent.

Crescentia.
Crescim-
beni.

the style of rebus, makes *lox in crescent*, q. d. *by advancing in virtue, one merits praise.*

CRESCENTIA, the **CALABASH-TREE**: A genus of the angiospermia order, belonging to the didynamia class of plants; and in the natural method ranking under the 25th order, *Putamineæ*. The calyx is bipartite and equal; the corolla gibbous; the berry pedicelled or stalked, unilocular, and polyspermous; the seeds bilocular. There are two species.

1. The *cujete*, with oblong narrow leaves and a large oval fruit, is a native of Jamaica and the Leeward Islands. It hath a thick trunk covered with a whitish bark, which rises from 20 to 30 feet high, and at the top divides into many branches, forming a large and regular head, garnished with leaves, which come out irregularly, sometimes single; at other times many arise out of the same knot: the flowers are produced from the sides of the large branches, and sometimes from the trunk, standing upon long footstalks. They have but one petal, which is irregular; and they are of a greenish yellow colour, striped and spotted with brown. These are succeeded by very large fruit, generally spherical, sometimes oval; and at other times they have a contracted neck like a bottle; and are so large, that when the pulp and seeds are cleaned out, the shells will contain three pints or two quarts of liquid. The fruit is covered externally with a thin skin of a greenish-yellow colour when ripe. When this is peeled off, there appears a hard ligneous shell, inclosing a pale yellowish soft pulp of a tart unfavourable flavour, surrounding a great number of flat heart-shaped seeds. 2. The *latifolia*, or broad-leaved calabash, seldom rises more than 15 or 20 feet high, with an upright trunk, covered with a white smooth bark, sending out many lateral branches at the top, garnished with leaves three inches in length, and one and a quarter broad, ranged alternately. The flowers come out as in the former species; but are smaller, and of a deeper yellow colour. The fruit of this sort is sometimes round, sometimes oval, but of very unequal sizes. Both these species are easily propagated by seeds; but the plants are too tender to live in this country, unless they are constantly kept in a stove.

The shells of calabashes are made use of for various purposes. At Barbadoes, besides drinking-cups and punch-bowls, there are made of them spoons, dishes, and other utensils for the slaves. Some of these shells are so large, as to be capable of holding 15 pints of water. The pulp is seldom eaten, except by cattle in the time of drought. The wood, which is hard and smooth, is made into stools, chairs, and other furniture.

CRESCIMBENI (John Maria), an Italian, was born at Macerata in Ancona, 1663. His talents for poetry and eloquence developed themselves early. His verses at first had too much pomp and point; but residing in Rome, and reading the best Italian poets, brought him back to nature. He not only reformed himself, but undertook to reform bad taste in general. From this motive he projected the establishment of a new academy, under the name of *Arcadia*; the members of which at first did not exceed 14, but afterwards increased much. They called themselves the shepherds of Arcadia, and each took the name of some shepherd and some place in that ancient kingdom. The founder of this society was appointed the director of it in 1690, and held this honourable post 38 years;

namely, to the year of his death, which happened in 1728. Among a great number of works, in verse and prose, the principal is, *An History of the Italian Poetry*, very much esteemed, and reprinted, 1731, at Venice, in six volumes 4to. This history is accompanied with a commentary, containing anecdotes of Italian poets. He published also *An History of the Academy of Arcadia*, together with the *Lives of the most illustrious Arcadians*: and many other works.

CRESCY, or **CRESSY**. See **CRESSY**.

CRESS, **WATER-CRESS**, or **CRESEES**, in botany. See **SISYMBRIUM**.

Indian Cress. See **TROPÆOLUM**.

CRESSY, a port-town of Picardy in France, about 44 miles south of Calais, and 27 north-west of Abbeville, remarkable on account of the victory obtained there over the French by Edward III. of England, in the year 1346. E. Long. 2. o. N. Lat. 50. 20.

Edward having encountered and overcome many difficulties in his expedition, was at last so closely followed and harassed by the French army, commanded by the King of France in person, that he determined to make a stand at this place, and to give his pursuers a check. For this purpose he chose his ground with great judgment, on the gentle declivity of a hill, with a thick wood in his rear. He ordered deep entrenchments to be made on each flank, and waited with firmness the approach of his enemies. The King of France, dreading nothing so much as the escape of the English, began the march of his great army from Abbeville early in the morning, August 26. and continued it several hours with great eagerness, till he received intelligence that the English had halted at Cressy, and were prepared to give him battle. He was advised at the same time not to engage that day, when his troops were much fatigued with their march, and in great disorder; and he was disposed to have taken this advice. But the discipline of these times was so imperfect, that the orders given for halting were not obeyed; and one corps of this mighty host impelling another, they continued advancing till they came into the presence of their enemies in much confusion.

Edward had employed the forenoon of this important day in drawing up his army in the most excellent order, in three lines. The first line, which consisted of 800 men at arms, 4000 English archers, and 600 Welsh foot, was commanded by his young, amiable, and heroic son, the Prince of Wales, assisted by the Earls of Warwick and Oxford, and several other noblemen. The second line, composed of 800 men at arms, 4000 halbardiers, and 2400 archers, was led by the Earls of Arundel and Northampton; the last line, or body of reserve, in which were 700 men at arms, 5300 billmen, and 6000 archers, was ranged along the summit of the hill, and conducted by the King in person, attended by the Lords Moubray, Mortimer, and others. When the army was completely formed, Edward rode along the lines, and by his words and looks inspired his troops with the most ardent courage and strongest hopes of victory. He then commanded the cavalry to dismount, and the whole army to sit down upon the grass, in their ranks, and refresh themselves with meat, drink, and rest. As soon as the French army came in view, they sprung from the ground, full of strength and spirit, and stood ready to receive them.

The King of France, assisted by the Kings of Bohemia

Cressy
||
Cressy.

Henry's
History,
Vol. IV,
p. 178.

Cressly. hemia and Majorca, the Dukes of Lorraine and Savoy, and several other sovereign princes, with the flower of the French nobility, laboured to restore some degree of order to his prodigious army, and drew it up also in three lines, but very indistinctly formed. The first line was commanded in chief by the King of Bohemia; the second by the Earl of Alençon, the King of France's brother; and the third by Philip in person; and each of these lines contained a greater number of troops than the whole English army.

The battle of Cressly was begun about three o'clock in the afternoon, August 26. by a great body of Genoese cross-bowmen, in the French service, who let fly their quarrels at too great a distance to do any execution, and were presently routed by a shower of arrows from the English archers. The Earl of Alençon, after trampling to death many of the flying Genoese, advanced to the charge, and made a furious attack on that corps commanded by the Prince of Wales. The Earls of Arundel and Northampton advanced with the second line to sustain the Prince, and Alençon was supported by as many troops as could crowd to his assistance. Here the battle raged for some time with uncommon fury; and the Earl of Warwick, anxious for the fate of the day and the safety of the Prince, sent a messenger to the King, intreating him to advance with the third line. Edward, who had taken his stand on a wind-mill on the top of the hill, from whence he had a full view of both armies, asked the messenger, if his son was unhorsed, or wounded, or killed? and being answered, that the Prince was unhurt, and performed prodigies of valour, "Go then," said he, "and tell my son and his brave companions, that I will not deprive them of any part of the glory of their victory." This flattering message being made known, inspired the Prince and his troops with redoubled ardour; and the King of Bohemia, the Earl of Alençon, and many other great men, being slain, the whole first and second lines of the French army were put to flight. Philip, undismayed at the slaughter of his troops, and the fall of so many princes, advanced to the charge with the line under his immediate command. But this body soon shared the same fate with the other two; and Philip, after having been unhorsed, and wounded in the neck and thigh, was carried off the field by John de Hainault, and fled with no more than five knights and about 60 soldiers in his company, of all his mighty army, which at the beginning of the battle consisted of more than 120,000 men. Such was the famous victory of Cressly, the greatest ever gained by any King of England. After the battle, the King flew into the arms of the Prince of Wales, and grasping him to his bosom, cried in an ecstasy of joy, "My dear son, you have this day showed yourself worthy of the knight-hood which you lately received, and of the crown for which you have so bravely fought; persevere in your honourable course." The Prince, as modest as he was brave, sunk down on his knees, his face covered with blushes, and begged his father's blessing. Edward continued with his army at Cressly three days, employed in numbering and burying the dead. The French had left on this bloody scene the King of Bohemia, 11 other princes, 80 bannerets, 1200 knights, 1500 gentlemen, 4000 men of arms, and 30,000 other soldiers.

CREST, in armoury, denotes the uppermost part of an armoury; or that part rising over the caske or helmet.—Next to the mantle, says Guillim, the crest or cognizance claims the highest place, being seated on the most eminent part of the helmet; yet so as to admit an interposition of some escrol, wreath, chapeau, crown, &c.

The ancient warriors wore crests to strike terror in their enemies, as the sight of the spoils of animals they had killed; or to give them the more formidable mien, by making them appear taller, &c.

In the ancient tournaments, the cavaliers had plumes of feathers, especially those of ostriches and herons, for their crests; these tufts they called *plumarts*; and were placed in tubes, on the tops of high caps or bonnets. Some had their crests of leather; others of parchment, pasteboard, &c. painted or varnished, to keep out the weather; others of steel, wood, &c. on which were sometimes represented a member or ordinary of the coat; as, an eagle, fleur-de-lys, &c. but never any of those called *honourable ordinaries*, as pale, fesse, &c. The crests were changeable at pleasure; being reputed no other than as an arbitrary device or ornament.

Herodotus attributes the rise of crests to the Carians, who first bore feathers on their casks, and painted figures on their bucklers; whence the Persians called them *cocks*.

The crest is esteemed a greater mark of nobility than the armoury, as being borne at tournaments; to which none were admitted till they had given proof of their nobility. Sometimes it serves to distinguish the several branches of a family. It has also served, on occasion, as the distinguishing badge of factions. Sometimes the crest is taken from the device; but more usually it is formed of some piece of the arms: thus, the emperor's crest is an eagle; that of Castile, a castle, &c. Families that exchange arms, as the houses of Brunswick and Cologne have done, do not change their crests; the first still retain the horse, and the latter the mermaid.

CREST, in heraldry, the figure placed above the helmet in an achievement. See HERALDRY.

CREST-fallen, a fault of an horse, when the upper part of his neck, called the *crest*, hangs to one side: this they cure by placing it upright, clipping away the spare skin, and applying plasters to keep it in a proper position.

CRETA, or CHALK, in natural history. See CHALK.

CRETE, one of the largest islands in the Mediterranean, lying between 22 and 27 degrees of east longitude, and between 35 and 36 degrees of north latitude. According to Strabo, this island is 287 miles in length; and according to Pliny, 270; and according to Scylax, 312. As to its breadth, it is not, as Pliny observes, above 55 miles where widest; whence it was styled, as Stephanus observes, the *Long Island*. It has the Archipelago to the north, the African sea to the south, the Carpathian sea to the east, and the Ionian to the west. Anciently it was known by the names of *Aeria*, *Chthonia*, *Idea*, *Curete*, *Macaris*, &c. but its most common name was that of *Crete*.

The Cretan mythologists, quoted by Diodorus Siculus, relate that the first inhabitants of the island were the Dactyli Idæi, who dwelt around mount Ida;

Crest
||
Crete.

Crete.

they were regarded as magicians, because they possessed a variety of knowledge, and were particularly skilled in religious mysteries. Orpheus, who distinguished himself so highly in poetry and music, was their disciple. They discovered the use of fire, iron, and brass, and invented the art of working these metals in Berecynthus, a mountain near Aptera. Those invaluable discoveries procured them divine honours. One of them, named Hercules, rendered himself famous by his courage and great exploits. He instituted the Olympic games: though posterity, by a mistake arising from his bearing the same name, have ascribed that institution to the son of Alcmena; who, indeed, trode in the steps of his predecessor, and raised himself also to immortality.

The Dactyli Idæi were the ancestors of the Curetes. These last, at first inhabited the forests and caves of the mountains. Afterwards they entered into domestic life, and contributed, by their institutions, to the civilization of mankind. They taught men to collect flocks of sheep, to tame the ferocity of wild animals for domestic purposes, and to invite bees into hives, that they might rifle them of the fruit of their labours. They first prompted men to the chase, and taught the use of the bow. They were the inventors of swords and of military dances. The noise which they made, by dancing in armour, hindered Saturn from hearing the cries of Jupiter, whose education Rhea had entrusted to them. With the assistance of the nymphs, they brought up that god in a cave in mount Ida, feeding him with the milk of the goat Amalthea, and with honey.

To this period mythology assigns the origin of the Titans; their abode near Gnosus, where stood the palace of Rhea; their travels over the whole earth; their war against Ammon, and his defence by Bacchus; the nuptials of Jupiter and Juno, celebrated nigh the river Therenus in Crete; the gods, goddesses, and heroes, who descended from them.

The most illustrious of those heroes were Minos and Rhadamanthus. They are said to have been the sons of Jupiter and Europa, who was conveyed into the island on a bull. Minos becoming king, built several cities; the most considerable of which are—Gnosus, on that side of the island which faces Asia, Phœstus on the southern shore, and Cydon on the western, facing Peloponnesus. He gave to his subjects a code of admirable laws, which he pretended to have received from his father Jupiter in the grotto of mount Ida.

Rhadamanthus distinguished himself by the impartiality of his judgments, and by the inflexible severity with which he inflicted punishment on the impious and wicked. His empire extended over the chief isles of the Archipelago, and the inhabitants of the adjacent coasts of Asia submitted to him on account of his high reputation for probity and justice. Mythologists have constituted him judge in the regions below, to determine the future state of the righteous and the wicked. They have conferred on him the same honours which were bestowed on Minos, the justest of kings.

Thus far have been followed the Cretan traditions as they are related by Diodorus; but historians differ about the truth of them. There are a variety of opinions concerning the first inhabitants of Crete. Stra-

bo, who has discussed them with great erudition, says, after several pages on the subject; "I am not fond of fables; yet I have detailed these at some length, because they are connected with theology. Every discourse concerning the gods should examine the religious opinions of antiquity, and distinguish them from fable. The ancients were pleased to conceal their knowledge of nature under a veil. It is now impossible to unfold the meaning of their enigmas. But by exposing to light the numerous allegories which they have left us, and by examining attentively their mutual relations and differences, genius may perhaps be able to unfold the truths which are couched under them."

But leaving mythology for the more certain records and monuments of history, we find that Crete received its name from Crés, the first of its monarchs. He was author of several useful inventions, which contributed to the happiness of his subjects. Prompted by gratitude, they endeavoured to perpetuate the memory of his favours, and to immortalize his name, by naming the island after him.

In order to distinguish the true Cretans from strangers, they were named *Eteocretes*. A number of colonies, from different parts of Greece, settled in the island. The agreeableness of the climate, and the fertility of the soil, invited them to fix their habitation there. The Lacedæmonians, Argives, and Athenians, were the principal people who sent colonies into Crete. This is what makes Homer say, "Crete is an extensive island in the midst of the stormy main. The soil is rich and fertile. It contains an immense number of inhabitants. It is adorned with an hundred cities. Its inhabitants speak in various languages. We find there Achæans, valiant Eteocretes, Cydonians, Dorians, and godlike Pelasgians." The Eteocretes inhabited the southern division of the island; they built there the city of Præsus, and erected a temple to Diætan Jove.

Crés was not the only monarch who reigned in the island of Crete. He had a series of successors. But history affords little information concerning them: only the names of a few of them are preserved, and a small number of events which happened under the reign of some others,—but blended and disfigured with an intermixture of fable. Among those monarchs we find two Jupiters, and two of the name of Minos. However, most writers confound them, and ascribe to one those transactions and exploits which should be shared between the two.

This remark chiefly regards Minos, who was esteemed the wisest legislator of antiquity. The office assigned him in the regions below, is a clear and certain proof of his having gained an exalted reputation by his justice. Greece, says Plato, has with great propriety adopted the laws of Crete; for they are founded on the solid basis of reason and equity, and have a natural tendency to render the people, who live in subjection to them, opulent and happy. One of those laws forbade "the Cretans ever to carry their festivity so far as to intoxicate themselves with wine." The following was very suitable to repress the presumptuous ardour of youth, "Let young people not canvass the laws with an indiscreet curiosity; let them not examine whether the lawgiver has done right or wrong in promulgating them; but let them join un-

Crete.

Crete. nimously in declaring them good, since they proceed from the gods. If any of the old men perceive something in them meriting amendment, let him mention it to the magistrate, or discuss it with his equals, but never in the presence of the young people." That excellent code was engraven on tables of brass; and Talos, chief minister to Minos, visited all the towns and cities in the island, three times a-year, to observe in what manner the laws were executed and obeyed. The king of Crete, well knowing that the marvellous is necessary to command the belief and enforce the obedience of the people, pretended that he had received those laws from his father Jupiter, in the grotto of mount Ida. In the same manner, Lycurgus, before promulgating his laws, repaired to Delphos, and gave out they had received the sanction of Apollo. A like reason induced Numa to pretend to an intimacy with the nymph Egeria, and Mahomet to ascribe his doctrines and institutions to the revelation of the angel Gabriel.

In contradiction to this account, others of the ancients describe Minos as a prince impotently abandoned to the fury of his passions, and a barbarous conqueror. Falling passionately in love with the nymph Dictynna, who refused to gratify his wishes, he pursued her to the brink of the shore, and forced her to plunge into the sea, where she was saved by some fishermen, who received her in their nets. He was the first of the Greeks who appeared in the Mediterranean at the head of a naval armament. He conquered the Cyclades, expelled the Carians, established Cretan colonies in those islands, and committed the government of them to his son.

Being informed, while he was at Paros, that his son Androgeus was slain at Athens, he declared war against Egeus, and imposed on him a disgraceful tribute; from the payment of which Theseus delivered his country. He took arms against Nisus, king of Megara, made him prisoner by the treachery of his daughter Scylla, and put him to death, together with Megarus, the son of Hippomanes, who had brought some forces to his assistance. Dædalus, who had by some means incurred his displeasure, despairing of pardon from so severe and inflexible a prince, employed the resources of his inventive genius, in order to escape from his power. He fled to Sicily, gained the protection of king Cocalus, and obtained an asylum in his court. Valerius Flaccus has described his flight in a very lively and picturesque manner. "Thus Dædalus, with the wings of a bird, ascended from mount Ida. Beside him flew the comrade of his flight, with shorter wings. They appeared like a cloud rising in the air. Minos, seeing his vengeance thus eluded, glowed with impotent rage. In vain he followed with his eyes the secure flight of his enemies through the wide expanse of heaven. His guards returned to Gortynia with their quivers filled with arrows." The Cretan monarch did not, however, give up his prey. He equipped a fleet, pursued the fugitive to Sicily, and fell before the walls of Camicum.

It is plain, that those actions cannot agree to the character of that just monarch, whose merits raised him to the office of determining, in the regions below, the unalterable fate of the righteous and the wicked. We may, therefore, reasonably conclude,

Crete. that Minos the legislator is a different person from the conqueror; that it was the former who gained a lasting reputation by his wisdom and justice; and the latter who subdued most of the islands of the Archipelago, but being enslaved by his passions, tarnished his glory by his cruelty and merciless thirst for vengeance.

The last king of Crete was Idomeneus. This prince, accompanied by Merion, conducted 24 ships to the assistance of Agamemnon. Homer informs us of the illustrious exploits by which he signalized himself before the walls of Troy. At his departure, he committed the government of his kingdom to Leucus his adopted son, promising him the hand of his daughter Clisithera if he governed wisely in his absence. That ambitious young man soon forgot the favours which had been so lavishly bestowed on him. Gaining a number of partisans, he in a short time aspired to the immediate possession of the crown. His impatience would not wait till he should obtain it lawfully by marriage. Flattering himself, from the long absence of the king, that he was perhaps fallen before Troy, he determined to mount the throne. Mida, wife to Idomeneus, and the princess Clisithera, were an obstacle to his wishes. But ambition knows no restraint, and tramples under foot the most sacred obligations. The base wretch having seduced the people from their allegiance, and captivated the affections of the nobles, sacrificed those unfortunate victims in the temple. When Idomeneus, crowned with laurels, landed on the coast of Crete, Leucus, who had now firmly established his power, attacked him with an armed force, and obliged him to reembark. A different account is also given of the banishment of Idomeneus. Servius says, that he had vowed, in a storm, to sacrifice to the gods the first person that his eyes should behold on the Cretan shore; that his son having met him first after his arrival, he fulfilled his vow, by sacrificing him; and that the island, being soon after depopulated by pestilence, the inhabitants looked upon that affliction as the effect of divine vengeance, and expelled the parricide; who, retiring to Italy, founded Salentum, on the Messapian coast. But that opinion appears entirely groundless. History mentions no son of Idomeneus. If he had a son of his own blood, why did he adopt Leucus? Why did he intrust to him the government of the island, when he promised him his daughter in marriage? The more probable opinion is, that the plague was introduced into the island by his ships, when he returned from the siege of Troy, as Herodotus asserts; and that Leucus artfully made use of that pretext to expel his lawful sovereign from the island. But it appears that the usurper did not long enjoy the fruit of his crimes. Soon after the departure of Idomeneus, monarchy was abolished, and the government of Crete became republican.

The republic of Crete has been celebrated by the panegyric of Plato, served Lycurgus as a model for that which he established in Lacedæmon, and was beheld by all Greece with respect and admiration. Strabo has thought it not unworthy of his pencil, and has consecrated the leading features of its constitution to lasting fame in his immortal work. It was indeed a system of legislation, whose direct tendency was to call forth the buds of virtue in the heart of infancy; to open and expand them

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them in youth; to inspire man, as he reached maturity, with the love of his country, of glory, and of liberty; and to comfort and support the infirmities of age with the respect and esteem due to the experience and wisdom of that period of life. It laboured to form affectionate friends, patriotic citizens, and worthy magistrates. It made no use, however, of a multitude of acts and statutes to produce those inestimable advantages. They flowed all from one source; the public education of youth, judiciously directed. The virtuous examples set before youth in the course of that education, the illustrious deeds which were recited to them with high applause, the honours conferred on valour and on noble actions, the opprobrium invariably cast on vice; these were the only means which the Cretan lawgiver made use of to form a warlike, humane, and virtuous nation.

The Cretan government, soon after the expulsion of Idomeneus, became aristocratical. The power was divided between the nobles and the people. Yet as the chief employments were occupied by the nobles, they directed the administration of affairs. Ten magistrates were annually elected, by a majority of voices, in the national assembly. These were named *Cosmoi*, and their public office and character were the same with those of the Ephori at Sparta. They were the generals of the republic in time of war, and directed all affairs of any importance. They had the right of choosing certain old men for counsellors. Those old men, to the number of twenty-eight, composed the Cretan senate. They were chosen from among such as had discharged the office of *Cosmoi*, or had distinguished themselves by extraordinary merit and blameless probity. Those senators continued in office during life, possessed a weighty influence, and were consulted in every affair of any importance. This body was a barrier opposed by the wisdom of the legislator against the ambition of the ten chief rulers. He had imposed another restraint on their power, by limiting the period of their administration to one year. His foresight went still farther. The suffrages of the people might be obtained by bribery or personal influence, and of consequence their choice might sometimes fall on a man unworthy of so honourable an office. When that happened, he who had been undeservedly advanced to the dignity of *Cosmos* was degraded, either in a national assembly, or simply by the voices of his colleagues. This, doubtless, is what Plato alludes to, when he says, "Neither the commonwealth, which approaches too near to a monarchical constitution, nor that which affects a licentious liberty, is founded on the solid basis of a just medium between anarchy and despotism. O Cretans! O Lacedaemonians! by establishing yours on firmer foundations, you have avoided those fatal extremes."

Such were the distribution of power and the administration of public affairs in the Cretan government. Its simplicity was admirable. A people who were blessed with the sacred enjoyment of liberty, but possessed not sufficient knowledge and discernment to direct themselves, elected magistrates, to whom they delegated their authority. Those magistrates, thus arrayed with sovereign power, chose senators to assist and direct their deliberations. These counsellors

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could neither enact or decide of themselves: but they held their office for life; and that circumstance contributed to strengthen their influence and to increase their experience. The magistrates were animated by the most powerful motives to distinguish themselves when in office, by unwearied activity in the public service. On one side, they were restrained by the fear of degradation; on the other, actuated by the hope of becoming one day members of the national council.

Yet let us enquire what means the Cretan lawgiver used to form virtuous citizens. All the Cretans were subjected to the power of their magistrates; and divided into two classes, the adults and the youth. Men arrived at maturity were admitted into the first. The second consisted of all the young men who were not below the age of seventeen. The society of adults sat together in public halls. There rulers, magistrates, poor and rich, seated together, partook, without distinction, of the same simple fare. A large bowl, filled with wine and water, which went round the company from one to another, was the only drink that they were allowed. None but the old men had a right to call for more wine. Doubtless, that people, so celebrated for wisdom, were not strangers to the power of beauty; for a woman was appointed to preside at each table. She openly distributed the most exquisite meats to those who had distinguished themselves by their valour or wisdom. That judicious preference was so far from exciting envy or jealousy, that it only prompted every person to deserve it by brave and prudent conduct. Near where the citizens sat, two tables were laid, which they named *Hospitable*; all strangers and travellers were entertained at these: and there was also a particular house set apart by the public, in which they might spend the night.

To supply the public expences, every citizen was obliged to bring a tenth part of his annual income into the treasury. The chief magistrates were to take care that every person contributed his proportion. In Crete, says Aristotle, one part of the fruits of the earth, of the produce of the flocks, of the revenues of the state, and of the taxes and customs, is sacred to the gods: the other is distributed among the members of the community; so that men, women, and children, all subsist at the public expence.

After dinner, the magistrates and senators usually spent some time in deliberating on the affairs of the state; they next recounted the noble deeds which had been done in war, celebrated the courage of their most distinguished warriors, and animated the youth to heroic valour. Those assemblies were the first school of the youth. At the age of seven, the boy was permitted to handle the bow;—from that time he was admitted into the society of the adults, where he continued till the age of seventeen. There, sitting on the ground, and clothed in a plain and coarse dress, he served the old men, and listened, with respectful silence, to their advices. His young heart was inflamed with the recital of noble deeds in arms, and glowed with ardour to imitate them. He acquired habits of sobriety and temperance. And being constantly witness of illustrious examples of moderation, wisdom, and patriotism; the seeds of virtue were thus

sown

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He was early accustomed to arms and to fatigue, that he might learn to endure excessive heat or cold, to clamber and leap among hills and precipices, and to bear manfully the blows and wounds which he might receive amid the gymnastic exercises or in battle. His education was not confined to the gymnastic exercises; he was also taught to sing the laws, which were written in verse, with a certain species of melody; in order that the charms of music might dispose him to learn them with more pleasure, and might impress them more deeply on his heart, and that, if he should ever transgress them, he might not have the excuse of ignorance to offer. He next learned hymns in honour of the gods, and poems composed in praise of heroes. When he reached his seventeenth year, he retired from the society of the adults, and became a member of that of the young men.

Here his education was still carried on. He exercised himself in hunting, wrestling, and fighting with his companions. The lyre played tunes of martial music; and he learned to follow exactly the sounds and measure of the musician. Those sports and exercises were sometimes attended with danger; because arms of steel were sometimes used in them. One dance, in which the youth aspired most ardently to excel, was the Pyrrhic, originally invented in Crete. The performers in that dance were arrayed in complete armour:—they wore a light short coat, which did not fall below the knee, and was bound with a girdle going twice round the waist: on their feet and legs were buskins; above these they bore their arms,—and performed various military evolutions to the sound of musical instruments. “The Lacedemonians and Cretans,” (says Libanius), “cultivated dancing with amazing ardour; they considered, that their laws had directed them to practise it for the most important purposes; and it was scarce less dishonourable for a Lacedemonian or Cretan to neglect the military dances, than to desert his post in battle.”

Those Cretans who were opulent and high-born, were permitted to form societies of young men of their own age. They often strove, with emulation, who should form the most numerous one. The father of the young man who formed one of those societies, usually presided in it. He had a right to educate those warlike youth, to exercise them in running and in hunting, to confer rewards and inflict punishments.

Friendship was in high estimation among the Cretans; but, says Strabo, the manner in which they conducted the intercourse of friendship was pretty extraordinary. Instead of mild persuasion, they made use of violence, to gain the objects of their affections. He who conceived an affection for a young man of his own age, and wished to attach him to himself by indissoluble bonds, formed a scheme for carrying him off by violence. Three days before putting it into execution, he communicated it to his comrades. They could not then interfere to prevent it; because if they had, they would have appeared to think the young man unworthy of such an excessive attachment. At the appointed day they assembled to protect their companion. If the ravisher appeared to them not unworthy of the object of his affection, they made, at first, a faint resistance in obedience to the law—but,

at last, joyfully favoured his enterprise; if, on the other hand, they thought him unworthy of the object of his choice, they made such resistance as to prevent him from executing his design. The feigned resistance continued till the ravisher had conducted his friend into the hall of that society to which he belonged. They did not regard him who possessed superior beauty and gracefulness of person as the most amiable; but him who had most distinguished himself by his modesty and valour.

The ravisher loaded his young friend with favours, and conducted him wherever he desired: they were accompanied by those who had favoured the rape: he carried him from feast to feast, procured him the pleasures of the chase and good cheer; and after using all possible means to gain his heart for the course of two months, brought him back to the city, and was obliged to give him up to his parents. But first he presented him with a suit of armour, an ox, and a drinking-cup; which were the usual and legal presents on such occasions. Sometimes his generosity went still farther; and he made more expensive presents; to defray the expence of which his comrades contributed. The young man sacrificed the ox to Jupiter, and gave an entertainment to those who had assisted when he was carried off. He then declared his sentiments concerning a connection with his ravisher, and told whether or not it was agreeable to him. If he had reason to complain of the treatment which he had received, the law allowed him to forsake a friend so unworthy of the name, and to demand his punishment.

It would have been disgraceful, adds Strabo, to a young man, who was handsome and well-born, to be rejected by his friends on account of the depravity of his manners. Those who had been carried off received public honours. Theirs were the first places in the halls and at the race. They were permitted to wear, during the rest of life, those ornaments which they owed to the tenderness of friendship; and that mark of distinction testified to all who saw them, that they had been the objects of some fond attachment.

When the youth had finished their exercises, and attained the legal age, they became members of the class of adults; being then considered as men, they were permitted to vote in the national assemblies, and were intitled to stand candidates for any public office. They were then obliged to marry; but did not take home their wives till such time as they were capable of managing their domestic concerns.

“The legislator (says Strabo) had considered liberty as the greatest blessing that cities can enjoy. Liberty alone can secure the property of the citizens of any state. Slavery either robs them of it, or renders it precarious. The first care of nations should therefore be to preserve their liberty. Concord strengthens and supports her empire; the flourishes wherever the seeds of dissension are extinguished. Almost all those hostilities which prevail among nations or individuals spring either from an inordinate desire of wealth or the love of luxury. Introduce, instead of those baneful principles, frugality, moderation, and equality of conditions; you will thus banish envy, hatred, injustice, and haughty disdain.” This was what the Cretan lawgiver happily effected. And the community, which was regulated by his wise institutions rose to glory, opulence, and power; and was hon-
oured

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noured with the panegyrics of the most celebrated philosophers of Greece: but—the highest honour it ever obtained, was that of serving Lycurgus as a model for the admirable form of government which he established at Sparta.

The republic of Crete continued to flourish till the age of Julius Cæsar. No other state has enjoyed so long a period of strength and grandeur. The legislature, regarding liberty as the only sure basis of a nation's happiness, had instituted a system of laws, the natural tendency of which was, to inspire men with an ardent passion for liberty, and with such virtue and valour as are necessary to support and defend it. All the citizens were soldiers; all of them were skilled in the art of war. The valiant youth of other nations resorted to Crete, to learn the exercises, manœuvres, and evolutions, of the military art. "Philopœmen (says Plutarch) being impatient of indolence, and eager to acquire skill in arms, embarked for Crete. After spending a considerable time in the noblest exercises among that brave people, who were skilled in the art of war, and accustomed to an austere and temperate life, he returned to the Aclæans. The knowledge which he had acquired made him so eminent among them, that he was immediately appointed general of their cavalry."

On the other hand, the legislator, being persuaded that conquests are generally unjust and criminal, that they often exhaust the strength of the victorious nation, and almost always corrupt its manners, endeavoured to preserve the Cretans from the ambition of conquest. The fertility of the island abundantly supplied their wants. They needed not that commerce should introduce among them the riches of foreign countries, along with which luxury and her train of attendant vices would also be introduced; and he knew how to inspire them with an indifference for such acquisitions without expressly forbidding them. The gymnastic exercises, which occupied the leisure of the gallant youths; the pleasures of the chase; the ardour of friendship; the public shows, at which all the different orders of the community, both men and women, used to assemble; the love of equality, order, and their country, with which he inflamed every breast; the wise institutions, which united a whole nation so closely that they composed but one family;—all these ties attached the Cretans to their native island: and finding at home that happiness which was the object of their wishes, they never thought of wandering abroad in search of an imaginary glory, or of extending their empire over other nations. Therefore, from the period at which that state assumed a republican form till the time when they were attacked by the arms of Rome, the nation was not once known to send an hostile force into the territories of any of their neighbours. This instance of moderation is unparalleled in history; no other nation can divide the glory of it with the Cretans. Individuals indeed might leave their country to engage in foreign armies. Those princes and states who knew their valour and skill in archery eagerly sought to take them into their pay; all the neighbouring monarchs were desirous of having in their armies a body of Cretan archers. Over the whole world none were more celebrated than they for bending the bow. "The arrows of Gortynia (says Claudian),

aimed from a trusty bow, are sure to wound, nor ever miss the destined mark."

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Though the multitude of independent cities which flourished in Crete did not unite their arms to subjugate the neighbouring islands, and drench them with the blood of their inhabitants; yet they were not so wise as to live in peace among themselves. Discord often stalked among them with her flaming torch. The most powerful wished to enslave the rest. Sometimes Gnoffus and Gortynia marched with social banners against their neighbours, levelled their fortresses, and subjected them to their power; at other times they attacked each other with hostile violence, and saw their bravest youth perish amid the horrors of civil war. Lyctos and Cydon opposed an invincible barrier to their ambition, and preserved their own liberty. The last of these cities had acquired such strength and influence, that she held the balance between the rival powers of the island. Those wars destroyed a number of the cities, and drenched the native country of Jupiter with blood.

To what source must we attribute those intestine dissensions? One part of the island was occupied by the Eteocretes, the original inhabitants; the rest was peopled with colonies from Athens, Sparta, Argos, and Samos. Perhaps the ancient grudges which had subsisted among those strangers, being still unextinguished in their breasts, were easily rekindled by accident or circumstances, and inflamed with new fury. We may also suppose, that the most powerful among them, exulting in their superiority, would endeavour to take advantage of the weakness of the rest, and disregard all laws but those of force; besides, the glowing ardour of the youth, trained to military exercises, was ever ready to fly to arms. Such, probably, were the causes which fomented discord and hostility among a people living under the same religion, customs, and laws. Whatever these might be, the Cretans, being persuaded that the firm union of their soldiers was essential to victory, arrayed the bravest youths of the army in splendid robes, and caused them to sacrifice to friendship before engaging in battle. In some countries it would be very proper to oblige the generals, on such occasions, to sacrifice to concord. If such a sacrifice were performed with sincerity, it might preserve their glory unstained, and prevent such deluges of blood from being wasted without producing any advantages to the state.

Their passion for war did not extinguish in the breasts of the Cretans that exquisite sensibility which is the mother and nurse of the fine arts. "The Cretans (says Sozomen) gave an illustrious proof of their munificence to genius, by making Homer a present of a thousand pieces of silver; and to perpetuate the memory of this act of generosity, they recorded it by an inscription on a public column." In Crete, adds Ptolemy, men are still more desirous of cultivating their understandings than of exercising their bodily powers. Often when dissensions arose, the voice of wisdom and the charms of poetry recalled them to reason and harmony. Thales of Gortynia, the preceptor of Lycurgus, was one of their most celebrated philosophers. Being both a poet and legislator, he made an happy use of his abilities and knowledge to extinguish among his countrymen the kindling sparks of discord. "His poems were moral discourses in verse, which recalled the

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the people to concord and submission to the laws. Using a regular measure, he recommended the austerity of his subject, by the insinuating and powerful charm of sentiment. So powerful were the effects of his verses, which addressed at once the ears, the heart, and the understanding of his hearers, that their rage was gradually softened. Next, opening their hearts to the love of peace, the advantages which he described in glowing colours, they forgot their intestine dissensions, and ranged themselves around the standard of concord." That sage is said to have invented tunes for the military dances and for the Cretan Pyrrhic. Men who felt so strongly the influence of poetry and music could scarcely be enemies to pleasure. Accordingly they had a custom of distinguishing their fortunate days with white flint stones, their unfortunate days with black. At the end of the year they counted the number of their white stones, and reckoned that they had lived only so many days as were distinguished for having been fortunate. They did not think mere existence, without the enjoyment of pleasure, worthy of the name of *life*. For this reason, they caused to be inscribed on their tombs: "He lived so many days; he continued in existence so long."

A passion for glory is easily awaked in a feeling and generous breast. The Cretans eagerly repaired to the famous solemnities of Greece, and were often crowned at the Olympic, Nemæan, and Pythian games: others of them were favourites of the muses, and versified the predictions of prophets, or celebrated the glorious deeds of their heroes. Several of them distinguished themselves by historical compositions. At the most ancient games, a prize is said to have been bestowed on the poet who sung the noblest hymn in honour of Apollo: Chrysothemis of Crete sung and gained the prize.

The ravages of time have deprived us of almost all their works; and if Pindar had not preserved the memory of some of their crowns, we should not know even the names of the conquerors who wore them. The temple of Diana at Ephesus, built by the Cretan Ctesipon and his son Metagenes, was not proof against the frantic hand of the incendiary. Those ingenious architects had built it on the principles of the Ionic order: to the coarseness of the materials, the elegance of the architecture, the symmetry of the parts, and the majesty and perfection of the whole, they had added solidity and strength, without which the rest must have been of small value. Their names have descended to posterity, but the pillars of that monument which has perpetuated their memory have been dispersed or destroyed. Scarce a vestige remains of that building which was esteemed one of the seven wonders of the world.

Nations are effaced from the earth like the monuments of their power, and after the revolution of several ages we can scarce trace in their posterity any remains of their ancient character. Some of them exist longer, others shorter; but we may almost always calculate the period of their duration by the excellence of their laws, and the fidelity with which they support and obey them. The republic of Crete, being established on a solid basis, knew no foreign master for a period of ten centuries. She bravely repelled the attacks of those princes who attempted to enslave her. At length the time arrived when the warlike and victorious Ro-

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mans aspired to the empire of the world, and would suffer none but their subjects or slaves to inhabit within the reach of their arms. Florus does not scruple to acknowledge, that the Romans had no other motives for invading Crete but the ambitious desire of subduing the renowned native country of Jupiter. "If any person wish to know the reasons which induced us to attack Crete (says he), the true reason was our desire to subdue so celebrated an island. The Cretans had appeared to favour Mithridates, and the Romans thought proper to declare war against them on that pretext. Mark Antony, father of the triumvir, attacked them with strong hopes of success; but was severely punished for his presumption and imprudence. The Cretans took a great part of his fleet, hung up his soldiers and sailors on the masts amid the sails and cordage, and returned in triumph into their harbours."

The Romans never forgot nor forgave a defeat. As soon as the Macedonian war was brought to an happy conclusion, they again took arms against the Cretans to revenge their ignominy and loss. Quintus Metellus was sent to Crete with a powerful armament. He met with an obstinate and vigorous resistance. Panarus and Lathenes, two experienced leaders, collecting a body of 20,000 young warriors, all eager for battle, and of determined courage, employed their arms and arrows successfully against the Romans, and protracted the fate of Crete for three years. Those conquerors could not make themselves masters of the island before destroying its bravest warriors. They lost a great number of troops, and bought a bloody victory at the price of many a danger and much fatigue. However, their usual good fortune at length prevailed. The first care of the conqueror was to abolish the laws of Minos, and to establish in their room those of Numa. Strabo, that enlightened philosopher, complains of this act of severity; and informs us, that in his days the original laws of Crete were no longer in force, because the Romans compelled the conquered provinces to adopt their civil code. To secure themselves still more fully in the possession of the island, they sent a powerful colony to Gnosus.

From that era to the present time, that is, for a period of 1900 years, the Cretans have no longer formed a separate nation, nor made any figure among the states and kingdoms of the world: their noble and ingenuous manners, their arts and sciences, their valour and their virtues, are no more. They have lost these with the loss of liberty. So true is it that man is born for himself; and that, when deprived of that aid which Nature has designed to strengthen and support his weakness, the flame of genius and the ardent glow of valour are extinguished in his breast; he becomes incapable of vigorous resolution, and sinks below the natural virtue and dignity of the species.

The island of Crete, joined with the small kingdom of Cyrene, on the Lybian coast, formed a Roman province. It was at first governed by a proconsul; a questor and an assistant were afterwards sent there; at last, as Suetonius informs us, it was put under the government of a consul. This island was one of the first places in the world that were favoured with the light of the gospel. St Paul introduced the Christian faith into Crete; and his disciple Titus, whom he left there

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to cherish and cultivate that precious plant, became the first bishop of the island. In the reign of the emperor Leo, it had twelve bishops, who were all subject to the patriarch of Constantinople. Constantine separated Crete from Cyrené in the new division which he made of the provinces of the empire. Leaving three sons, Constantius, Constantine, and Constant, he assigned Thrace and the eastern provinces to the first; to the second, the empire of the West; the island of Crete, Africa, and Illyria, to the third.

When Michael Balbus sat on the throne of Constantinople, the rebellion of Thomas, which lasted three years, caused him to neglect the other parts of the empire. The Agareniens (a people of Arabia), who had conquered the finest provinces of Spain, seized that opportunity. They fitted out a considerable fleet, plundered the Cyclades, attacked the island of Crete, and made themselves masters of it without opposition. In order to secure their conquest, they built a fortress which they named *Kbandak*, "intrenchment." From that citadel the barbarians made inroads into the interior parts of the island, carrying havoc and devastation wherever they appeared. By repeated attacks, they subdued all the cities in Crete except Cydon. Michael made some ineffectual efforts to expel them from Crete. The emperor Basilus, the Macedonian, was not more successful. They defeated him in a bloody battle; but being vanquished by one of his generals, they were subjected to the payment of an annual tribute. At the end of ten years, the Arabians refused the tribute. It was reserved for Nicephorus Phocas, who was afterwards emperor, to deliver this fine island from the yoke of the Infidels. He landed on the island with a numerous army, boldly attacked them, and routed them in various engagements. The Saracens, no longer daring to meet so formidable a general in the field, fled for protection to their fortresses. Phocas being plentifully supplied with all the warlike machines necessary for a siege, levelled their walls, and alarmed their hearts with terror. He took their cities and fortresses, and drove them into *Khandak* their metropolis and last resource. In the course of nine months he subdued the whole island, took their king Curup and his lieutenant Aremas prisoners, and reunited to the empire a province which had been 127 years in the hands of the Infidels. It remained under the dominion of the Romans till the time when Baldwin Count of Flanders, being raised to the throne, liberally rewarded the services of Boniface Marquis of Montserrat, by making him king of Thessalonica, and adding the island of Crete to his kingdom. That lord, being more covetous of gold than glory, sold it to the Venetians in the year 1194; under whom it assumed the name of *CANDIA*. See the sequel of its history under that article.

CRETIO, in antiquity, a certain number of days allowed the heir to consider whether he would act as heir to the deceased or not; after which time, if he did not act, he was excluded from the estate.

CREUX, a term in sculpture, much used by the French; though not yet, that we know of, naturalized among us: but the want of a word of equal import in English, as it has frequently put us under a necessity of using this in the course of the present

work; so it pleads strongly for its admission into our language.

Creux originally signifies a *hollow*, *cavity*, or *pit*, out of which something has been scooped or dug: hence it is used to denote that kind of sculpture and graving where the lines and figures are cut and formed within the face or plane of the plate or matter engraven on. In which sense it stands opposed to *relievo*; where the lines and figures are embossed, and appear prominent above the face of the matter.

CREW, the company of sailors belonging to a ship, boat, or other vessel.

The sailors that are to work and manage a ship are regulated by the number of lasts it may carry; each last making two ton. The crew of a Dutch ship, from 40 to 50 lasts, is seven sailors and a swabber; from 50 to 60 lasts, the crew consists of eight men and a swabber; and thus increases at the rate of one man for every ten lasts; so that a ship of 100 lasts has 12 men, &c. English and French crews are usually stronger than Dutch; but always in about the same proportion. In a ship of war there are several particular crews, or gangs, as the boatswain's crew, the carpenter's crew, the gunner's crew, &c.

CREVIER (*JOHN BAPTIST LEWIS*), a Parisian, was trained under the celebrated Rollin, and afterwards became professor of rhetoric. Upon the death of his master, in 1741, he took upon him to finish his Roman History. He published other works, and was greatly serviceable to the cause of virtue and religion as well as letters. His death happened, 1765, in a very advanced age. Besides the continuation just mentioned, he published, 1. An edition of *Livius, cum Notis*, in 6 vols 4to, 1748; and afterwards another edition, better adapted to the use of his pupils, in 6 vols. small 8vo. 2. *La Histoire des Empereurs de Romains Jusqu' a Constantin*, 1749, 12 tom. 12mo. 3. *Histoire de l'Université de Paris*, 7 tom. 12mo. 4. *Rhetorique Française*, a just and useful work. 5. *Observations sur l'Esprit des Loix*. Here he ventured out of his depth; he should have kept within the precincts of the belles letters.

CREUSA, in fabulous history, daughter of Creon king of Corinth. As she was going to marry Jason, who had divorced Medea, she put on a poisoned garment, which immediately set her body on fire, and she expired in the most excruciating torments. She had received this gown as a gift from Medea, who wished to take that revenge upon the infidelity of Jason. Some call her *Glauce*. (*Ovid. de Art. Am. l. v. 335.*) A daughter of Priam, king of Troy by Hecuba. She married Æneas, by whom she had, among other children, Ascanius. When Troy was taken, she fled in the night with her husband; but they were separated in the midst of the confusion and tumult, and Æneas could not recover her, nor hear where she was. Some say that Cybele saved her, and carried her to her temple, of which she became priestess. *Pauf. 10. c. 26.—Virg. Æn. 2. v. 562.*

CREX, in ornithology, a species of *RALLUS*.

CRIB, the rack or manger of a stable, or the stall or cabin of an ox. It is also used for any small habitation, as a cottage, &c.

CRIB, in the English salt-works, a name given to a sort of case used in some places instead of the *drab*, to put

Crew
||
Crib.

put the salt into as it is taken out of the boiling pan.

CRIBBAGE, a game at cards, to be learnt only by practice.

CRIBRATION, in pharmacy, the passing any substance through a sieve or searce, in order to separate the finer particles from the grosser.

CRIBROSUM OS, in anatomy, called also *os ethmoides*. See *Anatomy*, n^o 17.

CRICELASIA, the driving a ring or hoop. Driving a hoop was one of the ancient gymnastics: this hoop was as high as the breast of the person who used it. It was commended for rendering the limbs pliable, and for strengthening the nerves.

CRICETUS, in zoology. See *Mus*.

CRICHTON (James), a Scots gentleman, who lived in the 16th century, and who, on account of his extraordinary endowments both of body and mind, obtained the appellation of "the admirable Crichton;" by which title he has continued to be distinguished down to the present day. The time of this celebrated person's birth is said, by the generality of writers, to have been in 1551; but, according to Lord Buchan*, it appears, from several circumstances, that he was born in the month of August 1560. There is a difference likewise between the Earl of Buchan and other biographers, with regard to the family of Crichton, and the rank and situation of his father. The common accounts assert, that James Crichton's father was Robert Crichton of Clunie, in the county of Perth; and that this Robert Crichton commanded Queen Mary's army at the battle of Langside in the year 1568. But from the Earl of Buchan we learn, that this gentleman was of Elliock in the same county, and that he was lord advocate of Scotland in queen Mary's reign from 1561 to 1573; part of which time he held that office in conjunction with Spens of Condie. The mother of James Crichton was Elizabeth Stuart, the only daughter of Sir James Stuart of Beath, who was a descendant of Robert duke of Albany, the third son of king Robert the second, by Elizabeth Muir or More, as she is commonly called. It is hence evident, that when the admirable Crichton boasted (as he did abroad), that he was sprung from Scottish kings, he said nothing but what was agreeable to truth.

James Crichton is said to have received his grammatical education at Perth, and to have studied philosophy in the university of St Andrew. His tutor in that university was Mr John Rutherford, a professor at that time famous for his learning, and who distinguished himself by writing four books on Aristotle's logic and a commentary on his poetics. According to Aldus Manutius, who calls Crichton first cousin to the king, he was also instructed, along with his majesty, by Buchanan, Hepburn, and Robertson, as well as by Rutherford; and he had scarcely arrived to the 20th year of his age, when he had run through the whole circle of the sciences, and could speak and write to perfection in ten different languages. Nor was this all; for he had likewise improved himself to the highest degree in riding, dancing, and singing, and in playing upon all sorts of instruments.

Crichton, being thus accomplished, went abroad upon his travels, and is said to have gone to Paris; of his transactions at which place the following account

is given. He caused six placards to be fixed on all the gates of the schools, halls, and colleges belonging to the university, and on all the pillars and posts before the houses of the most renowned men for literature in the city, inviting all those who were well versed in any art or science, to dispute with him in the college of Navarre, that day six weeks, by nine of the clock in the morning, where he would attend them, and be ready to answer to whatever should be proposed to him in any art or science, and in any of these 12 languages, Hebrew, Syriac, Arabic, Greek, Latin, Spanish, French, Italian, English, Dutch, Flemish, and Sclavonian; and this either in verse or prose at the discretion of the disputant. During this whole time, instead of closely applying to his studies, he regarded nothing but hunting, hawking, tilting, vaulting, riding of a well-managed horse, tossing the pike, handling the musket, and other military feats; or else he employed himself in domestic games, such as balls, concerts of music vocal and instrumental; cards, dice, tennis, and the like diversions of youth. This conduct so provoked the students of the university, that, beneath the placard which was fixed on the Navarre gate, they caused the following words to be written: "If you would meet with this monster of perfection, to make search for him either in the tavern or bawdy-house, is the readiest way to find him." Nevertheless, when the day appointed arrived, Crichton appeared in the college of Navarre, and acquitted himself beyond expression in the disputation, which lasted from nine o'clock in the morning till six at night. At length, the president, after extolling him highly for the many rare and excellent endowments which God and nature had bestowed upon him, rose from his chair, and, accompanied by four of the most eminent professors of the university, gave him a diamond ring, and a purse full of gold, as a testimony of their love and favour. The whole ended with the repeated acclamations and huzzas of the spectators; and henceforward our young disputant was called, "the admirable Crichton." It is added, that he was so little fatigued with the dispute, that he went on the very next day to the Louvie, where he had a match of tilting (an exercise then in much request), and in the presence of some of the princes of the court of France, and a great many ladies, carried away the ring 15 times successively.

About two years after this we find him at Rome, where he affixed a placard upon all the eminent places of the city, in the following terms: *Nos Jacobus Crichtonus Scotus, cuiusque rei propositae ex improviso respondimus*. In a city which abounded in wit, this bold challenge, to answer to any question that could be proposed to him without his being previously advertised of it, could not escape the ridicule of a pasquinade. It is said, however, that being nowise discouraged, he appeared at the time and place appointed; and that, in the presence of the pope, many cardinals, bishops, doctors of divinity, and professors in all the sciences, he displayed such wonderful proofs of his universal knowledge, that he excited no less surprise than he had done at Paris. Boccalini, who was then at Rome, gives something of a different relation of the matter. According to this author, the pasquinade against Crichton, which was to the following effect, "And he that will see it let him go to

Crichton. *the sign of the Falcon and it shall be shown,*" made such an impression upon him, that he left a place where he had been so grossly affronted as to be put upon a level with jugglers and mountebanks.

From Rome he went to Venice; where he contracted an intimate friendship with Aldus Manutius, Laurentius Massa, Speron Speronius, Johannes Donatus, and various other learned persons, to whom he presented several poems in commendation of the city and university. At length he was introduced to the Doge and Senate, in whose presence he made a speech, which was accompanied with such beauty of eloquence, and such grace of person and manner, that he received the thanks of that illustrious body, and nothing was talked of through the whole city but this *rara in terris avis*, this prodigy of nature. He held, likewise, disputations on the subjects of theology, philosophy, and mathematics, before the most eminent professors, and large multitudes of people. His reputation was so great, that the desire of seeing and hearing him brought together a vast concourse of persons from different quarters to Venice. It may be collected from Manutius, that the time in which Crichton exhibited these demonstrations of his abilities was in the year 1580.

During his residence at Venice, he fell into a bad state of health, which continued for the space of four months. However, before he was perfectly recovered, he went, by the advice of his friends, to Padua, the university of which city was at that time in great reputation. The next day after his arrival, there was a meeting of all the learned men of the place, at the house of Jacobus Aloysius Cornelius; when Crichton opened the assembly with an extemporary poem in praise of the city, the university, and the company who had honoured him with their presence. After this, he disputed for six hours with the most celebrated professors on various subjects of learning; and he exposed, in particular, the errors of Aristotle and his commentators, with so much solidity and acuteness, and at the same time with so much modesty, that he excited universal admiration. In conclusion, he delivered extempore an oration in praise of ignorance, which was conducted with such ingenuity and elegance, that his hearers were astonished. This exhibition of Crichton's talents was on the 14th of March 1581. Soon after he appointed a day for another disputation to be held at the palace of the bishop of Padua; not for the purpose of affording higher proofs of his abilities, for that could not possibly be done, but in compliance with the earnest solicitations of some persons who were not present at the former assembly. However, several circumstances occurred which prevented this meeting from taking place. Such is the account of Manutius: but Imperialis relates, that he was informed by his father, who was present upon the occasion, that Crichton was opposed by Archangelus Mercenarius, a famous philosopher; and that he acquitted himself so well as to obtain the approbation of a very honourable company, and even of his antagonist himself.

Amidst the discourses which were occasioned by our young Scot's exploits, and the high applauses that were bestowed upon his genius and attainments, some persons there were who endeavoured to detract from his merit. For ever, therefore, to confound these in-

vidious impugnors of his talents, he caused a paper to be fixed on the gates of St John and St Paul's church, wherein he offered to prove before the university, that the errors of Aristotle, and of all his followers, were almost innumerable; and that the latter had failed both in explaining their master's meaning, and in treating on theological subjects. He promised likewise to refute the dreams of certain mathematical professors; to dispute in all the sciences; and to answer to whatever should be proposed to him or objected against him. All this he engaged to do, either in the common logical way or by numbers and mathematical figures, or in 100 sorts of verses, at the pleasure of his opponents. According to Manutius, Crichton sustained this contest, without fatigue, for three days; during which time he supported his credit, and maintained his propositions, with such spirit and energy, that, from an unusual concourse of people, he obtained acclamations and praises, than which none more magnificent were ever heard by men.

From Padua, Crichton set out for Mantua; where there happened to be at the time a gladiator, who had foiled, in his travels, the most famous fencers in Europe, and had lately killed three who had entered the lists with him in this city. The duke of Mantua was much grieved at having granted this man his protection, as he found it to be attended with such fatal consequences. Crichton, being informed of his Highness's concern, offered his service, not only to drive the murderer from Mantua, but from Italy, and to fight him for 1500 pistoles. Though the duke was unwilling to expose such an accomplished gentleman to so great a hazard; yet, relying upon the report he had heard of his warlike achievements, he agreed to the proposal; and the time and place being appointed, the whole court attended to behold the performance. At the beginning of the combat Crichton stood only upon his defence; while the Italian made his attack with such eagerness and fury, that, having overacted himself, he began to grow weary. Crichton now seized the opportunity of attacking his antagonist in return; which he did with so much dexterity and vigour, that he ran him through the body in three different places, of which wounds he immediately died. The acclamations of the spectators were loud and extraordinary upon this occasion; and it was acknowledged by all of them, that they had never seen Art grace Nature, or Nature second the precepts of Art, in so lively a manner as they had beheld these two things accomplished on that day. To crown the glory of the action, Crichton bestowed the prize of his victory upon the widows of the three persons who had lost their lives in fighting with the gladiator.

It is asserted, that in consequence of this and his other wonderful performances, the duke of Mantua made choice of him for preceptor to his son Vincentio di Gonzaga, who is represented as being of a riotous temper and a dissolute life. The appointment was highly pleasing to the court. Crichton, to testify his gratitude to his friends and benefactors, and to contribute to their diversion, framed, we are told, a comedy, wherein he exposed and ridiculed all the weaknesses and failures of the several employments in which men are engaged. This composition was regarded as one of the most ingenious satires that ever was made upon mankind. But the

Crichton. most astonishing part of the story is, that Crichton sustained 15 characters in the representation of his own play. Among the rest, he acted the divine, the philosopher, the lawyer, the mathematician, the physician, and the soldier, with such inimitable grace, that every time he appeared upon the theatre he seemed to be a different person.

From being the principal actor in a comedy, Crichton soon became the subject of a dreadful tragedy. One night, during the time of carnival, as he was walking along the streets of Mantua, and playing upon his guitar, he was attacked by half a dozen people in masks. The assailants found that they had no ordinary person to deal with, for they were not able to maintain their ground against him. In the issue, the leader of the company being disarmed, pulled off his mask, and begged his life, telling him that he was the prince his pupil. Crichton immediately fell upon his knees, and expressed his concern for his mistake; alleging, that what he had done was only in his own defence, and that if Gonzaga had any design upon his life, he might always be master of it. Then taking his own sword by the point, he presented it to the prince, who immediately received it, and was so irritated by the affront which he thought he had sustained in being foiled with all his attendants, that he instantly ran Crichton through the heart.

Various have been the conjectures concerning the motives which could induce Vincentio di Gonzaga to be guilty of so ungenerous and brutal an action. Some have ascribed it to jealousy, asserting that he suspected Crichton to be more in favour than himself with a lady whom he passionately loved; and Sir Thomas Urquhart has told a story upon this head which is extravagant and ridiculous in the highest degree. Others, with greater probability, represent the whole transaction as the result of a drunken frolic; and it is uncertain, according to Imperialis, whether the meeting of the prince and Crichton was by accident or design. However, it is agreed on all hands that Crichton lost his life in this rencounter. The time of his decease is said, by the generality of his biographers, to have been in the beginning of July 1583; but Lord Buchan fixes it to the same month in the preceding year. There is a difference, likewise, with regard to the period of life at which Crichton died. The common accounts declare that he was killed in the 32d year of his age: but Imperialis asserts that he was only in his 22d when that calamitous event took place; and this fact is confirmed by lord Buchan.

Crichton's tragical end excited a very great and general lamentation. If Sir Thomas Urquhart is to be credited, the whole court of Mantua went three quarters of a year into mourning for him; the epitaphs and elegies that were composed upon his death and stuck upon his hearse, would exceed, if collected, the bulk of Homer's works; and, for a long time afterwards, his picture was to be seen in most of the bed-chambers and galleries of the Italian nobility, representing him on horseback, with a lance in the one hand and a book in the other. The same author tells us, that Crichton gained the esteem of kings and princes, by his magnanimity and knowledge; of noblemen and gentlemen, by his courtliness and breeding; of knights, by his honourable deportment and

pregnancy of wit; of the rich, by his affability and good fellowship; of the poor, by his munificence and liberality; of the old, by his constancy and wisdom; of the young, by his mirth and gallantry; of the learned, by his universal knowledge; of the soldiers, by his undaunted valour and courage; of the merchants and artificers, by his upright dealing and honesty; and of the fair sex, by his beauty and handsomeness, in which respect he was a masterpiece of nature.

Joannes Imperialis, in his life of Crichton, says, That he was the wonder of the last age; the prodigious production of nature; the glory and ornament of Parnassus, in a stupendous and unusual manner; and that, in the judgment of the learned world, he was the phoenix of literature, and rather a shining particle of the Divine Mind and Majesty than a model of what could be attained by human industry. The same author, after highly celebrating the beauty of his person, asserts, that his extraordinary eloquence and his admirable knowledge of things testified that he possessed a strength of genius wholly divine. "What (adds this writer) can more exceed our comprehension, than that Crichton, in the 21st year of his age, should be master of ten different languages, and perfectly well versed in philosophy, mathematics, theology, polite literature, and all other sciences? Besides, was it ever heard in the whole compass of the globe, that to these extraordinary endowments of the mind should be added a singular skill in fencing, dancing, singing, riding, and in every exercise of the gymnastic art?" Nay, Imperialis, in his account of Crichton's death, declares, that the report of so sad a catastrophe was spread to the remotest parts of the earth; that it disturbed universal nature; and that in her grief for the loss of the wonder she had produced, she threatened never more to confer such honour upon mankind. Compared with these extravagancies, the assertion of Bayle that Crichton was one of the greatest prodigies of wit that ever lived, and the testimony of Fœlix Astolfus concerning his wonderful memory, may be considered as modest encomiums.

Such are the accounts which, by a succession of writers, and particularly since the time of Mackenzie, have been given of the admirable Crichton. These accounts are indeed so wonderful, that many persons have been disposed to consider them as in a great measure, if not entirely, fabulous. We shall therefore subjoin from the *Biographia Britannica* the following observations of Dr Kippis, with a view to ascertain what portion of faith is due to the different parts of the preceding narrative, or at least to assist the reader in forming a proper judgment concerning them.

The Doctor begins with observing, "That no credit can be granted to any facts which depend upon the sole authority of Sir Thomas Urquhart. Mr Pennant indeed speaks of him with approbation; and Dr Samuel Johnson laid a stress on his veracity, in the account of Crichton which he dictated to Dr Hawkeforth, and is inserted in the 81st number of the *Adventurer*; of which account it may be observed, that it is only an elegant summary of the life written by Mackenzie. But with all deference to these respectable names, I must declare my full persuasion that Sir Thomas Urquhart is an author whose testimony to facts is totally unworthy

Crichton. thy of regard; and it is surprizing that a perusal of his works does not strike every mind with this conviction. His productions are so inexpressibly absurd and extravagant, that the only rational judgment which can be pronounced concerning him is, that he was little, if at all, better than a madman. To the character of his having been a madman must be added that of his being a liar. Severe as this term may be thought, I apprehend that a diligent examination of the treatise which contains the memorials concerning Crichton would show that it is strictly true. But of his total disregard to truth there is incontestable evidence in another work of his, intitled, *The true Pedigree and Lineal Descent of the most ancient and honourable Family of the Urquhart's in the House of Cromarty, from the Creation of the World until the year of God 1652.* In this work it is almost incredible what a number of falsities he has invented both with respect to names and facts. Perhaps a more flagrant instance of imposture and fiction was never exhibited; and the absurdity of the whole pedigree is beyond the power of words to express. It can only be felt by those who have perused the tract itself. Such a man therefore can justly be intitled to no degree of credit, especially when he has a purpose to serve, as was the case with Sir Thomas Urquhart. His design was to exalt his own family and his own nation at any rate. With respect to his own nation, there was no occasion for having recourse to fiction, in order to display the lustre of Scotland, in the eminent men whom it has produced in arms and literature. The pencil of truth alone would have been amply sufficient for that purpose.

“So far therefore as Sir Thomas Urquhart's authority is concerned, the wonderful exhibitions of Crichton at Paris, his triumph at Rome, his combat with the gladiator, his writing an Italian comedy, his sustaining fifteen characters in the representation of that comedy, the extraordinary story of the amour which is described as the cause of his death, the nine months mourning for him at Mantua, and the poems hung round his hearse to the quantity of Homer's works, must be regarded as in the highest degree doubtful, or rather absolutely false. I cannot forbear mentioning two circumstances, which show how much Sir Thomas Urquhart was destitute of prudence, as well as of scrupulosity, in his violations of truth. He says that the duke of Mantua was pleased to confer upon the young lady that was Crichton's mistress and future wife, a pension of five hundred ducats a year; and that

Crichton. the prince also bestowed as much upon her during all the days of his life, “which was (adds Sir Thomas) but short; for he did not long enjoy himself after the cross fate of so miserable an accident. Now it is well known that Vincenzo di Gonzaga succeeded his father in the dukedom of Mantua in 1587, and that he did not die till the year 1612; which was almost, if not entirely, thirty years after Crichton's decease. The other instance of the imprudence of Sir Thomas Urquhart in the contrivance of his fictions, occurs at the conclusion of his narrative, where he asserts that the verity of the story which he hath related concerning the incomparable Crichton, ‘may be certified by two thousand men yet living who have known him.’ *Two thousand men yet living!* that is, in 1652, sixty-nine or seventy years after Crichton's death, for such was the time of Sir Thomas's publication. Our author would have been sadly puzzled to collect together these two thousand living witnesses who could certify the verity of his story.

“With regard, however, to the account which is given of the prodigious exertions of Crichton, both corporal and mental, at Paris, Mackenzie imagines that he has found a full confirmation of them in a passage produced by him from the *Disquisitiones* of Stephen Pasquier, and which he considers as the testimony of an eye-witness. But the whole of what has been built upon it by Mackenzie and succeeding biographers, is founded on a mistake. In the quotation from the *Disquisitiones*, the name of Crichton is not mentioned, and the author doth not appear to have been personally present at the exhibitions of the extraordinary youth there described. The expressions which are supposed to carry that meaning may well be referred not to the writer himself, but to his countrymen the French, before whom the young man is said to have displayed his surprizing talents. But the discussion of this point is totally needless, because the passage in question is not an original authority. The book intitled *Stephani Paschieri Disquisitiones*, is only an abridgement in Latin of Pasquier's *Des Recherches de la France*. Now in this last work there is indeed an account of a wonderful youth, such as is related in Mackenzie's quotation, and from which that passage was formed. But this wonderful youth, whoever he might be, was not the admirable Crichton: for Pasquier, who does not tell his name, expressly says that he appeared in the year 1445 (A). The evidence, therefore, produced by Mackenzie falls entirely to the ground.

(A) This matter has lately been set in a clear light by a learned and judicious writer in the *Edinburgh Magazine* for May 1787, whose letter is as follows.

“S I R,

“We are informed by Sir John Hawkins, that Dr Johnson dictated from memory that account of the person vulgarly named *the Admirable Crichton*, which is to be found in one of the papers of the *Advertiser*.

“That account is plainly an abridgement of the *Life of Crichton* by Dr George Mackenzie. Dr Mackenzie supposes that Pasquier, the French lawyer and antiquary, was an eye witness of the feats performed in arts as well as in arms by Crichton. This is one of the grossest errors in biography which has occurred to me in the course of my reading: and it is an error which I perceive is gaining ground daily, and bids fair in a short time to be received as an indisputable truth.

“The error seems to have arisen from the following circumstance: Dr Mackenzie had never read the original work of Pasquier intitled *Recherches de la France*; what he quotes concerning *the wonderful young man*

Crichton. ground. Indeed, if the story of Crichton's exploits at Paris had been true, no man was more likely to be acquainted with them than Stephen Pasquier, who lived at the time, and who would be fond enough of recording transactions so extraordinary. It may farther be observed, that Thuanus, who was likewise a contemporary, and who in his own life is very particular in what relates to learned men, makes no mention of Crichton. The only authority for his having ever resided in France at all (Sir Thomas Urquhart excepted) is that of Dr John Johniton, who says *Gallia pectus excolit*. But this amounts to no proof of the truth of the transactions related by Urquhart. The whole which can be deduced from it is, that Crichton, in the course of his travels, might make some stay in France for the purpose of improvement. Even this, however, doth not agree with the narration of Imperialis, who informs us, that when troubles arose in Scotland on account of religion, and queen Mary fell into so many calamities, Crichton was sent by his father directly from that country to Venice as a place of security.

"It is acknowledged by Sir John Hawkins, that Sir Thomas Urquhart has produced no authorities in support of his surprising narrations. But this defect, Sir John thinks, is supplied in the Life of Crichton which is given in Mr Pennant's Tour. I am under the necessity of saying, that this is by no means the case. The article in Pennant was not drawn up by that ingenious and learned gentleman, but is the transcript of a pamphlet, that was printed some years ago at Aberdeen; and which pamphlet is nothing more than a republication, with a few verbal alterations, of the Life of Crichton written by Mackenzie. It doth not, therefore, furnish a single additional testimony in confirmation of Sir Thomas Urquhart's stories, excepting in the mistaken instance from Pasquier. In other respects it only borrows facts from Sir Thomas Urquhart, without establishing them upon fresh proofs. It is observable, that the earlier biographers of Crichton had no knowledge of most of the transactions enlarged

upon by this extravagant writer; for if they had known them, they would have been eagerly disposed to relate them, and to do it with every circumstance of exaggeration. How much this was the character of Thomas Dempster, with regard to his own countrymen, is sufficiently understood, and hath frequently been remarked; and yet his account of Crichton is uncommonly modest, compared with those of succeeding authors. The extravagance of Imperialis in respect to Crichton has already appeared. There seems indeed to have been an universal tendency in the writers of this young Scot's life to produce wonder and astonishment. Mackenzie remarks, that Imperialis could not but know the truth of all, or at least of most of, the things he has related concerning Crichton, since he lived upon the places in which they were transacted, and had them from an eye and ear witness, even his own father. It is, however, to be remembered, that Imperialis's *Museum Historicum* was not published till 1640, nearly sixty years after the events recorded by him happened; to which may be added, that the information he derived from his father was probably very imperfect. Imperialis the elder was not born till 1568, and consequently was only thirteen years old when Crichton displayed his talents at Padua. What real dependence, therefore, could there be on the accuracy of the account given by a youth of that age? He could only relate, and perhaps from inadequate intelligence, the things which were talked of when he was a boy. Besides, his authority is appealed to for no more than a single fact, and that a doubtful one, since it does not accord with Manutius's narrative: and who ever heard of the famous philosopher Arcangelus Mercenarius?

"The truth of the matter is, that, some slight circumstances excepted, neither Dempster nor Imperialis have produced any evidences of Crichton's extraordinary abilities besides those which are recorded by the younger Aldus Manutius. He therefore is to be regarded as the only living authority upon the subject.

is taken from a Latin abridgement of that work; he refers to *Steph. Pasch. Disquis. lib. v. cap. 23.* and he gives his quotation in Latin; indeed it does not appear that Dr Mackenzie had ever heard of the original work. Now Pasquier, instead of saying that he was an eye-witness of the wonders exhibited by Crichton, says, in the most unequivocal terms, that what he relates was taken 'from a manuscript which was occasionally used by him,' (*d'un livre écrit à la main dont je m'aide selon les occurrences*). And he adds, 'I will represent the story in its own simple garb, without any artificial colouring, so that my readers may be the more inclined to give credit to it,' (*vous représentant cette histoire en sa simplicité sans y apporter aucun fard pour ce que vous y adjoutez plus de foi*). He then transcribes the narrative from the MS. which places the appearance of this phenomenon in the year 1445, a full century before the birth of our Crichton. See *Recherches de la France*, lib. vi. c. 38, 39.

"Dr Mackenzie, although he had not read the original of Pasquier, appears to have read an author who quotes the same story: 'The learned M. du Launoy (says he), in his History of the college of Navarre, finding the history of this dispute recorded in a MS. History of the College of Navarre, and the like account of a Spaniard in Trithemius, confounds the two together, and robs our author of the glory of this action, and places it in the year 1445; whereas it should be in the year 1571.' This charge of robbery is singular enough.

"Let me only add, that Pasquier transcribes some verses written by George Chastelain, a French poet in the reign of Charles VII king of France, which allude to the same story; and that Pasquier himself was born at Paris in 1528, passed his life in that city, and was an eminent lawyer and pleader in 1571; so that it is impossible the feats of Crichton, had they been really performed at Paris, could have been unknown to him, and most improbable that, knowing them, he would have omitted to mention them; for, in the same lib. vi. c. 39. he is at pains to produce examples of great proficiency, displayed by men in a much humbler rank of life than that of philosophers and public disputants.

I am, &c."

Crichton. jeft. Manutius was contemporary with Crichton; he was closely connected with him in friendship; and he relates several things on his own personal knowledge. He is a positive and undoubted witness with respect to our young Scotsman's intellectual and literary exertions at Venice and at Padua; and from him it is that our account of them is given above. Nevertheless, even Aldus Manutius is to be read with some degree of caution. Dedications are apt to assume the style of exaggeration, and this is the case with Manutius's dedication of the *Paradoxa Ciceronis* to Crichton. In addition to the general language of such addresses, he might be carried too far by his affection for his friend, which appears to have been very great: nor was the younger Aldus eminent for steadiness and consistency of character. It is even said that by his imprudencies he fell into contempt and misery. But independently of any considerations of this kind, it may be observed, that Manutius's narrative, previously to Crichton's arrival at Venice, could not be derived from personal knowledge. For that part of it (which is sufficiently erroneous) he was probably indebted to Crichton himself. Neither does he appear to have been an eye-witness of the whole of the disputations which were held at Padua; for speaking of his young friend's praise of ignorance, he relates, that those who were present told him afterwards how much they were struck with that oration. However, at the other disputation, which lasted three days, Manutius seems certainly to have attended; for he concludes his accounts of it with saying, that he was not only the adviser but the spectator of Crichton's wonderful contests. It is evident, however, from the dedication, that his extraordinary abilities were not universally acknowledged and admired. Some there were who detracted from them, and were displeas'd with Manutius for so warmly supporting his reputation.

"As to the real cause and manner of our young Scotsman's death, both of them still remain in some degree of obscurity. That he was killed in a rencounter at the carnival at Mantua, is testified by too many authors to be reasonably doubted. But whether there was that particular malignity on the part of Vincenzo di Gonzago, which is commonly ascribed to him, may be considered as uncertain.

"One important method yet remains by which we may be enabled to form a judgment of Crichton's genius, and that is from a perusal of the four poems of his which are still preserved. It is, however, to be feared, that these will not exhibit him in a very high point of view. Some fancy, perhaps, may be thought to be displayed in the longest of his poems, which was written on occasion of his approach to the city of Venice. He there represents a Naiad as rising up before him; and, by the order of the Muses and of Minerva, directing him how to proceed. But this is a sentiment which so easily presents itself to a classical reader, that it can scarcely be considered as deserving the name of a poetical invention. The three other poems of Crichton have still less to recommend them. Indeed his verses will not stand the test of a rigid examination even with regard to quantity.

"What then is the opinion which on the whole we are to form of the admirable Crichton? It is evident that he was a youth of such lively parts as excited

great present admiration, and high expectations with regard to his future attainments. He appears to have had a fine person, to have been adroit in his bodily exercises, to have possessed a peculiar facility in learning languages, to have enjoyed a remarkably quick and retentive memory, and to have excelled in a power of declamation, a fluency of speech, and a readiness of reply. His knowledge, likewise, was probably very uncommon for his years; and this, in conjunction with his other qualities, enabled him to shine in public disputation. But whether his knowledge and learning were accurate or profound, may justly be questioned; and it may equally be doubted whether he would have arisen to any extraordinary degree of eminence in the literary world. It will always be reflected upon with regret, that his early and untimely death prevented this matter from being brought to the test of experiment."

From the portraits which remain of Crichton, it appears that in his face and form he was beautiful and elegant, and that his body and limbs, though not muscular or athletic, were well proportioned, and fitted for feats of agility. The following catalogue of Crichton's works is given by Dempster: 1. *Ode ad Laurentium Massam plures*. 2. *Laudes Patavinae, Carmen extempore effusum, cum in Jacobi Mofsi Cornelii domo experimentum ingenii coram tota Academia frequentia, non sine multorum stupore, faceret*. 3. *Ignorantionis Laudatio, extemporale Thema ibidem redditum, post sex horarum disputationes, ut praesentes somnia potius fovere quam rem se veram videre affirmarint, ait Manutius*. 4. *De Appulsu suo Venetias*. 5. *Ode ad Aldum Manutium*. 6. *Epistole ad Diversos*. 7. *Praefationes solennes in omnes Scientias sacras et profanas*. 8. *Judicium de Philosophis*. 9. *Errores Aristotelis*. 10. *Arma an Litere praeslant, Controversia oratoria*. 11. *Refutatio Mathematicorum*. 12. A Comedy in the Italian language.

CRICK, among farriers, is when a horse cannot turn his neck any manner of way, but holds it fore right, inasmuch that he cannot take his meat from the ground without great pain.

CRICKET, in zoology. See GRILLUS.

CRICKET is also the name of an exercise or game, with bats and a ball.

Mole CRICKET. See GRYLLOTALPA.

CRICKLADE, a borough-town of Wiltshire, situated on the river Isis, about 26 miles south-west of Oxford. It sends two members to parliament. W. Long. 1. 55. N. Lat. 51. 35.

CRICOARYTANOIDÆUS, in anatomy, a name given to two muscles of the larynx. See ANATOMY, n^o 116.

CRICOIDES, in anatomy, a cartilage of the larynx, called also the *annular cartilage*. It occupies the lowest part by way of base to the rest of the cartilages, and to the lower part of it the aspera arteria adheres. See ANATOMY, *Table of the muscles*.

CRICOTHYROIDÆUS, in anatomy, one of the five proper muscles of the larynx. *Ibid*.

CRIM-TARTARS, a people of Asia, so called because they originally came from Crimea. They rove from place to place in search of pastures, their houses being drawn on carts. There are a great number of them about Astrachan, to which place they flock in the winter-time; but they are not permitted to enter the city: for this reason, they erect huts up and down

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down in the open fields; which are made either of bull-rushes or reeds, being about 12 feet in diameter, of a round form, and with a hole at the top to let out the smoke. Their fuel is turf or cow-dung; and, when the weather is very cold, they cover the hut with a coarse cloth, and sometimes pass several days without stirring out. They are generally of small stature, with large faces, little eyes, and of an olive complexion. The men are generally so wrinkled in their faces, that they look like old women. Their common food is fish dried in the sun, which serves them instead of bread; and they eat the flesh of horses as well as camels. Their drink is water and milk, especially mares milk, which they carry about in nasty leathern-bags. Their garments are of coarse grey cloth, with a loose mantle made of a black sheep's skin, and a cap of the same. The women are clothed in white linen, with which likewise they dress their heads, hanging a great many Moscovian pence about them; and there is likewise a hole left to stick feathers in. As for their religion, they are a sort of Mahometans; but do not coop up their women like the Turks.

CRIM-TARTARY, or *Crimea*. See CRIMEA.

CRIME and PUNISHMENT. The discussion and admeasurement of crimes and punishments forms in every country the code of criminal law; or, as it is more usually denominated in England, the doctrine of the *pleas of the crown*: so called, because the king, in whom centres the majesty of the whole community, is supposed by the law to be the person injured by every infraction of the public rights belonging to that community; and is therefore in all cases the proper prosecutor for every public offence.

The knowledge of this branch of jurisprudence, which teaches the nature, extent, and degrees of every crime, and adjusts to it its adequate and necessary penalty, is of the utmost importance to every individual in the state. For no rank or elevation in life, no uprightness of heart, no prudence or circumspection of conduct, should tempt a man to conclude, that he may not at some time or other be deeply interested in these researches. The infirmities of the best among us, the vices and ungovernable passions of others, the instability of all human affairs, and the numberless unforeseen events which the compass of a day may bring forth, will teach us (upon a moment's reflection), that to know with precision what the laws of our country have forbidden, and the deplorable consequences to which a wilful disobedience may expose us, is a matter of universal concern.

In proportion to the importance of the criminal law, ought also to be the care and attention of the legislature in properly forming and enforcing it. It should be founded upon principles that are permanent, uniform, and universal; and always conformable to the dictates of truth and justice, the feelings of humanity, and the indelible rights of mankind: though it sometimes (provided there be no transgression of these eternal boundaries) may be modified, narrowed, or enlarged, according to the local or occasional necessities of the state which it is meant to govern. And yet, either from a want of attention to these principles in the first concoction of the laws, and adopting in their stead the impetuous dictates of avarice, ambi-

tion, and revenge; from retaining the discordant political regulations, which successive conquerors or factions have established, in the various revolutions of government; from giving a lasting efficacy to sanctions that were intended to be temporary, and made (as lord Bacon expresses it) merely upon the spur of the occasion; or from, lastly, too hastily employing such means as are greatly disproportionate to their end, in order to check the progress of some very prevalent offence; from some, or from all, of these causes it hath happened, that the criminal law is in every country of Europe more rude and imperfect than the civil. We shall not here enter into any minute enquiries concerning the local constitutions of other nations; the inhumanity and mistaken policy of which have been sufficiently pointed out by ingenious writers of their own*. But even with us in Britain, where our crown-law is with justice supposed to be more nearly advanced to perfection; where crimes are more accurately defined, and penalties less uncertain and arbitrary; where all our accusations are public, and our trials in the face of the world; where torture is unknown, and every delinquent is judged by such of his equals, against whom he can form no exception, nor even a personal dislike;—even here we shall occasionally find room to remark some particulars that seem to want revision and amendment. These have chiefly arisen from too scrupulous an adherence to some rules of the ancient common law, when the reasons have ceased upon which those rules were founded; from not repealing such of the old penal laws as are either obsolete or absurd; and from too little care and attention in framing and passing new ones. The enacting of penalties to which a whole nation shall be subject, ought not to be left, as a matter of indifference, to the passions or interests of a few, who upon temporary motives may prefer or support such a bill; but be calmly and maturely considered by persons who know what provisions the laws have already made to remedy the mischief complained of, who can from experience foresee the probable consequences of those which are now proposed, and who will judge without passion or prejudice how adequate they are to the evil. It is never usual in the house of peers even to read a private bill which may affect the property of an individual, without first referring it to some of the learned judges, and hearing their report thereon. And surely equal precaution is necessary, when laws are to be established, which may affect the property, the liberty, and perhaps even the lives, of thousands. Had such a reference taken place, it is impossible that in the 18th century it could ever have been made a capital crime, to break down (however maliciously) the mound of a fishpond, whereby any fish shall escape; or to cut down a cherry-tree in an orchard. Were even a committee appointed but once in an hundred years to revise the criminal law, it could not have continued to this hour a felony without benefit of clergy, to be seen for one month in the company of persons who call themselves or are called *Egyptians*.

It is true, that these outrageous penalties, being seldom or never inflicted, are hardly known to be the law by the public; but that rather aggravates the mischief, by laying a snare for the unwary. Yet they cannot but occur to the observation of any one, who

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hath undertaken the task of examining the great outlines of our law, and tracing them up to their principles; and it is the duty of such a one to hint them with decency to those whose abilities and stations enable them to apply the remedy. Proceed we now to consider (in the first place) the general nature of crimes.

I. A crime, or misdemeanour, is an act committed, or omitted, in violation of a public law, either forbidding or commanding it. This general definition comprehends both crimes and misdemeanours; which, properly speaking, are mere synonymous terms: though, in common usage, the word "crimes" is made to denote such offences as are of a deeper and more atrocious dye: while smaller faults, and omissions of less consequence, are comprized under the gentler name of "misdemeanours" only.

The distinction of public wrongs from private, of crimes and misdemeanours from civil injuries, seems principally to consist in this: that private wrongs, or civil injuries, are an infringement or privation of the civil rights which belong to individuals, considered merely as individuals; public wrongs, or crimes and misdemeanours, are a breach and violation of the public rights and duties, due to the whole community, considered as a community, in its social aggregate capacity. As if I detain a field from another man, to which the law has given him a right, this is a civil injury, and not a crime; for here only the right of an individual is concerned, and it is immaterial to the public which of us is in possession of the land: but treason, murder, and robbery, are properly ranked among crimes; since, besides the injury done to individuals, they strike at the very being of society; which cannot possibly subsist, where actions of this sort are suffered to escape with impunity.

In all cases the crime includes an injury: every public offence is also a private wrong, and somewhat more; it affects the individual, and it likewise affects the community. Thus treason in imagining the king's death, involves in it conspiracy against an individual, which is also a civil injury: but as this species of treason in its consequences principally tends to the dissolution of government, and the destruction thereby of the order and peace of society, this denominates it a crime of the highest magnitude. Murder is an injury to the life of an individual; but the law of society considers principally the loss which the state sustains by being deprived of a member, and the pernicious example thereby set, for others to do the like. Robbery may be considered in the same view: it is an injury to private property; but, were that all, a civil satisfaction in damages might atone for it: the public mischief is the thing, for the prevention of which our laws have made it a capital offence. In these gross and atrocious injuries the private wrong is swallowed up in the public: we seldom hear any mention made of satisfaction to the individual; the satisfaction to the community being so very great. And indeed, as the public crime is not otherwise avenged than by forfeiture of life and property, it is impossible afterwards to make any reparation for the private wrong: which can only be had from the body or goods of the aggressor. But there are crimes of an inferior nature, in which the public punishment is not so severe, but it

affords room for a private compensation also: and herein the distinction of crimes from civil injuries is very apparent. For instance; in the case of battery, or beating another, the aggressor may be indicted for this at the suit of the king, for disturbing the public peace, and be punished criminally by fine and imprisonment: and the party beaten may also have his private remedy by action of trespass for the injury, which he in particular sustains, and recover a civil satisfaction in damages. So also, in case of a public nuisance, as digging a ditch across a highway, this is punishable by indictment, as a common offence to the whole kingdom, and all his majesty's subjects: but if any individual sustains any special damage thereby, as laming his horse, breaking his carriage, or the like, the offender may be compelled to make ample satisfaction, as well for the private injury as for the public wrong.

II. The nature of crimes and misdemeanours in general being thus ascertained and distinguished, we proceed in the next place to consider the general nature of punishments: Which are evils or inconveniences consequent upon crimes and misdemeanours; being devised, denounced, and inflicted by human laws, in consequence of disobedience or misbehaviour in those, to regulate whose conduct such laws were respectively made. And herein we will briefly consider the *power*, the *end*, and the *measure*, of human punishment.

1. As to the *power* of human punishment, or the right of the temporal legislator to inflict discretionary penalties for crimes and misdemeanours. It is clear, that the right of punishing crimes against the law of nature, as murder and the like, is in a state of mere nature, vested in every individual. For it must be vested in somebody; otherwise the laws of nature would be vain and fruitless, if none were empowered to put them in execution: and if that power is vested in any one, it must also be vested in all mankind; since all are by nature equal. Whereof the first murderer Cain was so sensible, that we find him expressing his apprehensions, that whoever should find him would slay him. In a state of society this right is transferred from individuals to the sovereign power; whereby men are prevented from being judges in their own causes, which is one of the evils that civil government was intended to remedy. Whatever power therefore individuals had of punishing offences against the law of nature, that is now veiled in the magistrate alone; who bears the sword of justice by the consent of the whole community. And to this precedent natural power of individuals must be referred that right, which some have argued to belong to every state (though, in fact, never exercised by any), of punishing not only their own subjects, but also foreign ambassadors, even with death itself; in case they have offended, not indeed against the municipal laws of the country, but against the divine laws of nature, and become liable thereby to forfeit their lives for their guilt.

As to offences merely against the laws of society, which are only *mala prohibita*, and not *mala in se*; the temporal magistrate is also empowered to inflict coercive penalties for such transgression: and this by the consent of individuals; who, in forming societies,

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did either tacitly or expressly invest the sovereign power with a right of making laws, and of enforcing obedience to them when made, by exercising, upon their non-observance, severities adequate to the evil. The lawfulness therefore of punishing such criminals is founded upon this principle, that the law by which they suffer was made by their own consent; it is a part of the original contract into which they entered, when first they engaged in society; it was calculated for, and has long contributed to, their own security.

This right therefore, being thus conferred by universal consent, gives to the state exactly the same power, and no more, over all its members, as each individual member had naturally over himself or others. Which has occasioned some to doubt, how far a human legislature ought to inflict capital punishments for positive offences; offences against the municipal law only, and not against the law of nature; since no individual has, naturally, a power of inflicting death upon himself or others for actions in themselves indifferent. With regard to offences *mala in se*, capital punishments are in some instances inflicted by the immediate command of God himself to all mankind; as, in the case of murder, by the precept delivered to Noah, their common ancestor and representative, "Who so sheddeth man's blood, by man shall his blood be shed." In other instances they are inflicted after the example of the Creator, in his positive code of laws for the regulation of the Jewish republic; as in the case of the crime against nature. But they are sometimes inflicted without such express warrant or example, at the will and discretion of the human legislature; as for forgery, for theft, and sometimes for offences of a lighter kind. This practice is thus justified by that great and good man Sir Matthew Hale: "When offences grow enormous, frequent, and dangerous to a kingdom or state, destructive or highly pernicious to civil societies, and to the great security and danger of the kingdom or its inhabitants, severe punishment and even death itself is necessary to be annexed to laws in many cases by the prudence of lawgivers." It is therefore the enormity, or dangerous tendency, of the crime, that alone can warrant any earthly legislature in putting him to death that commits it. It is not its frequency only, or the difficulty of otherwise preventing it, that will excuse our attempting to prevent it by a wanton effusion of human blood. For though the end of punishment is to deter men from offending, it never can follow from thence, that it is lawful to deter them at any rate and by any means; since there may be unlawful methods of enforcing obedience even to the justest laws. Every humane legislator will be therefore extremely cautious of establishing laws that inflict the penalty of death, especially for slight offences, or such as are merely positive. He will expect a better reason for his so doing, than that loose one which generally is given; that it is found by former experience that no lighter penalty will be effectual. For is it found upon farther experience, that capital punishments are more effectual? Was the vast territory of all the Russians worse regulated under the late empress Elizabeth, than under her more sanguinary predecessors? Is it now, under Catherine II. less civilized, less social, less secure? And yet we are assured, that neither of these

illustrious princesses have, throughout their whole administration, inflicted the penalty of death: and the latter has, upon full persuasion of its being useless, nay even pernicious, given orders for abolishing it entirely throughout her extensive dominions. But indeed, were capital punishments proved by experience to be a sure and effectual remedy, that would not prove the necessity (upon which the justice and propriety depend) of inflicting them upon all occasions when other expedients fail. It is feared this reasoning would extend a great deal too far. For instance, the damage done to our public roads by loaded waggons is universally allowed, and many laws have been made to prevent it, none of which have hitherto proved effectual. But it does not therefore follow, that it would be just for the legislature to inflict death upon every obstinate carrier, who defeats or eludes the provisions of former statutes. Where the evil to be prevented is not adequate to the violence of the preventive, a sovereign that thinks seriously can never justify such a law to the dictates of conscience and humanity. To shed the blood of our fellow-creature is a matter that requires the greatest deliberation, and the fullest conviction of our own authority: for life is the immediate gift of God to man; which neither he can resign, nor can it be taken from him, unless by the command or permission of him who gave it, either expressly revealed, or collected from the laws of nature or society by clear and indisputable demonstration.

We would not be understood to deny the right of the legislature in any country to enforce its own laws by the death of the transgressor, though persons of some abilities have doubted it; but only to suggest a few hints for the consideration of such as are, or may hereafter become, legislators. When a question arises, whether death may be lawfully inflicted for this or that transgression, the wisdom of the laws must decide it: and to this public judgment or decision all private judgments must submit; else there is an end of the first principle of all society and government. The guilt of blood, if any, must lie at their doors, who misinterpret the extent of their warrant; and not at the doors of the subject, who is bound to receive the interpretations that are given by the sovereign power.

2. As to the end, or final cause, of human punishments. This is not by way of atonement or expiation for the crime committed; for that must be left to the just determination of the Supreme Being: but as a precaution against future offences of the same kind. This is effected three ways: either by the amendment of the offender himself; for which purpose all corporeal punishments, fines, and temporary exile or imprisonment, are inflicted: or, by deterring others by the dread of his example from offending in the like way, "*ut pœna* (as Tully expresses it) *ad paucos, metus ad omnes, perveniat*; which gives rise to all ignominious punishments, and to such executions of justice as are open and public: or, lastly, by depriving the party injuring of the power to do future mischief; which is effected by either putting him to death, or condemning him to perpetual confinement, slavery, or exile. The same one end, of preventing future crimes, is endeavoured to be answered by each of these three species of punishment. The public gains

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equal security, whether the offender himself be amended by wholesome correction, or whether he be disabled from doing any farther harm: and if the penalty fails of both these effects, as it may do, still the terror of his example remains as a warning to other citizens. The method, however, of inflicting punishment ought always to be proportioned to the particular purpose it is meant to serve, and by no means to exceed it: therefore the pains of death, and perpetual disability by exile, slavery, or imprisonment, ought never to be inflicted, but when the offender appears incorrigible: which may be collected either from a repetition of minuter offences; or from the perpetration of some one crime of deep malignity, which of itself demonstrates a disposition without hope or probability of amendment: and in such cases it would be cruelty to the public to defer the punishment of such a criminal till he had an opportunity of repeating perhaps the worst of villainies.

3. As to the *measure* of human punishments. From what has been observed in the former articles we may collect, that the quantity of punishment can never be absolutely determined by any standing invariable rule; but it must be left to the arbitration of the legislature to inflict such penalties as are warranted by the laws of nature and society, and such as appear to be the best calculated to answer the end of precaution against future offences.

Hence it will be evident, that what some have so highly extolled for its equity, the *lex talionis* or "law of retaliation," can never be in all cases an adequate or permanent rule of punishment. In some cases indeed it seems to be dictated by natural reason; as in the case of conspiracies to do an injury, or false accusations of the innocent; to which we may add that law of the Jews and Egyptians, mentioned by Josephus and Diodorus Siculus, that whoever without sufficient cause was found with any mortal poison in his custody, should himself be obliged to take it. But, in general, the difference of persons, place, time, provocation, or other circumstances, may enhance or mitigate the offence; and in such cases retaliation can never be a proper measure of justice. If a nobleman strikes a peasant, all mankind will see, that if a court of justice awards a return of the blow, it is more than a just compensation. On the other hand, retaliation may sometimes be too easy a sentence; as, if a man maliciously should put out the remaining eye of him who had lost one before, it is too slight a punishment for the maimer to lose only one of his: and therefore the law of the Locrians, which demanded an eye for an eye, was in this instance judiciously altered; by decreeing, in imitation of Solon's laws, that he who struck out the eye of a one-eyed man, should lose both his own in return. Besides, there are very many crimes, that will in no shape admit of these penalties, without manifest absurdity and wickedness. Theft cannot be punished by theft, defamation by defamation, forgery by forgery, adultery by adultery, and the like. And we may add, that those instances, wherein retaliation appears to be used, even by the divine authority, do not really proceed upon the rule of exact retribution, by doing to the criminal the same hurt he has done to his neighbour, and no more; but this correspondence between the crime and punishment is barely a conse-

quence from some other principle. Death is ordered to be punished with death; not because one is equivalent to the other, for that would be expiation, and not punishment. Nor is death always an equivalent for death: the execution of a needy decrepid assassin is a poor satisfaction for the death of a nobleman in the bloom of his youth, and full enjoyment of his friends, his honours, and his fortune. But the reason upon which this sentence is grounded seems to be, that this is the highest penalty that man can inflict, and tends most to the security of the world; by removing one murderer from the earth, and setting a dreadful example to deter others: so that even this grand instance proceeds upon other principles than those of retaliation. And truly, if any measures of punishment is to be taken from the damage sustained by the sufferer, the punishment ought rather to exceed than equal the injury: since it seems contrary to reason and equity, that the guilty (if convicted) should suffer no more than the innocent has done before him; especially as the suffering of the innocent is past and irrevocable, that of the guilty is future, contingent, and liable to be escaped or evaded. With regard indeed to crimes that are incomplete, which consist merely in the intention, and are not yet carried into act, as conspiracies and the like; the innocent has a chance to frustrate or avoid the villainy, as the conspirator has also a chance to escape his punishment: and this may be one reason why the *lex talionis* is more proper to be inflicted, if at all, for crimes that consist in intention, than for such as are carried into act. It seems indeed consonant to natural reason, and has therefore been adopted as a maxim by several theoretical writers, that the punishment, due to the crime of which one falsely accuses another, should be inflicted on the perjured informer. Accordingly, when it was once attempted to introduce into England the law of retaliation, it was intended as a punishment for such only as preferred malicious accusations against others; it being enacted by statute 37 Edw. III. c. 18. that such as preferred any suggestions to the king's great council should put in sureties of taliation; that is, to incur the same pain that the other should have had, in case the suggestion were found untrue. But, after one year's experience, this punishment of taliation was rejected, and imprisonment adopted in its stead.

But though from what has been said it appears, that there cannot be any regular determinate method of rating the quantity of punishments for crimes, by any one uniform rule; but they must be referred to the will and discretion of the legislative power: yet there are some general principles, drawn from the nature and circumstances of the crime, that may be of some assistance in allotting it an adequate punishment.

As, first, with regard to the object of it: for the greater and more exalted the object of an injury is, the more care should be taken to prevent that injury, and of course under this aggravation the punishment should be more severe. Therefore treason in conspiring the king's death is (in Britain) punished with greater rigour than even actually killing any private subject. And yet, generally, a design to transgress is not so flagrant an enormity as the actual completion of that design. For evil, the nearer we approach it, is the more disagreeable and shocking;

so that it requires more obstinacy in wickedness to perpetrate an unlawful action, than barely to entertain the thought of it: and it is an encouragement to repentance and remorse, even till the last stage of any crime, that it never is too late to retract; and that if a man stops even here, it is better for him than if he proceeds: for which reasons an attempt to rob, to ravish, or to kill, is far less penal than the actual robbery, rape, or murder. But in the case of a treasonable conspiracy, the object whereof is the king's majesty, the bare intention will deserve the highest degree of severity: not because the intention is equivalent to the act itself; but because the greatest rigour is no more than adequate to a treasonable purpose of the heart, and there is no greater left to inflict upon the actual execution itself.

Again: The violence of passion, or temptation, may sometimes alleviate a crime; as theft, in case of hunger, is far more worthy of compassion, than when committed through avarice, or to supply one in luxurious excesses. To kill a man upon sudden and violent resentment is less penal than upon cool deliberate malice. The age, education, and character, of the offender; the repetition (or otherwise) of the offence; the time, the place, the company wherein it was committed; all these, and a thousand other incidents, may aggravate or extenuate the crime (A).

Farther: As punishments are chiefly intended for the prevention of future crimes, it is but reasonable that among crimes of different natures those should be most severely punished, which are the most destructive of the public safety and happiness; and, among crimes of an equal malignity, those which a man has the most frequent and easy opportunities of committing, which cannot be so easily guarded against as others, and which therefore the offender has the strongest inducement to commit: according to what Cicero observes, *Ea sunt animadvertenda peccata maxime, quae difficillime praecaventur.* Hence it is, that for a servant to rob his master is in more cases capital than for a stranger. If a servant kills his master, it is a species of treason; in another it is only murder. To steal a handkerchief, or other trifle of above the value of twelvepence, privately from one's person, is made capital; but to carry off a load of corn from an open field, though of fifty times greater value, is punished with transportation only. And in the island of Man this rule was formerly carried so far, that to take away an horse or an ox was there no felony, but a trespass, because of the difficulty in that little territory to conceal them or carry them off: but to steal a pig or a fowl, which is easily done, was a capital misdemeanour, and the offender was punished with death.

Lastly, as a conclusion to the whole, we may observe, that punishments of unreasonable severity, especially when indiscriminately inflicted, have less effect in preventing crimes, and amending the manners of a people, than such as are more merciful in general, yet properly intermixed with due distinctions of severity.

It is the sentiment of an ingenious writer, who seems to have well studied the springs of human action, that crimes are more effectually prevented by the certainty than by the severity of punishment; for the excessive severity of laws (says Montesquieu) hinders their execution. When the punishment surpasses all measure, the public will frequently prefer impunity to it. Thus also the statute 1 Mar. st. 1. c. 1. recites in its preamble, "that the state of every king consists more assuredly in the love of the subject towards their prince, than in the dread of laws made with rigorous pains; and that laws made for the preservation of the commonwealth without great penalties, are more often obeyed and kept than laws made with extreme punishments." Happy had it been for the nation if the subsequent practice of that deluded prince in matters of religion, had been correspondent to these sentiments of herself and parliament in matters of state and government! We may further observe, that sanguinary laws are a bad symptom of the distemper of any state, or at least of its weak constitution. The laws of the Roman kings, and the twelve tables of the *decemviri*, were full of cruel punishments: the Porcian law, which exempted all citizens from sentence of death, silently abrogated them all. In this period the republic flourished: under the emperors severe punishments were revived, and then the empire fell.

It is, moreover, absurd and impolitic to apply the same punishment to crimes of different malignity. A multitude of sanguinary laws (besides the doubt that may be entertained concerning the right of making them) do likewise prove a manifest defect either in the wisdom of the legislative, or the strength of the executive, power. It is a kind of quackery in government, and argues a want of solid skill, to apply the same universal remedy, the *ultimum supplicium*, to every case of difficulty. It is, it must be owned, much easier to extirpate than to amend mankind; yet that magistrate must be esteemed both a weak and a cruel surgeon, who cuts off every limb which through ignorance or indolence he will not attempt to cure. It has been therefore ingeniously proposed, that in every state a scale of crimes should be formed, with a corresponding scale of punishments, descending from the greatest to the least. But if that be too romantic an idea, yet at least a wise legislator will mark the principal divisions, and not assign penalties of the first degree to offences of an inferior rank. Where men see no distinction made in the nature and gradations of punishment, the generality will be led to conclude there is no distinction in the guilt. Thus in France the punishment of robbery, either with or without murder, is the same: hence it is, that though perhaps they are therefore subject to fewer robberies, yet they never rob but they also murder. In China murderers are cut to pieces, and robbers not: hence in that country they never murder on the highway, though they often rob. And in Britain, besides the additional terrors of a speedy execution, and a subsequent exposure or dissection, robbers

(A) Thus Demosthenes (in his oration against Midias) finely works up the aggravations of the insults he had received. "I was abused (says he) by my enemy, in cold blood, out of malice, not by heat of wine, in the morning, publicly, before strangers as well as citizens; and that in the temple, whither the duty of my office called me."

robbers have a hope of transportation, which seldom is extended to murderers. This has the same effect here as in China, in preventing frequent assassination and slaughter.

Yet though in this instance we may glory in the wisdom of our law, we shall find it more difficult to justify the frequency of capital punishment to be found therein; inflicted (perhaps inattentively) by a multitude of successive independent statutes, upon crimes very different in their natures. It is a melancholy truth, that among the variety of actions which men are daily liable to commit, no less than 160 have been declared by act of parliament to be felonies without benefit of clergy; or, in other words, to be worthy of instant death. So dreadful a list, instead of diminishing, increases the number of offenders. The injured, through compassion, will often forbear to prosecute; juries, through compassion, will sometimes forget their oaths, and either acquit the guilty or mitigate the nature of the offence; and judges, through compassion, will respite one half of the convicts, and recommend them to the royal mercy. Among so many chances of escaping, the needy and hardened offender overlooks the multitude that suffer: he boldly engages in some desperate attempt to relieve his wants or supply his vices; and if unexpectedly the hand of justice overtakes him, he deems himself peculiarly unfortunate in falling at last a sacrifice to those laws which long impunity has taught him to contemn.

As to the trials and mode of punishment, see ARRAIGNMENT; TRIAL, and the references therefrom; CONVICTION; JUDGMENT; ATTAINDER; CORRUPTION of Blood; FORFEITURE; EXECUTION; the several Crimes under their respective names; and LAW, Part II. cxxiii. et seq. and Part III. clxxxvi.

Persons capable or incapable of committing CRIMES; or (which is all one) of suffering the censures of the law upon the commission of forbidden acts.

All the several pleas and excuses which protect the committer of a forbidden act from the punishment which is otherwise annexed thereto, may be reduced to this single consideration, the want or defect of will. An involuntary act, as it has no claim to merit, so neither can it induce any guilt: the concurrence of the will, when it has its choice either to do or to avoid the fact in question, being the only thing that renders human actions either praiseworthy or culpable. Indeed, to make a complete crime, cognizable by human laws, there must be both a will and an act. For though, *in foro conscientiae*, a fixed design or will to do an unlawful act is almost as heinous as the commission of it; yet as no temporal tribunal can search the heart, or fathom the intentions of the mind, otherwise than as they are demonstrated by outward actions, it therefore cannot punish for what it cannot know. For which reason, in all temporal jurisdictions, an *overt* act, or some open evidence of an intended crime, is necessary in order to demonstrate the depravity of the will, before the man is liable to punishment. And as a vitious will without a vitious act is no civil crime; so, on the other hand, an unwarrantable act without a vitious will is no crime at all. So that to constitute a crime against human laws, there must be, first, a vitious will; and, secondly, an unlawful act consequent upon such vitious will.

Now there are three cases in which the will does not join with the act: 1. When there is a defect of understanding. For where there is no discernment, there is no choice; and where there is no choice, there can be no act of the will, which is nothing else but a determination of one's choice to do or to abstain from a particular action: he, therefore, that has no understanding, can have no will to guide his conduct. 2. Where there is understanding and will sufficient residing in the party, but not called forth and exerted at the time of the action done; which is the case of all offences committed by chance or ignorance. Here the will sits neuter, and neither concurs with the act nor disagrees to it. 3. Where the action is constrained by some outward force and violence. Here the will counteracts the deed; and is so far from concurring with, that it loaths and disagrees to what the man is obliged to perform. Infancy, idiocy, lunacy, and intoxication, fall under the first class; misfortune and ignorance may be referred to the second; and compulsion or necessity may properly rank in the third. See INFANCY, IDIOCY, DRUNKENNESS, MISFORTUNE, IGNORANCE, NECESSITY.

CRIMEA, or CRIM TARTARY, anciently the *Chersonesus Taurica*, a peninsula situated directly to the south of St Petersburg, between the 51st and 55th degrees of latitude, and in 46 of longitude. Its southern and western coasts lie in the Euxine, its northern and eastern in the Rotten Sea and the Palus Mæotis. It is joined, however, to the continent on the north by a small neck of land not more than six miles broad. This peninsula has been known more than 3000 years since the first naval expedition of the Argonauts; a story, though mixed with fable, yet well founded in its principal facts. The mountainous parts were inhabited by the Tauri, probably a colony of Scythians; and its coasts on the west, the east, and the south, by Greeks. The Scythians were driven out by Mithridates; the Greeks by the Sarmatians; and these again by the Alani and Goths, a northern hord of Scythians. The Hungarians, the Cossacks, and Tartars, succeeded in their turn; while the Genoese, in the 12th century, held a temporary and precarious possession of the seaports, which they were obliged to yield to the Turks in 1475. At the peace of 1774, the Tartars of the Crimea were declared independent; and in 1783, this peninsula was united to the Russian empire.

From the above-mentioned isthmus, on which is built the fortrefs of Or-kapi or Perekop, to the first rising of the hill at Karasubafar, the country is one continued flat; elevating itself, by an easy gradation, to the summit of the hill, which forms the south side of the peninsula and the shore of the Euxine Sea. The surface of the soil is almost all of one kind, a reddish-grey loam; on digging, you find it more or less mixed with a black earth, and the hills abound with marle. The whole flat, from Perekop to the river Salgir, which may be an extent of 80 miles, is full of salt marshes and lakes; from whence the neighbouring Russian governments, as well as the Crim itself, Anatolia, and Bessarabia, are supplied with salt. The most remarkable of these lakes are five in number: Koslof and Kessia, so called after the towns near which they lie, are very large; the Tusla, about 15 versts from Perekop, on the road from Kessia; the Red Lake,

Crimea. not far from the last mentioned; and the Black Lake. Besides these, there are many other swamps and lakes, from whence the inhabitants get salt for their own consumption.

The greatest part of the peninsula is so level that a man may travel over the half of it without meeting with a river, or even the smallest brook. The inhabitants of the villages, therefore, make a pit in the yard of every house for receiving the rain or the water that runs from the hills. The whole tract is bare of every kind of tree. Not a bush or a bramble is to be seen, and the herbage is extremely scanty. This, however, does not proceed so much from the unfruitfulness of the place, as from the vast herds of cattle which rove the whole year long from place to place; by which means all the grass in spring, summer, or autumn, no sooner appears through the long drought which succeeds the rainy season, but it is immediately devoured or trodden down. The universal prevalence of this custom of keeping cattle to wander up and down, joined to the slothfulness of the Tartars, with their inaptitude and aversion to agriculture, is the reason of the total neglect of that science here. Otherwise, were the land divided into portions and properly managed, there would be a sufficiency for the cattle, and the rest would be fruitful in corn and grain. By this means alone the Crim would become a fertile country, and no natural defect would be found in opposition to the welfare of its inhabitants. The truth of this is well known by their neighbours; where, of a hundred Tartars, one perhaps follows husbandry, who finds it to answer to so much profit, that he has not only enough for his own use, but wherewith to sell to the ninety-nine.

This peninsula, which is indeed but a little district, yet, from the many advantages conferred upon it by nature, may be esteemed peculiarly rich, is divided into the hilly country and the flat. The latter, which extends from Perekop to Koslof and the river Bulganak, to Karafubasar, Keffa, and Yenicali, is strewn here and there with little Tartar villages, maintained by cattle and the produce of the salt lakes. The highlands, or hilly country, form the southern part of the Crim, along the straight coast of the Black Sea, and stretching westward, in a right line from Keffa, to the vicinity of Belbek. These hills are composed of layers of chalk; which, in the headlands and promontories, is soft, but more inland quite hard. The strata of the highest hills are like those of the promontories, and take a direction from north to south. These qualities of the strata prevail not throughout the whole hills, but only in the large and lofty ones; such as the two that rise near Karafubasar, and one very high by Achmetfched, which bears the name of Aktau. The other smaller hills lie scattered and dispersed, but take the names of the greater ones, to which they seem to belong; as the great ridge of Caucasus does, which extends beyond the Donau, through Bulgaria, and are named *Palkans*.

All accounts agree in this, that nature has favoured these highland countries with great advantages, and blessed them with abundance of all things. A number of springs that flow from the mountains form the two considerable rivers Salgir and Karafu, which run into the Rotten Sea. The former, which takes its rise from a cavern in a high hill near Achmetfched, falls

straight into the plain below, and waters a great part of the Crim; the other, commencing behind Karafubasar, falls likewise into the plain, and mingles with the Salgir. There are many other little rivers and streams, which run eastward, and either join the two forementioned, or fall immediately into the Rotten Sea. All the streams, for the whole length of the hills, which begin at Keffa, and proceed in a chain of the same height, flow to the north or the north-east, excepting the one behind Achmetfched, where the great mountain Aktau is, which falls on the other side: this river, rising on the northern side of this mountain, flows, as was before observed, towards the north-east, to the Salgir and the Rotten Sea; as likewise those which spring on the western side, take their course westward to the Bulganak, and thence straight to the Black Sea; which also receives all the other little rivers that arise from these hills, as the Amma, the Katscha, the Belbek, the Kafulkioi, &c.

The mountains are well covered with woods fit for the purpose of ship building, and contain plenty of wild beasts. The valleys consist of fine arable land; on the sides of the hills grow corn and vines in great abundance, and the earth is rich in mines. But these mountaineers are as careless and negligent as the inhabitants of the deserts; slighting all these advantages; and, like their brethren of the lowlands, are sufficiently happy if they are in possession of a fat sheep and as much bread as serves them to eat.

About 20 years ago this peninsula was uncommonly full of inhabitants and wealth. They reckoned at that time at least 1200 villages; but, from the late troubles in the Crim, it has lost more than a third part of its inhabitants; and now, wherever we turn, we meet with the ruins of large villages and dwellings. The people were composed of various nations, who lived together under the Tartars in the most unbounded freedom; but in the late Turkish war they either put themselves under the Russian government, and were transferred to that empire, or fled to Abcasia and the Tschirkassian hills.

The houses in the towns, as well as the villages, are for the most part of square timbers, having the interstices filled with brick work, if the possessor can afford it, and those of the poorer sort with turf. The chinks and crannies are made tight with clay, and then plastered within and without. The covering is commonly either of brick or of turfs. Only the medcheds, minarets, and baths, are of stone, and a few extremely handsome of marble. They have chimnies in the chambers, at which they likewise dress their victuals; but stoves in the Russian manner none. In extreme frosts a great iron pan of charcoal is brought into the room, for making it comfortable. Their custom is, to sit upon low sofas, with Turkish coverings and cushions, or upon a clay seat, somewhat raised above the earth, and spread with a carpet. In these rooms are cupboards and chests, often covered with cushions, to serve as seats; in which they keep their gold, silver, and valuables. Such are the inner apartments or harams, in which the women generally live; the others are not so fine. These contain only a sofa, or a bank of clay covered with a carpet, as in the chimney rooms.

The rich Tartars, and their nobility or murzas (excepting:

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cepting only such as are about the person of the khan), commonly dwell all the year round in the country, coming only to town when they have business there. There are but few towns in the Crim, at least in comparison of its former population. The Krimskoi Tartars have no tribunal of justice, controversies and quarrels being seldom heard of among them; and if a dispute should arise, it is immediately settled by an appeal to the Koran. Little differences in the villages inevitably happening about property, or other matters not taken notice of in that code, are amicably adjusted by the elders or abefes; but in the towns all weighty concerns, excepting the single case of murder or homicide, are brought before the kaimakan or commandant, who settles them absolutely without appeal.

The residence of the khans of the Crimea was formerly Bachtshifarai, in which city they held their seat for upwards of 200 years. They went thither from Eski-Crim, or Old Crim, the capital city of the Genoese, upon Bengli Ghirekhan's plundering the seaports, and driving all the Genoese from their stations. Before Eski-Crim, and indeed upon the first coming of the Tartars into this peninsula, the sovereign residence was at Koslof; but here they remained not long. Under the late khan Shagin Ghirei it was held at Keffa, the ancient Theodosia; which is 10 miles distant from Eski-Crim, said to be the Cimmerium of the ancients.

The principal cities or towns of the Crimea are: 1. *Bachtshchi-Sarai*, an extensive and wealthy city, lying in a vale between two high mountains, and surrounded by a number of gardens. From this circumstance it has its name; *bachtshchi* signifying in the Tartarian language "a garden," and *sarai* "a palace." It formerly contained 3000 houses, and many sumptuous medsheds. The palace of the khans, with its gardens and ponds, were much improved under the government of Khan Kerim Girei, under whose government the last Turkish war took its rise. In this palace is the burial place of all the khans of Crimea, wherein all the khans that have reigned here lie interred. The fine Krimskoi vines, with their large clusters of grapes, grow in great plenty all about this town, and a profusion of other delicious fruits, from whence the neighbouring parts of Russia are supplied. 2. *Keffa*, the present residence of the khans, stands on the shore of a large harbour in the Black Sea. Its site is on the declivity of a long ridge of mountains; and is mantled by a stone wall, fortified by several towers, and encompassed by a deep ditch. On both sides of the city formerly stood castles, and in the middle of them a lofty turret for the purpose of giving signals by fire. Before the wall were wide extended suburbs; containing, among other considerable buildings, medsheds, churches for the Greek and Armenian worship; of all which now only the vestiges remain. The castles and towers lie also in ruins; and not one third part of the houses of the city itself are now remaining, and those chiefly built of materials taken from the aforesaid ruins. They formerly reckoned Keffa to contain 4000 houses, including the suburbs, with a number of medsheds and Christian churches; but this number has been much diminished by the last Turkish war. The present inhabitants consist mostly of Tartars; who carry on a trade by no means inconsiderable, in commodities brought

from Turkey. The late khan, an intelligent and enlightened personage, made this city the place of his residence, and brought hither the miut from Bachtshifarai, built himself a palace, and erected a divan, which assembled three times a-week, and the fourth time was held in the palace of the khan, in which he always personally assisted. Here is also a customhouse, the management of which is farmed out. 3. *Karafubasar*, likewise a very rich city in former times, stands at the beginning of the mountains, about half-way between Keffa and Bachtshifarai. It is a large trading town; contains a considerable number of dwelling-houses and medsheds, but the greatest part of them in decay, and many fine gardens. This place is the most famous in all the Crim for its trade in horses, and has a market once a-week for that article of traffic; to which are likewise brought great numbers of buffaloes, oxen, cows, camels, and sheep, for sale. Near this city flows one of the principal rivers of the Crim, called the *Karafu*, that is, the Black Water. Of this river they have an opinion in Russia, that one part of it flows upwards for several versts together. But this is in some sort true, not only of the Karafu, but of all the rivers of the Crim that have a strong current. The Tartars, who dwell either in the valleys or on the sides of the mountains (frequently without considering whether the place is supplied with water or not), dig canals either from the source of the next river, or from that part of it which lies nearest to their particular habitation, about an arshine in breadth, for their gardens and domestic use. From these they cut smaller ones through the villages, to supply them with water, and not unfrequently to drive a mill. These canals appear, to the imagination of the common people, to run in a contrary direction to the current of the river; and in fact these canals do lie, in many places for a verst in length, some fathoms higher than the level of the stream from whence they are supplied. 4. *Achmetsted*, a pretty large city not far from Bachtshifarai; now made the capital of all the Crimea by the regulations of Prince Potemkin in the summer of 1785. 5. *Koslof*, formerly a very considerable trading town, lies on the western side of the peninsula, in a bay of the Black Sea; which, as well as the found at Keffa, might rather be called a road than a haven. This was the first town the Tartars possessed themselves of on their first entrance into the Crim, and established a customhouse therein, after the example of the Genoese, which is now farmed out.

The other remarkable places are, *Sudak*, which is built on the hills upon the shore of the Black Sea, at the south side of the peninsula, and is famous for its excellent wine, resembling Champagne both in colour and strength; *Aluschi*, on the same side, among the hills on the sea-shore; *Bahuklava*, where there is a fine harbour, and perhaps the only one on the Black Sea, containing ample room for a very good fleet; *Inkerman* may be noticed for its commodious though not very large haven, called *Achtiar*; and *Mangup*, the old Chersonesus: which were all formerly very flourishing towns; but are now either in ruins, or dwindled into small villages.

All these places, so long as the Genoese remained masters of the Crim, were well fortified; but the Tartars, in taking them, demolished all the works. While they

Crimea.

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they were under the Turks, they left the fortresses of Keffa, Kertsch, and Koslof, and built the fort Arabat on the neck of land between the sea of Azof (or Palus Mæotis) and the Rotten Sea, where Perekop also is.

In *Arabat* are but few houses; but here the warlike stores of the khans were kept.—*Perekop*, called by the Turks *Or-kapi*, is a fortress of moderate strength; standing about the middle of the neck of land that joins the peninsula with the continent. This isthmus, which is at least six miles broad, is cut through with a wide and deep ditch lined with stone, and reaches from the Black to the Rotten Sea. This was formerly kept without water, but now is filled from both seas. On the Crimean side a high wall of earth runs the whole length of it, straight from one sea to the other. The people pass over the ditch by means of a drawbridge, and through the wall by a gateway. The walls of the fortresses are some fathoms from the road-side; of which the ruins are only now discernible, namely, large brick houses, with a number of bomb-shells and cannon-balls about them, which were formerly kept in the fortresses. At least two miles from this is the pretty populous but miserable place, which was probably the town to which this fort belonged. Near the gate is a customhouse, where all imports and exports pay duty.

This peninsula was formerly extremely populous; the number of its inhabitants, in Tartars, Turks, Greeks, Armenians, Jews, and others, amounted to above 200,000 men. Since that, however, the greatest part of the Christians have betaken themselves to the other parts of the Russian empire, particularly the government of Azof; and many other inhabitants, particularly Tartars, have gone to Taman and Abchasia; so that the present population of the Crim cannot now be reckoned at more than 70,000 men at most.

The Crim was heretofore divided into 24 kaduliks or districts; namely, Yenikali, Kertsch, Arabat, Efki-krim, Keffa, Kairasubasar, Sudak, Achmetsched, Yalof, Bachtschifarai, Balaklava, Mangup, Inkerman, Koslof, Or, Mansur, Tarkan, Sivafsch, Tschongar, Sarubulat, Barun, Argun, Sidchugut, and Schirin. Several of these districts are named after the town or village wherein the murza, their governor, dwells; and many of them are at present in a state of total decay.

CRIMEN FALSI. See *FALSI Crimen*.

CRIMSON, one of the seven red colours of the dyers. See *DYEING*.

CRINGLE, a small hole made in the bolt-rope of a sail, by intertwisting one of the divisions of a rope, called a *strand*, alternately round itself and through the *strands* of the bolt-rope, till it becomes threefold, and assumes the shape of a wreath or ring. The use of the cringle is generally to contain the end of some rope, which is fastened thereto for the purpose of drawing up the sail to its yard, or of extending the skirts by the means of *bridles*, to stand upon a side wind. The word seems to be derived from *krinckelen* (Belg.) "to run into twists."

CRINUM, ASPHODEL-LILY: A genus of the monogynia order, belonging to the hexandria class of plants; and in the natural method ranking under the 9th order, *Spalbacca*. The corolla is funnel-shaped, monopetalous, and sexpartite, with three alternate segments having hooked appendages; the germen is co-

vered in the bottom of the corolla, the stamina standing asunder. They are very beautiful green-house plants, rising two or three feet high, each of them crowned by a large umbellate cluster of spathaceous, monopetalous, long funnel-shaped flowers, blue, white, or striped, having a very fragrant smell. They are propagated by off-sets.

CRISIS, in medicine, is used in different senses, both by the ancient and modern physicians. With some it means frequently no more than the excretion of any noxious substance from the body. Others take the word for a secretion of the noxious humours made in a fever. Others use it for the critical motion itself; and Galen defines a crisis in fevers, a sudden and instantaneous change, either for the better or the worse, productive of recovery or death.

CRISPIN and CRISPIANUS, two legendary saints, whose festival, as marked in the kalendar, is on the 25th of October. According to the legend, they were brethren, born at Rome; from whence they travelled to Soissons in France, about the year 303, to propagate the Christian religion; and because they would not be chargeable to others for their maintenance, they exercised the trade of shoemakers; but the governor of the town discovering them to be Christians, ordered them to be beheaded. From which time the shoemakers made choice of them for their tutelar saints.

CRISTÆ, in surgery, a term for certain excrescences about the anus and pudenda. See *MEDICINE-Index*.

CRISTA GALLI, in anatomy, an eminence in the middle of the *os ethmoides*, advancing within the cavity of the cranium; and to which is fastened that part of the dura mater which divides the brain, called *falsx*. It has its name from its figure, which resembles that of a cock's comb. In adults, this process appears of a piece with the *septum narium*.

CRITERION, or CRITERIUM, a standard by which propositions and opinions are compared, in order to discover their truth or falsehood.

CRITHE, in surgery, commonly called the *stye*, is a sort of tubercle that grows on the eye-lids. When small, it is seated on the edge of the eye-lid; but when large, it spreads further. When they do not suppurate, they become wens. They are apt to disappear and return. If there is inflammation, endeavour to suppurate it with the white-bread poultice: if it is hard, destroy it with a mixture of equal parts of hog's lard and quicksilver. If the lower eye-lid is affected, the tumor is more frequently on its inside; and then it is best to dissect it, or to make way for it outwardly by applying a caustic on the skin just upon it.

CRITHMUM, SAMPHIRE: A genus of the digynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 45th order, *Umbellata*. The fruit is oval and compressed, the florets equal. There are two species, the principal of which is the maritimum, or common maritime samphire. It hath a fibrous penetrating root; thick, succulent, branchy stalks rising two feet high; winged fleshy leaves, consisting of many small spear-shaped lobes; with round yellow flowers growing in umbels. It is produced naturally on the sea-coasts among the gravel and rocks. Its leaves are an excellent pickle

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used for sauces, and are by many eaten raw in salads. It is of a saltish relish, palatable, and comfortable to the stomach. It is not very easily preserved in gardens. It must be sown on gravelly or rocky ground, half an inch deep; in which situation the plants will come up, and last some years. The leaves of this plant are said also to be aperient and diuretic.

CRITHOMANCY, a kind of divination, performed by considering the dough or matter of the cakes offered in sacrifice, and the meal strewed over the victims to be killed. Hence, in regard they ordinarily used barley-meal in these ceremonies, this kind of divination was called *crithomancy*, from *κριθῆν*, *barley*, and *μαντεία*, *divination*.

CRITIAS, one of the 30 tyrants set over Athens by the Spartans. He was eloquent and well bred, but of dangerous principles. He cruelly persecuted his enemies and put them to death. He was killed about 400 years before the Augustan age, in a battle against those citizens whom his oppression had banished. He had been among the disciples of Socrates, and had written elegies and other compositions, of which some fragments remain.

CRITICAL DAYS and SYMPTOMS, among physicians, are certain days and symptoms in the course of acute diseases, which indicate the patient's state, and determine him either to recover or grow worse. See *MEDICINE-Index*.

CRITICISM, the art of judging with propriety concerning any object or combination of objects. But, in a more limited sense, the science of criticism is confined to the fine arts. The principles of the fine arts are best unfolded by studying the sensitive part of our nature, and by learning what objects are naturally agreeable and what are naturally disagreeable. The man who aspires to be a critic in these arts, must pierce still deeper: he must clearly perceive what objects are lofty, what low, what are proper or improper, what are manly, and what are mean or trivial. Hence a foundation for judging of taste, and for reasoning upon it: where it is conformable to principles, we can pronounce with certainty that it is correct; otherwise, that it is incorrect, and perhaps whimsical. Thus the fine arts, like morals, become a rational science; and, like morals, may be cultivated to a high degree of refinement.

Manifold are the advantages of criticism, when thus studied as a rational science. In the first place, a thorough acquaintance with the principles of the fine arts redoubles the entertainment these arts afford. To the man who resigns himself entirely to sentiment or feeling, without interposing any sort of judgment, poetry, music, painting, are mere pastime; in the prime of life, indeed, they are delightful, being supported by the force of novelty and the heat of imagination: but they lose their relish gradually with their novelty; and are generally neglected in the maturity of life, which disposes to more serious and more important occupations. To those who deal in criticism as a regular science, governed by just principles, and giving scope to judgment as well as to fancy, the fine arts are a favourite entertainment; and in old age maintain that relish which they produce in the morning of life.

In the next place, a philosophical inquiry into the

principles of the fine arts, inures the reflecting mind to the most enticing sort of logic: the practice of reasoning upon subjects so agreeable tends to a habit; and a habit strengthening the reasoning faculties, prepares the mind for entering into subjects more difficult and abstract. To have, in this respect, a just conception of the importance of criticism, we need but reflect upon the common method of education; which, after some years spent in acquiring languages, hurries us, without the least preparatory discipline, into the most profound philosophy: a more effectual method to alienate the tender mind from abstract science, is beyond the reach of invention: and accordingly, with respect to such speculations, the bulk of our youth contract a sort of hobgoblin terror, which is seldom, if ever, subdued. Those who apply to the arts are trained in a very different manner; they are led, step by step, from the easier parts of the operation to what are more difficult; and are not permitted to make a new motion till they be perfected in those which regularly precede it. The science of criticism appears then to be a middle link, connecting the different parts of education into a regular chain. This science furnisheth an inviting opportunity to exercise the judgment: we delight to reason upon subjects that are equally pleasant and familiar; we proceed gradually from the simpler to the more involved cases: and in a due course of discipline, custom, which improves all our faculties, bestows acuteness upon those of reason, sufficient to unravel all the intricacies of philosophy.

Nor ought it to be overlooked, that the reasonings employed upon the fine arts are of the same kind with those which regulate our conduct. Mathematical and metaphysical reasonings have no tendency to improve social intercourse; nor are they applicable to the common affairs of life: but a just taste in the fine arts, derived from rational principles, furnishes elegant subjects for conversation, and prepares us finely for acting in the social state with dignity and propriety.

The science of rational criticism tends to improve the heart not less than the understanding. It tends, in the first place, to moderate the selfish affections: by sweetening and harmonizing the temper, it is a strong antidote to the turbulence of passion and violence of pursuit; it procures to a man so much mental enjoyment, that, in order to be occupied, he is not tempted in youth to precipitate into hunting, gaming, drinking; nor in middle-age, to deliver himself over to ambition; nor in old age, to avarice. Pride and envy, two disgustful passions, find in the constitution no enemy more formidable than a delicate and discerning taste: the man upon whom nature and culture have bestowed this blessing, feels great delight in the virtuous dispositions and actions of others: he loves to cherish them, and to publish them to the world: faults and failings, it is true, are to him not less obvious; but these he avoids, or removes out of sight, because they give him pain. On the other hand, a man void of taste, upon whom the most striking beauties make but a faint impression, has no joy but in gratifying his pride or envy by the discovery of errors and blemishes. In a word, there may be other passions, which, for a season, disturb the peace of society more than those mentioned; but no other passion is so unwearied an antagonist

Criticism.

Criticism **Crizzel-ling.** gonist to the sweets of social intercourse: these passions, tending assiduously to their gratification, put a man perpetually in opposition to others; and dispose him more to relish bad than good qualities, even in a companion. How different that disposition of mind, where every virtue in a companion or neighbour, is, by refinement of taste, set in its strongest light; and defects or blemishes, natural to all, are suppressed, or kept out of view!

In the next place, delicacy of taste tends not less to invigorate the social affections than to moderate those that are selfish. To be convinced of this tendency, we need only reflect, that delicacy of taste necessarily heightens our sensibility of pain and pleasure, and of course our sympathy, which is the capital branch of every social passion. Sympathy, in particular, invites a communication of joys and sorrows, hopes and fears: such exercise, soothing and satisfactory in itself, is necessarily productive of mutual good-will and affection.

One other advantage of rational criticism is referred to the last place, being of all the most important; which is, that it is a great support to morality. No occupation attaches a man more to his duty than that of cultivating a taste in the fine arts: a just relish of what is beautiful, proper, elegant, and ornamental, in writing or painting, in architecture or gardening, is a fine preparation for the same just relish of these qualities in character and behaviour. To the man who has acquired a taste so acute and accomplished, every action wrong or improper must be highly disgustful: if, in any instance, the overbearing power of passion sway him from his duty, he returns to it upon the first reflection, with redoubled resolution never to be swayed a second time: he has now an additional motive to virtue, a conviction derived from experience, that happiness depends on regularity and order, and that a disregard to justice or propriety never fails to be punished with shame and remorse.

For the rules of criticism applicable to the fine arts, and derived from human nature, see ARCHITECTURE, BEAUTY, CONGRUITY, COMPARISON, GRANDEUR, &c.

CRITO, an Athenian philosopher, flourished 400 years before Christ. He was one of the most zealous disciples of Socrates, and supplied him with whatever he wanted. He had several scholars who proved great men, and he composed some dialogues which are lost.

CRITOLAUS, a citizen of Tegea in Arcadia. He with two brothers fought against the three sons of Demoltratus of Pheneus, to put an end to a long war between their respective nations. The brothers of Critolaus were both killed, and he alone remained to withstand his three bold antagonists. He conquered them; and when at his return his sister deplored the death of one of his antagonists, to whom she was betrothed, he killed her in a fit of resentment. The offence deserved capital punishment; but he was pardoned on account of the services he had rendered his country. He was afterwards general of the Achæans; and it is said that he poisoned himself because he had been conquered at Thermopylæ by the Romans, about 146 years before the Augustan age.

CRIZZELLING, in the glass trade, a kind of roughness arising on the surface of some kinds of glass.

This was the fault of a peculiar sort of glass made in Oxfordshire and some other places, of black flints, a crystallized sand, and a large quantity of nitre, tartar, and borax. The glass thus made is very beautiful, but, from the too great quantities of the salts in the mixture, is subject to crizzel; that is, the salts in the mixture, from their too great proportion, are subject, either from the adventitious nitre of the air from without, or from warm liquors put in them, to be either increased in quantity or dissolved, and thereby induce a scabrities or roughness, irrecoverably clouding the transparency of the glass. This is what was called *crizzelling*; but by using an Italian white pebble, and abating the proportions of the salts, the manufacture is now carried on with advantage, and the glass made with these salts is whiter than the finest Venetian, and is subject to no faults.

CROATIA, a part of the ancient Illyricum, is bounded on the east by Sclavonia and Bosnia, on the south and south-west by Morlachia, and on the north by the Drave, which separates it from a part of Sclavonia. It is about 80 miles in length and 70 in breadth, and was once divided between the Hungarians and Turks; but now the greatest part of it is subject to the house of Austria. The Croats derive their origin from the Sclavi; and their language is a dialect of the Sclavonian, approaching very near to that of the Poles. The country is divided into two parts, viz. that under, and that beyond, the Save. In the late wars between the empress queen and the king of Prussia, no less than 50,000 men were raised out of this small territory. Both horse and foot are good soldiers, especially the former. The soil, where cultivated, is fruitful in wine and oil, &c. but being a frontier country, and much exposed to inroads, it is not so well cultivated as otherwise it might be.

CROCODILE, in zoology. See LACERTA.

Fossile CROCODILE, one of the greatest curiosities in the fossile world which the late ages have produced. It is the skeleton of a large crocodile, almost entire, found at a great depth under ground, bedded in stone. This was in the possession of Linkius, who wrote many pieces of natural history, and particularly an accurate description of this curious fossile. It was found in the side of a large mountain in the midland part of Germany, and in a stratum of black fossile stone, somewhat like our common slate, but of a coarser texture, the same with that in which the fossile fish in many parts of the world are found. This skeleton had the back and ribs very plain, and was of a much deeper black than the rest of the stone; as is also the case in the fossile fishes which are preserved in this manner. The part of the stone where the head lay was not found; this being broken off just at the shoulders, but that irregularly; so that, in one place, a part of the back of the head was visible in its natural form. The two shoulder-bones were very fair, and three of the feet were well preserved; the legs were of their natural shape and size, and the feet preserved even to the extremities of the five toes of each.

CROCODILE (*crocodilus*), in rhetoric, a captious and sophistical kind of argumentation, contrived to seduce the unwary, and draw them speciously into a snare. It has its name crocodile from the following occasion, invented by the poets. A poor woman, begging a cro-

Croatia,
Crocodile.

Crocus.

codile that had caught her son walking by the river-side to spare and restore him, was answered, that he would restore him, provided she should give a true answer to a question he should propose: the question was, Will I restore thy son or not? To this the poor woman, suspecting a deceit, sorrowfully answered, Thou wilt not: and demanded to have him restored, because she had answered truly. Thou liest, says the crocodile; for if I restore him, thou hast not answered truly: I cannot therefore restore him without making thy answer false. Under this head may be reduced the propositions called *mentientes* or *insolubiles*; which destroy themselves. Such is that of the Cretan poet: *Omnes ad unum Cretenfes semper mentiuntur*: "All the Cretans, to a man, always lie." Either, then, the poet lies when he asserts that the Cretans all lie, or the Cretans do not all lie.

CROCUS, SAFFRON: A genus of the monogynia order, belonging to the triandria class of plants; and in the natural method ranking under the 6th order, *Enfatae*. The corolla is sexpartite and equal; the stigmata convoluted or rolled spirally inwards. Modern botanists allow only one species of this genus, which, however, comprehends many beautiful varieties. This hath a small roundish, brown, bulbous root, compressed at the bottom. Directly from the root issue many long narrow leaves, of a deep green colour; and amidst them the flowers all protruded from a thin univalvular radical spathe; the tube of the flower is long, standing on the root, and serving as a foot-stalk to the limb or upper part, which is erect, six-parted, widens gradually upward, and grows from about three to five or six inches high. The varieties of this species may be divided into two classes, the autumnal and spring flowering.

The varieties of the first are the *crocus officinalis*, or saffron of the shops; for the properties of which, and its cultivation for sale, see the article **SAFFRON**. This hath a long-tubed bluish purple flower, with three stigmata of a fine golden colour. Other varieties are the autumnal small blue crocus; deep blue, sky-blue, whitish blue, many-flowered whitish blue, purple, large ruff-leaved purple, autumnal white crocus, and autumnal yellow crocus. The varieties of the vernal crocus are, the small and large, and golden yellow crocuses, and the yellow black-striped, the yellow purple-striped and double cloth of gold ones; the white, white purple-striped, white purple bottom, white black-striped, whitish cream coloured, whitish ash-coloured, little narrow-leaved white, and white blue-striped crocuses. Besides these there are a great many others of a blue and purple colour finely variegated.

The autumnal crocuses flower about the beginning of October, but never ripen their seeds in this country. They are very beautiful if sown in patches in the front of borders, or in beds by themselves, and very proper ornaments for gardens of every extent, as coming up at a time when most other flowers are on the decay. They grow freely in any kind of soil, and may be propagated by offsets. The vernal kinds flower in February, March, and April. They also are very ornamental, and are so hardy that they will grow almost any where. They are propagated by seeds, which the plants produce in plenty.

CROCUS, in chemistry, denotes any metal calcined to a red or deep yellow colour.

Crocus Metallorum, an emetic preparation of antimony and nitre. See **CHEMISTRY-Index**.

CRÆSUS, the last king of Lydia, remarkable for his riches, his conquests, his temporary prosperity, and the sad reverse of his fortune. He subdued the Phrygians, Mysians, Paphlagonians, Thracians, and Carians; amassed together immense riches; and became one of the most powerful and magnificent princes in the world. He drew the learned to his court, and took a pleasure in conversing with them. Thales of Miletus, Pittacus of Mitylene, Bias of Priene, Cleobulus of Lindus, and most of the other "wise men," as they are emphatically styled, who lived in that age, as well as Æsop the fabulist, and the elegant Greek poets of the times, were bountifully received at the court of Cræsus. There is still on record a memorable conversation between that prince and Solon, which seemed to predict the subsequent events of his reign, and which had a late but important influence on the character and fortune of the Lydian king. Cræsus having entertained his Athenian guest, according to the ancient fashion, for several days, before he asked him any questions, ostentatiously showed him the magnificence of his palace, and particularly the riches of his treasury. After all had been displayed to the best advantage, the king complimented Solon upon his curiosity and love of knowledge; and asked him, as a man who had seen many countries, and reflected with much judgment upon what he had seen, Whom of all men he esteemed most happy? By the particular occasion, as well as the triumphant air with which the question was proposed, the king made it evident that he expected flattery rather than information. But Solon's character had not been enervated by the debilitating air of a court; and he replied with a manly freedom, "Tellus, the Athenian." Cræsus, who had scarcely learned to distinguish, even in imagination, between wealth and happiness, inquired with a tone of surprise, why this preference to Tellus? "Tellus," rejoined Solon, "was not conspicuous for his riches or his grandeur, being only a simple citizen of Athens; but he was descended from parents who deserved the first honours of the republic. He was equally fortunate in his children, who obtained universal esteem by their probity, patriotism, and every useful quality of the mind or body: and as to himself, he died fighting gallantly in the service of his country, which his valour rendered victorious in a doubtful combat; on which account the Athenians buried him on the spot where he fell, and distinguished him by every honour which public gratitude can confer on illustrious merit."

Cræsus had little encouragement, after this answer, to ask Solon, in the second place, Whom, next to Tellus, he deemed most happy? Such, however, is the illusion of vanity, that he still ventured to make this demand; and still, as we are informed by the most circumstantial of historians, entertained hopes of being favourably answered. But Solon replied with the same freedom as before, "The brothers Cleobis and Biton; two youths of Argos, whose strength and address were crowned with repeated victory at the Olympic games; who deserved the affection of their parents, the gratitude of their country, the admiration of Greece; and who,

Crocus,
Cræsus.

Cræsus. who, having ended their lives with peculiar felicity, were commemorated by the most signal monuments of immortal fame." "And is the happiness of a king, then," said Cræsus, "so little regarded, O Grecian stranger! that you prefer to it the mean condition of an Athenian or Argive citizen?" The reply of Solon sufficiently justified his reputation for wisdom. "The life of man," said he, "consists of 70 years, which make 25,550 days; an immense number: yet in the longest life, the events of any one day will not be found exactly alike to those of another. The affairs of men are liable to perpetual vicissitudes: the Divinity who presides over our fate is envious of too much prosperity; and all human life, if not condemned to calamity, is at least liable to accident. Whoever has uninterruptedly enjoyed a prosperous tide of success may justly be called *fortunate*: but he cannot before his death be intitled to the epithet of *happy*."

The events which soon followed this conversation, prove how little satisfaction is derived from the possession of a throne. Victorious in war, unrivalled in wealth, supreme in power, Cræsus felt and acknowledged his unhappiness. The warmest affections of his soul centered in his son Atys, a youth of the most promising hopes, who had often fought and conquered by his side. The strength of his attachment was accompanied with an excess of paternal care, and the anxiety of his waking hours disturbed the tranquillity of his rest. He dreamed that his beloved son was slain by a dart; and the solicitude with which he watched his safety, preventing the youth from his usual occupations and amusements, and thereby rendering him too eager to enjoy them, most probably exposed him to the much-dreaded misfortune. Reluctantly permitted to engage in a party of hunting, the juvenile ardour of Atys, increased by the impatience of long restraint, made him neglect the precautions necessary in that manly amusement. He was slain by a dart aimed at a wild boar of monstrous size, which had long spread terror over the country of the Mysians. The weapon came from the hand of Adrastus, a Phrygian prince and fugitive, whom Cræsus had purified from the involuntary guilt of a brother's blood, and long distinguished by peculiar marks of bounty. To the grateful protection of the Phrygian, Cræsus recommended, at parting, the safety of his beloved son. A mournful procession of Lydians brought to Sardis the dead body of Atys. The ill-fated murderer followed behind. When they approached the royal presence, Adrastus stepped forward, and intreated Cræsus to put him to death; thinking life no longer to be endured after killing, first his own brother, and then the son of his benefactor. But the Lydian king, notwithstanding the excess of his affliction, acknowledged the innocence of Adrastus, and the power of fate. "Stranger, your action is blameless, being committed without design. I know that my son was destined to a premature death." Adrastus, though pardoned by Cræsus, could not pardon himself. When the mourners were removed, he privately returned, and perished by his own hand on the tomb of Atys.

Two years Cræsus remained disconsolate for the loss of his son; and might have continued to indulge his unavailing affliction during the remainder of life, had not the growing greatness of Persia, which threatened

the safety of his dominions, roused him from his dream of misery. (See LYDIA.)—He marched against Cyrus with a great army, but was defeated; and retreating to his capital Sardis, was there besieged. The city was taken by assault; and as a Persian soldier was going to kill Cræsus, that prince's only surviving son, who had hitherto been dumb, terrified at his danger, cried, *Stop, soldier, and touch not Cræsus*. But though delivered by this extraordinary accident from the blind rage of the soldier, he seemed to be reserved for a harder fate. Dragged into the presence of his conqueror, he was loaded with irons; and the stern, unrelenting Cyrus, of whose humane temper of mind we have so beautiful, but so flattering, a picture in the philosophical romance of Xenophon, ordered him, with the melancholy train of his Lydian attendants, to be committed to the flames. An immense pile of wood and other combustibles was erected in the most spacious part of the city. The miserable victims, bound hand and foot, were placed on the top of the pyre. Cyrus, surrounded by his generals, witnessed the dreadful spectacle, either from an abominable principle of superstition if he had bound himself by a vow to sacrifice Cræsus as the first fruits of his Lydian victory, or from a motive of curiosity, equally cruel and impious, to try whether Cræsus, who had so magnificently adorned the temples and enriched the ministers of the gods, would be helped in time of need by the miraculous interposition of his much honoured protectors. Meanwhile the unfortunate Lydian, oppressed and confounded by the intolerable weight of his present calamity compared with the security and splendor of his former state, recollected his memorable conversation with the Athenian sage, and uttered with a deep groan the name of *Solon*. Cyrus asked by an interpreter, "Whose name he invoked?" "*His*," replied Cræsus, emboldened by the prospect of certain death, "whose words ought ever to speak to the heart of kings." This reply not being satisfactory, he was commanded to explain at full length the subject of his thoughts. Accordingly he related the important discourse which had passed between himself and the Athenian, of which it was the great moral, That no man could be called happy till his death.

The words of a dying man are fitted to make a strong impression on the heart. Those of Cræsus deeply affected the mind of Cyrus. The Persian considered the speech of Solon as addressed to himself. He repented of his intended cruelty towards an unfortunate prince, who had formerly enjoyed all the pomp of prosperity: and dreading the concealed vengeance that might lurk in the bosom of fate, gave orders that the pyre should be extinguished. But the workmen who had been employed to prepare it, had performed their task with so much care, that the order could not speedily be obeyed. At that moment, Cræsus calling on Apollo, whose favourite shrine of Delphi had experienced his generous munificence, and whose perfidious oracle had made him so ungrateful a return; the god, it is said, sent a plentiful shower to extinguish the pyre. This event, which saved the life, and which sufficiently attested the piety of Cræsus, strongly recommended him to the credulity of his conqueror. It seemed impossible to pay too much respect to a man who was evidently the favourite of heaven. Cyrus gave orders

Cræsus
||
Croisade.

that he should be seated by his side, and thenceforth treated as a king; a revolution of fortune equally sudden and unexpected. But the mind of Cræsus had undergone a still more important revolution: for, tutored in the useful school of adversity, he learned to think with patience and to act with prudence, to govern his own passions by the dictates of reason, and to repay by wholesome advice the generous behaviour of his Persian master.

The first advantage which he derived from the change in Cyrus's disposition towards him, was the permission of sending his fetters to the temple of Delphian Apollo, whose flattering oracles had encouraged him to wage war with the Persians. Behold," were his messengers instructed to say, "the trophies of our promised success! behold the monuments of the unerring veracity of the god!" The Pythia heard their reproach with a smile of contemptuous indignation, and answered it with that solemn gravity which she was so carefully taught to assume: "The gods themselves cannot avoid their *own* destiny, much less avert, however they may retard, the determined fates of men. Cræsus has suffered, and justly suffered, for the crime of his ancestor Gyges; who, entrusted as chief of the guards, with the person of Candaules, the last king of the race of Hercules, was seduced by an impious woman to murder his master, to defile his bed, and to usurp his royal dignity. For this complicated guilt of Gyges the misfortunes of Cræsus have atoned; but know, that through the favour of Apollo, these misfortunes have happened three years later than the fates ordained." The Pythia then proceeded to explain her answers concerning the event of the war against Cyrus, and proved, to the conviction of the Lydians, that her words, if properly understood, portended the destruction, not of the Persian, but of the Lydian empire. Cræsus heard with resignation the report of his messengers, and acknowledged the justice of the Delphian oracle, which maintained and increased the lustre of its ancient fame. This fallen monarch survived Cyrus. The manner of his death is not known.

CROFT, a little close adjoining to a dwelling-house, and inclosed for pasture or arable land, or any other purpose.—In some ancient deeds, *crofta* occurs as the Latin word for a "croft;" but *cum toftis* & *croftis* is more frequent. Croft is translated in Abbo Floriacensis, by *pradium* a "farm".

CROISADE, or CRUSADE, a name given to the expeditions of the Christians against the infidels for the conquest of Palestine.

These expeditions commenced in the year 1096. The foundation of them was a superstitious veneration for those places where our Saviour performed his miracles, and accomplished the work of man's redemption. Jerusalem had been taken, and Palestine conquered, by Omar the successor of Abu Beer*, who succeeded Mahomet himself. This proved a considerable interruption to the pilgrims, who flocked from all quarters to perform their devotions at the holy sepulchre. They had, however, still been allowed this liberty, on paying a small tribute to the Saracen caliphs, who were not much inclined to molest them. But, in 1065, this city changed its masters. The Turks took it from the Saracens; and being much more fierce and barbarous than the former, the pil-

grims now found they could no longer perform their devotions with the same safety they did before. An opinion was about this time also prevalent in Europe, which made these pilgrimages much more frequent than formerly. It was somehow or other imagined, that the thousand years mentioned in the 20th chapter of the Revelations, were fulfilled; that Christ was soon to make his appearance in Palestine, to judge the world; and consequently that journeys to that country were in the highest degree meritorious, and even absolutely necessary. The multitudes of pilgrims which now flocked to Palestine meeting with a very rough reception from the Turks, filled all Europe with complaints against those infidels who profaned the holy city by their presence, and derided the sacred mysteries of Christianity even in the place where they were fulfilled. Pope Gregory VII. had formed a design of uniting all the princes of Christendom against the Mahometans; but his exorbitant encroachments upon the civil power of princes had created him so many enemies, and rendered his schemes so suspicious, that he was not able to make great progress in this undertaking. The work was reserved for a meaner instrument.

Peter, commonly called the *hermit*, a native of Amiens in Picardy, had made the pilgrimage to Jerusalem; and being deeply affected with the dangers to which that act of piety now exposed the pilgrims, as well as with the oppression under which the eastern Christians now laboured, formed the bold, and, in all appearance, impracticable design of leading into Asia, from the farthest extremities of the West, armies sufficient to subdue those potent and warlike nations that now held the Holy Land in slavery. He proposed his scheme to Martin II. who then filled the papal chair; but he, though sensible enough of the advantages which must accrue to himself from such an undertaking, resolved not to interpose his authority till he saw a greater probability of success. He summoned, at Placentia, a council consisting of 4000 ecclesiastics and 30,000 seculars. As no hall could be found large enough to contain such a multitude, the assembly was held in a plain. Here the Pope himself, as well as Peter, harangued the people, representing the dismal situation of their brethren in the East, and the indignity offered to the Christian name in allowing the holy city to remain in the hands of the infidels. These speeches were so agreeable to those who heard them, that the whole multitude suddenly and violently declared for the war, and solemnly devoted themselves to perform this service, which they believed to be so meritorious in the sight of God.

But though Italy seemed to have embraced the design with ardour, Martin yet thought it necessary, in order to insure perfect success, to engage the greater and more warlike nations in the same enterprize. Having therefore exhorted Peter to visit the chief cities and sovereignties of Christendom, he summoned another council at Clermont in Auvergne. The fame of this great and pious design being now universally diffused, procured the attendance of the greatest prelates, nobles, and princes; and when the Pope and the hermit renewed their pathetic exhortations, the whole assembly, as if impelled by an immediate inspiration, exclaimed with one voice, "It is the will of God! it is the will

* See Arabia, n^o 76.

of God!" These words were deemed so memorable, and so much the effect of a divine impulse, that they were employed as the signal of rendezvous and battle in all future exploits of these adventurers. Men of all ranks now flew to arms with the utmost ardour, and a cross was affixed to their right shoulder by all who enlisted in this holy enterprize.

At this time Europe was sunk in the most profound ignorance and superstition. The ecclesiastics had gained the greatest ascendant over the human mind; and the people, who committed the most horrid crimes and disorders, knew of no other expiation than the observances imposed on them by their spiritual pastors.

But amidst the abject superstition which now prevailed, the military spirit had also universally diffused itself; and, though not supported by art or discipline, was become the general passion of the nations governed by the feudal law. All the great lords possessed the right of peace and war. They were engaged in continual hostilities with one another: the open country was become a scene of outrage and disorder: the cities, still mean and poor, were neither guarded by walls nor protected by privileges. Every man was obliged to depend for safety on his own force, or his private alliances; and valour was the only excellence which was held in esteem, or gave one man the pre-eminence above another. When all the particular superstitions, therefore, were here united in one great object, the ardour for private hostilities took the same direction; "and all Europe (as the princess Anna Comnena expresses herself), torn from its foundations, seemed ready to precipitate itself in one united body upon Asia"

All orders of men, now deeming the croisades the only road to heaven, were impatient to open the way with their swords to the holy city. Nobles, artisans, peasants, even priests, inrolled their names; and to decline this service was branded with the reproach of impiety or cowardice. The nobles who enlisted themselves were moved, by the romantic spirit of the age, to hope for opulent establishments in the East, the chief seat of arts and commerce at that time. In pursuit of these chimerical projects, they sold at the lowest price their ancient castles and inheritances, which had now lost all value in their eyes. The infirm and aged contributed to the expedition by presents and money; and many of them, not satisfied with this, attended it in person, being determined, if possible, to breathe their last in sight of that city where their Saviour had died for them. Women themselves, concealing their sex under the disguise of armour, attended the camp; and commonly forgot their duty still more, by prostituting themselves to the army. The greatest criminals were forward in a service which they considered as an expiation for all crimes; and the most enormous disorders were, during the course of these expeditions, committed by men inured to wickedness, encouraged by example, and impelled by necessity. The multitude of adventurers soon became so great, that their more sagacious leaders became apprehensive lest the greatness of the armament would be the cause of its own disappointment. For this reason they permitted an undisciplined multitude, computed at 300,000 men, to go before them under the command of Peter

the hermit, and Gautier or Walter, surnamed the *moneyless*, from his being a soldier of fortune. These took the road towards Constantinople through Hungary and Bulgaria; and, trusting that heaven, by supernatural assistance, would supply all their necessities, they made no provision for subsistence in their march. They soon found themselves obliged to obtain by plunder what they vainly expected from miracles; and the enraged inhabitants of the countries through which they passed, attacked the disorderly multitude, and slaughtered them without resistance. The more disciplined armies followed after; and, passing the straits at Constantinople, they were mustered in the plains of Asia, and amounted in the whole to 700,000 men.

This rage for conquering the Holy Land did not cease with this expedition. It continued for very near two centuries, and eight different croisades were set on foot, one after another. The first was in the year 1096, as already observed. The princes engaged in it were, Hugo, count of Vermandois, brother to Philip I. king of France; Robert, duke of Normandy; Robert earl of Flanders; Raimond, earl of Toulouse and St Giles; Godfrey of Bouillon, duke of Lorraine, with his brothers Baldwin and Eustace; Stephen, earl of Chartres and Blois; Hugo, count of St Paul; with a great number of other lords. The general rendezvous was at Constantinople. In this expedition, the famous Godfrey besieged and took the city of Nice. The city of Jerusalem was taken by the confederated army, and Godfrey chosen king. The Christians gained the famous battle of Ascalon against the foldan of Egypt; which put an end to the first croisade.

The second croisade, in the year 1144, was headed by the emperor Conrad III. and Louis VII. king of France. The emperor's army was either destroyed by the enemy, or perished through the treachery of Manuel the Greek emperor; and the second army, through the unfaithfulness of the Christians of Syria, was forced to break up the siege of Damascus.

The third croisade, in the year 1188, immediately followed the taking of Jerusalem by Saladin the foldan of Egypt. The princes engaged in this expedition were, the emperor Frederic Barbarossa; Frederic duke of Suabia, his second son; Leopald duke of Austria; Berthold duke of Moravia; Herman marquis of Baden; the counts of Nassau, Thuringia, Missen, and Holland; and above 60 other princes of the empire; with the bishops of Besançon, Cambrai, Munster, Osnaburg, Missen, Passau, Vissburg, and several others. In this expedition, the emperor Frederic defeated the foldan of Iconium: his son Frederic, joined by Guy Lusignon king of Jerusalem, in vain endeavoured to take Acre or Ptolemais. During which transactions, Philip Augustus king of France, and Richard II. king of England, joined the croisade; by which means the Christian army consisted of 300,000 fighting men: but great disputes happening between the kings of France and England, the former quitted the Holy Land, and Richard concluded a peace with Saladin.

The fourth croisade was undertaken, in the year 1195, by the emperor Henry VI. after Saladin's death. In this expedition the Christians gained several battles

against

croisade.

Croisade.

Croisade.

against the infidels, took a great many towns, and were in the way of success, when the death of the emperor obliged them to quit the Holy Land, and return into Germany.

The fifth croisade was published, by order of pope Innocent III. in 1198. Those engaged in it made fruitless efforts for the recovery of the Holy Land: for, though John de Neule, who commanded the fleet equipped in Flanders, arrived at Ptolemais a little after Simon of Montfort, Renard of Dampierre, and others; yet the plague destroying many of them, and the rest either returning or engaging in the petty quarrels of the Christian princes, there was nothing done; so that the foldan of Aleppo easily defeated their troops in 1204.

The sixth croisade began in 1228; in which the Christians took the town of Damietta, but were forced to surrender it again. The next year the emperor Frederic made peace with the foldan for 10 years. About 1240, Richard earl of Cornwall, and brother to Henry III. king of England, arrived in Palestine at the head of the English croisade; but finding it most advantageous to conclude a peace, he embarked, and steered towards Italy. In 1244, the Karasmians being driven out of Persia by the Tartars, broke into Palestine, and gave the Christians a general defeat near Gaza.

The seventh croisade was headed by St Lewis, in the year 1249, who took the town of Damietta: but a sickness happening in the Christian army, the king endeavoured a retreat; in which being pursued by the infidels, most of his army were miserably butchered, and himself and the nobility taken prisoners. Then a truce was agreed upon for 10 years, and the king and lords set at liberty.

The eight croisade, in 1270, was headed by the same prince, who made himself master of the port and castle of Carthage in Africa; but dying in a short time, he left his army in a very ill condition. Soon after, the king of Sicily coming up with a good fleet, and joining Philip the Bold, son and successor of Lewis the king of Tunis, after several engagements with the Christians, in which he was always worsted, desired peace, which was granted upon conditions advantageous to the Christians: after which both princes embarked for their own kingdoms. Prince Edward of England, who arrived at Tunis at the time of this treaty, sailed towards Ptolemais, where he landed with a small body of 300 English and French, and hindered Bendocdar from laying siege to Ptolemais: but being obliged to quit the Holy Land to take possession of the crown of England, this croisade ended without contributing any thing to the recovery of the Holy land. In 1291, the town of Acre, or Ptolemais, was taken and plundered by the foldan of Egypt, and the Christians quite driven out of Syria. There has been no croisade since that time, though several popes have attempted to stir up the Christians to such an undertaking; particularly Nicholas IV. in 1292, and Clement V. in 1311.

Though these croisades were effects of the most absurd superstition, they tended greatly to promote the good of Europe. Multitudes indeed were destroyed. M. Voltaire computes the people who perished in the different expeditions at upwards of two millions. Many there were, however, who returned; and these, ha-

Croisade.

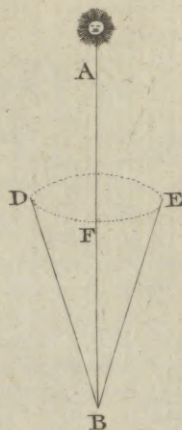
ving converted so long with people who lived in a much more magnificent way than themselves, began to entertain some taste for a refined and polished way of life. Thus the barbarism in which Europe had been so long immersed, began to wear off soon after this time. The princes also who remained at home, found means to avail themselves of the frenzy of the people. By the absence of such numbers of restless and martial adventurers, peace was established in their dominions. They also took the opportunity of annexing to their crown many considerable siefs, either by purchase, or by the extinction of the heirs; and thus the mischiefs which must always attend feudal governments were considerably lessened.

With regard to the bad success of the croisaders, it was scarce possible that any other thing could happen them. The emperors of Constantinople, instead of assisting, did all in their power to disconcert their schemes. They were jealous, and not without reason, of such an inundation of barbarians. Yet, had they considered their true interest, they would rather have assisted them, or at least stood neuter, than entered into alliances with the Turks. They followed the latter method, however, and were often of very great disservice to the western adventurers, which at last occasioned the loss of their city*. But the worst enemies the croisaders had, were their own internal

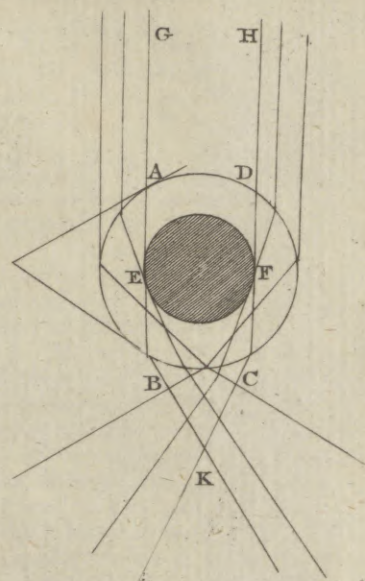
feuds and dissensions. They neither could agree while marching together in armies with a view to conquest, nor could they unite their conquests under one government after they had made them. They set up three small states, one at Jerusalem, another at Antioch, and another at Edeffa. These states, instead of assisting, made war upon each other, and on the Greek emperors; and thus became an easy prey to the common enemy. The horrid cruelties they committed also were such as must have inspired the Turks with the most invincible hatred against them, and made them resist with the greatest obstinacy. They were such as could have been committed only by barbarians inflamed with religious enthusiasm. When Jerusalem was taken, not only the numerous garrison were put to the sword, but the inhabitants were massacred without mercy and without distinction. No age nor sex was spared, not even sucking children. According to Voltaire, some Christians, who had been suffered by the Turks to live in that city, led the conquerors into the most private caves where women had concealed themselves with their children, and not one of them was suffered to escape. What eminently shows the enthusiasm by which these conquerors were animated, is their behaviour after this terrible slaughter. They marched over heaps of dead bodies towards the holy sepulchre; and while their hands were yet polluted with the blood of so many innocent persons, sung anthems to the common Saviour of mankind. Nay, so far did their religious enthusiasm overcome their fury, that these ferocious conquerors now burst into tears. If the absurdity and wickedness of this conduct can be exceeded by any thing, it must be by what follows. In the year 1204, the frenzy of croisading seized the children, who are ever ready to imitate what they see their parents engage themselves in. Their childish folly was encouraged by the monks and schoolmasters; and thousands of those innocents were conducted from

* See Constantinople, n° 144.

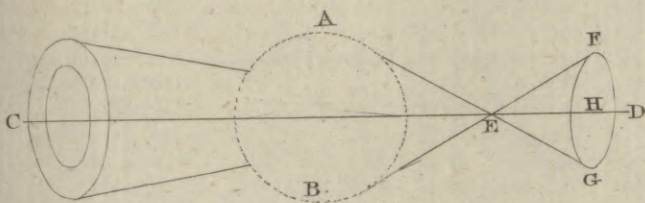
N^o 2.



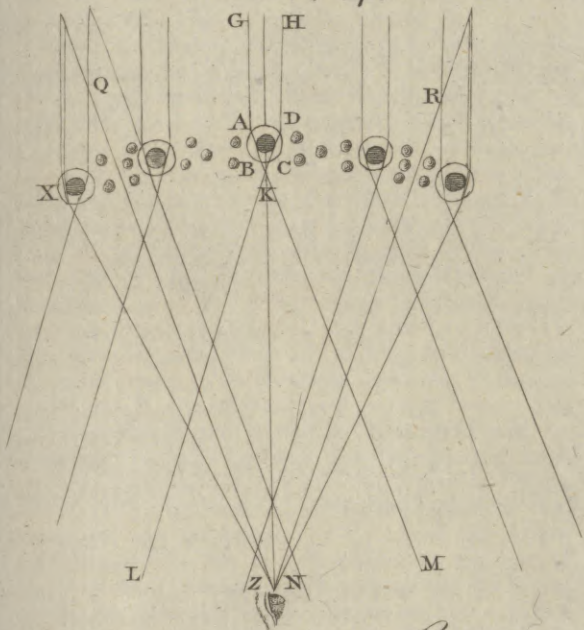
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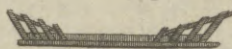
N^o 1.



N^o 4.



Cradle.



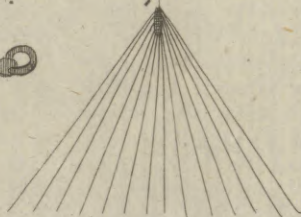
Cromlech.



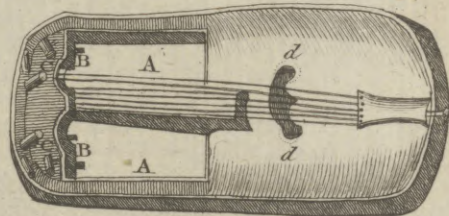
Creper.



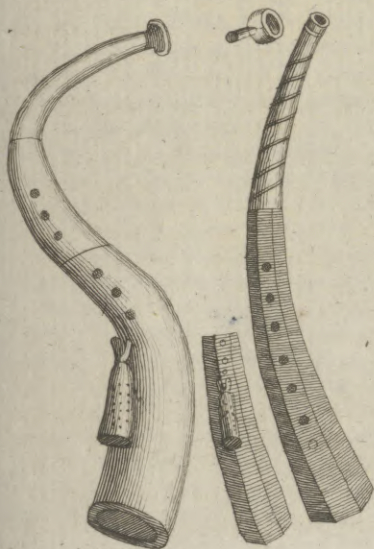
Crowfoot.



Crowth.



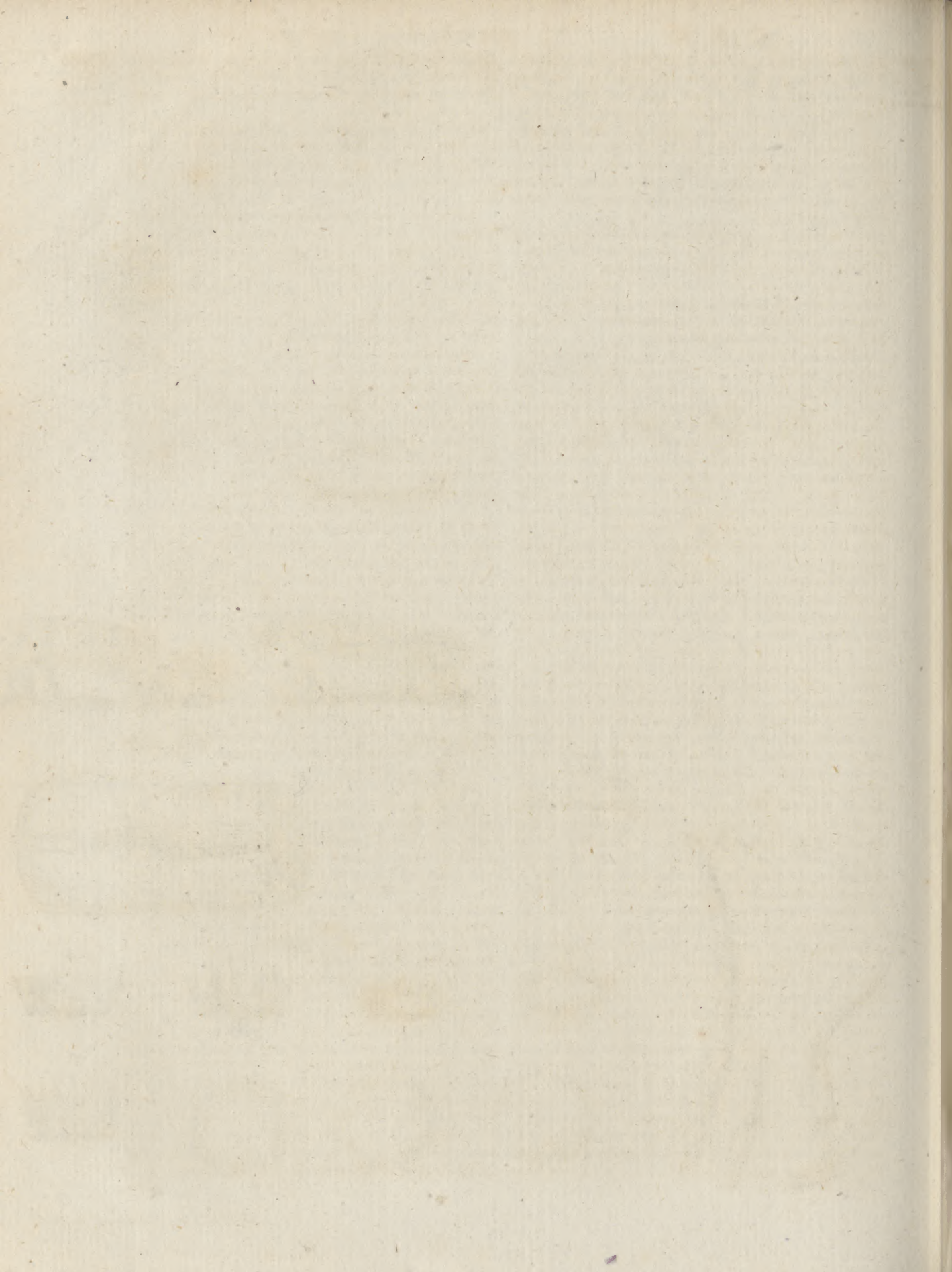
Cornett.



Crown.



A Bell Pin, W. A. Sculptor fecit.



Croises
||
Croix.

the houses of their parents on the faith of these words, "Out of the mouth of babes and sucklings hast thou perfected praise." Their base conductors sold a part of them to the Turks, and the rest perished miserably.

CROISES, or CROIZES, in English antiquity, pilgrims bound for the Holy Land, or such as had been there; so called from a badge they wore in imitation of a cross. The knights of St John of Jerusalem, created for the defence and protection of pilgrims, were particularly called *croises*.

CROISIERS, a religious order founded in honour of the invention or discovery of the cross by the empress Helena. They are dispersed in several parts of Europe, particularly in the Low Countries, France, and Bohemia, those in Italy being at present suppressed. These religious follow the rule of St Augustine. They had in England the name of *crouched friars*.

CROIX (FRANCIS PETIS DE LA), secretary and interpreter to the king of France in the Turkish and Arabic languages, died November 4th 1695, in his 73d year; after having executed this employment for the space of 44 years. And it appears, that he executed it with as much integrity as abilities: for, when the Algerines sought for peace of Louis XIV. conditions were offered, by which they were required to reimburse to this monarch 600,000 franks. The terms being thought exorbitant, they had recourse to stratagem: and they offered a large sum to La Croix, who was the interpreter of all that passed, if he would put into the treaty "crowns of Tripoli," instead of "French crowns;" which would have made to the Algerines a difference of more than 100,000 livres. But the integrity of the interpreter triumphed over the temptation; which however was the greater, as it was next to impossible he should be discovered. Besides the Turkish and the Arabic, the Persian and the Tartarian, he also understood the Ethiopian and Armenian languages. He is well known to the learned world by many works. He translated the "History of France" into the Turkish language. He digested the three volumes of "Voyages into the East Indies" of M. Thevenot. He made an accurate catalogue of all the Turkish and Persian books which are in the king's library. He composed two complete Dictionaries for the French and Turkish languages: and, when he was dying, he was about to present the world with the history of Genghiscan. He undertook this history by the order of M. Colbert: for this minister, altogether intent upon aggrandizing his master, was accustomed every week to call together, either in the king's library or his own, certain of the learned, whom, according as they excelled in their several departments in literature, he constantly set to work. This history, which cost La Croix more than ten years labour, is useful, not only to the learned who are curious to know past events, or to geographers who had hitherto been greatly ignorant of Grand Tartary, but likewise to all who trade to China, Persia, or other eastern parts of the world. There is a good map of northern Asia drawn by M. de l'Isle, accompanying the work; which M. Petis de la Croix, the author's son, not only revised, but, to render it more curious, added to it an abridgement of the lives of all those authors from whom it was extracted. It was translated into English, and published at London, 1722, 8vo.

VOL. V. Part II.

CROMARTY, the capital of the shire of Cromarty, in Scotland, with an excellent and safe harbour capable of containing the greatest fleets. W. Long. 3. 40. N. Lat. 57. 54.

CROMLECH, in British antiquities, are huge, broad, flat stones, raised upon other stones set up on end for that purpose. They are common in ANGLESEY; under which article a very large one is described. See Plate CL.

These monuments are spoken of largely by Mr Rowland, by Dr Borlase, and by Wormius, under the name or *Ara* or altar. Mr Rowland, however, is divided in his opinion; for he partly inclines to the notion of their having been altars, partly to their having been sepulchres: he supposes them to have been originally tombs, but that in after times sacrifices were performed upon them to the heroes deposited within. Mr Keiller preserves an account of King Harold having been interred beneath a tomb of this kind in Denmark, and Mr Wright discovered in Ireland a skeleton deposited under one of them. The great similarity of the monuments throughout the north, Mr Pennant observes, evinces the same religion to have been spread in every part, perhaps with some slight deviations. Many of these monuments are both British and Danish; for we find them where the Danes never penetrated.

The cromlech, or cromleli, chiefly differs from the *KIST-VAEN*, in not being closed up at the end and sides, that is, in not so much partaking of the chest-like figure; it is also generally of larger dimensions, and sometimes consists of a greater number of stones: the terms *cromleli* and *kist-vaen* are however indiscriminately used for the same monument. The term *cromlech* is by some derived from the Armoric word *crum*, "crooked or bowing," and *leli* "stone," alluding to the reverence which persons paid to them by bowing. Rowland derives it from the Hebrew words *carem-luach*, signifying a "devoted or consecrated stone." They are called by the vulgar *coetne Arthur*, or *Arthur's quoits*, it being a custom in Wales as well as Cornwall to ascribe all great or wonderful objects to prince Arthur, the hero of those countries.

CROMWELL (Thomas), earl of Essex, was the son of a blacksmith at Putney, and born in 1498. Without a liberal education, but endowed with a strong natural genius, he considered travelling as the proper means of improving his understanding; and to this early token of his sound judgment he stood indebted for the high rank and distinguished honours he afterwards enjoyed. He became by degrees the confidential favourite and prime minister of Henry VIII.; and from the moment he acquired any authority in the cabinet, he employed it in promoting the reformation, to his zeal for which he became a victim; for, the more firmly to secure the Protestant cause, he contrived to marry the king to Ann of Cleves, whose friends were all Lutherans. Unfortunately Henry took a disgust to this lady, which brought on Cromwell's ruin; the king, with his usual cruelty and caprice, taking this opportunity to sacrifice this minister to the Roman Catholic party, to whom he seemed desirous of reconciling himself as soon as he had Catharine Howard in view. Cromwell was a great politician, and a good man; but, like most statesmen, was guilty of great errors. In his zeal for the new religion,

Cromarty
||
Cromwell.

Cromwell. gion, he had introduced the unjustifiable mode of attainder in cases of treason and heresy; and his enemies, who were numerous (consisting of two classes, the ancient nobility and gentry, who were enraged to see the highest honours bestowed on a man of his mean extraction, and the Roman Catholics, who detested him), having preferred many complaints against him, availed themselves of his own law. He was attainted of treason and heresy, convicted unheard, and beheaded in 1540. He was the chief instrument of the suppression of the abbeyes and monasteries, and of the destruction of images and relics; to him also we are indebted for the institution of parish-registers of births, marriages, and burials.

CROMWELL (Oliver), styled *Lord Protector* of the commonwealth of England, one of the most extraordinary personages mentioned in history, was the son of Mr Robert Cromwell of Hinchinbrooke in the county of Huntingdon. His ancestors were of very honourable extraction; but no ways related to Thomas Cromwell earl of Essex, the prime minister and favourite of Henry VIII. He was born in the parish of St John, Huntingdon, where his father mostly lived, on the 24th or 25th of April 1599, and educated at the free school of that town. Little is known concerning him in his younger years, or indeed concerning his behaviour in private life. It is, however, related by authors of unsuspected veracity, that when at school he gave many signs of a very turbulent and restless disposition. He is also said from his early years to have been subject to the hypochondriac disorder, and to many deceptions of the imagination. He had a very remarkable one while at school. It happened in the day time, when he was lying melancholy upon his back in bed. A spectre, as he thought, approached him, and told him that he should be the greatest man in the kingdom. His father, being informed of this, was very angry, and desired his master to correct him severely. This, however, produced no effect. Oliver persisted in the truth of his story, and would sometimes mention it though his uncle told him "it was too traitorous to be repeated."—From this school Oliver was removed to Sidney-college in Cambridge, where he was admitted in 1616. His progress in his studies is uncertain; but he spent much time in playing at foot-ball, cricket, and other robust exercises, at which he was very expert. His father dying after he had been about two years at college, Cromwell returned home; but the irregularity of his life gave such offence to his mother, that, by the advice of some friends, she sent him to London, and placed him in Lincoln's-inn. This expedient by no means answered the purpose; her son gave himself up to gaming, wine, and women, so that he quickly dissipated all that was left him by his father. This dissipation, however, could be but of very short continuance; for he was married, before he was 21 years of age, to Elizabeth daughter of Sir James Bouchier of Essex. Soon after his marriage he returned to the country, where he led a very grave and sober life. This sudden reformation has been ascribed to his falling in with the Puritans; but it is certain, that Mr Cromwell continued then, and for some time after, a zealous member of the church of England, and formed a close friendship with several eminent divines.

Cromwell. He continued at Huntingdon where he settled after his marriage, till an estate of between L. 400 and L. 500 *per annum* devolved to him by the death of his uncle Sir Thomas Stuart. This induced him to remove to the idle of Ely where the estate lay, and here he embraced the puritanical doctrines. He was elected a member of the third parliament of Charles I. which met on the 20th of January 1628; and was a member of the committee for religion, where he distinguished himself by his zeal against popery. After the dissolution of that parliament, he returned again into the country, where he continued to express much concern for religion, to keep company with silenced ministers, and to invite them often to lectures and sermons at his house. Thus he brought his affairs again into a very indifferent situation; so that, by way of repairing the breaches he made in his fortune, he took a farm at St Ives, which he kept five years. But this scheme succeeded so ill, that he was obliged to give it up; and at last, chagrined with his disappointments, and made uneasy by the treatment his party at that time received, he formed a design of going over to New-England. In this, however, he was disappointed; the king issued out a proclamation against all such emigrations, and Cromwell was obliged to remain in England against his will.

In 1638, Cromwell had first an opportunity of getting himself publicly taken notice of. The earl of Bedford, and some other persons of high rank, who had estates in the fen country, were very desirous of having it better drained; and though one project of this sort had failed, they set on foot another, got it countenanced by royal authority, and settled a part of the profits upon the crown. This, though really intended for a public benefit, was opposed as injurious to private property: and at the head of the opposers was Mr Oliver Cromwell, who had considerable influence in these parts. The vigour he showed on this occasion recommended him to his friend and relation Mr Hampden; who afterwards characterized him in parliament, as a person capable of contriving and conducting great designs. But for all this he was not very successful in his opposition; and as his private affairs were still declining, he was in very necessitous circumstances at the approach of the long parliament. In this critical situation he got himself elected member of parliament in the following manner. In the puritanical meetings which he constantly frequented, Oliver had most eminently distinguished himself by his *gifts* of praying, preaching, and expounding. At one of these meetings, he met with one Richard Tims, a tradesman of Cambridge. This man was so much taken with Oliver, that he took it into his head to attempt getting him chosen burgess for the approaching parliament. Being himself one of the common-council, Tims imagined this design might be brought about; and with this view went to Mr Wildbore a relation of Cromwell's, to whom he communicated his intention. Wildbore agreed as to the fitness of the person; but told him the design was impracticable, because Oliver was not a freeman. Tims next addressed one Evett on the same subject, who also made the same objection. He recollected, however, that the mayor had a freedom to bestow, and a scheme was immediately laid for securing this freedom to Cromwell. On application

Cromwell. plication to the mayor, however, he told them that the freedom was already disposed of to another; but this objection being obviated by promising that person a freedom from the town, the mayor being informed that Cromwell was a man of great fortune, signified his intention of bestowing the freedom upon him. Our hero, being informed of the good offices of his friends, made his appearance in the court dressed in scarlet richly laced with gold, and having provided plenty of claret and sweatmeats, they were so freely circulated among the corporation, that Mr Mayor's freeman was unanimously declared to be a very civil worthy gentleman. When the election came on, the mayor discovered his mistake, but it was now too late; the party among the burgeses was strong enough to choose him, and accordingly did so at the election next year.

When Cromwell first came into parliament, he affected great plainness, and even carelessness, in his dress. His attention to farming had entirely rusticated him, so that he made a very uncouth appearance. "Who (says Dr South) that had beheld such a bankrupt, beggarly fellow, as Cromwell, first entering the parliament house, with a thread-bare torn coat and greasy hat, and perhaps neither of them paid for, could have suspected, that, in the space of so few years, he should, by the murder of one king, and the banishment of another, ascend the throne, be invested with the royal robes, and want nothing of the state of a king but the changing his hat into a crown?" Cromwell was very active in promoting the famous *Remonstrance**, which in reality laid the foundation of the civil war. He declared afterwards to Lord Falkland, that if the remonstrance had not been carried, he designed to have converted the small remains of his estate into ready money the next day, and to have left the kingdom by the first opportunity. His firmness on this occasion so effectually recommended him to Hampden, Pym, and the other leaders of the popular party, that they took him into all their councils; and here he acquired that clear insight into things, and that knowledge of men, of which he afterwards made such prodigious use. His exploits during the civil war, his murder of the king, and usurpation of the kingdom, are related under the article BRITAIN, n^o 139, — 188.

With regard to the character of Cromwell, Mr Hume expresses himself as follows: "The writers attached to this wonderful person make his character, with regard to abilities, bear the air of the most extravagant panegyric: his enemies form such a representation of his moral qualities as resembles the most virulent invective. Both of them, it must be confessed, are supported by such striking circumstances in his fortune and conduct, as bestow on their representation a great air of probability. 'What can be more extraordinary (it is said), than that a person of private birth and education, no fortune, no eminent qualities of body, which have sometimes, nor shining qualities of mind, which have often, raised men to the highest dignities, should have the courage to attempt, and the abilities to execute, so great a design as the subverting one of the most ancient as well as best established monarchies in the world? That he should have the power and boldness to put his prince and

master to an open and infamous death? should banish that numerous and strongly allied family? Cover all these temerities under a seeming obedience to a parliament, in whose service he pretended to be retained? Trample too upon that parliament in their turn, and scornfully expel them as soon as they gave him ground of dissatisfaction? Erect in their place the dominion of the saints, and give reality to the most visionary idea which the heated imagination of any fanatic was ever able to entertain? Suppress again that monster in its infancy, and openly set himself up above all things that ever were called *sovereign* in England? Overcome first all his enemies by arms, and all his friends afterwards by artifice? Serve all parties patiently for a while, and afterwards command them victoriously at last? Over-run each corner of the three nations, and subdue with equal facility both the riches of the south, and the poverty of the north? Be feared and courted by all princes, and adopted a brother to the gods of the earth? Call together parliaments with a word of his pen, and scatter them again by the breath of his mouth? Reduce to subjection a warlike and discontented nation by means of a mutinous army? Command a mutinous army by means of seditious and faction officers? Be humbly and daily petitioned, that he would be pleased, at the rate of millions a-year, to be hired as master of those who had formerly hired him for their servant? Have the estates and lives of three nations as much at his disposal as was once the little inheritance of his father, and be as noble and liberal in the spending of them? And, lastly, (for there is no end of enumerating every particular of his glory), with one word bequeath all this power and splendor to his posterity? Die possessed of peace at home, and triumph abroad? Be buried among kings, and with more than regal solemnity? And leave a name behind him not to be extinguished but with the whole world; which, as it was too little for his praise, so it might have been for his conquests, if the short line of his mortal life could have stretched out to the extent of his immortal designs?"

"My intention is, not to disfigure this picture drawn by so masterly a hand: I shall only endeavour to remove from it somewhat of the marvellous; a circumstance which, on all occasions, gives much ground for doubt and suspicion. It seems to me that the circumstance of Cromwell's life in which his abilities are principally discovered, is his rising, from a private station, in opposition to so many rivals, so much advanced before him, to a high command and authority in the army. His great courage, his signal military talents, his eminent dexterity and address, were all requisite for this important acquisition. Yet will not this promotion appear the effect of supernatural abilities, when we consider that Fairfax himself, a private gentleman, who had not the advantage of a seat in parliament, had, through the same steps, attained even to a superior rank; and, if endued with common capacity and penetration, had been able to retain it. To incite such an army to rebellion against the parliament, required no uncommon art or industry: to have kept them in obedience had been the more difficult enterprize. When the breach was once formed between the military and civil powers, a supreme and absolute authority, from that moment, is devolved on

* See *Bri-
tain*, n^o 107.

Cromwell. the general; and if he is afterwards pleased to employ artifice or policy, it may be regarded on most occasions as great condescension, if not as superfluous caution. That Cromwell was ever able really to blind or over-reach either the king or the republicans, does not appear: as they possessed no means of resisting the force under his command, they were glad to temporize with him; and, by seeming to be deceived, to wait for an opportunity of freeing themselves from his dominion. If he seduced the military fanatics, it is to be considered, that their interest and his evidently concurred; that their ignorance and low education exposed them to the grossest imposition; and that he himself was at bottom as frantic an enthusiast as the worst of them; and, in order to obtain their confidence, needed but to display those vulgar and ridiculous habits which he had early acquired, and on which he set so high a value. An army is so forcible, and at the same time so coarse a weapon, that any hand which wields it, may, without much dexterity, perform any operation, and attain any ascendant in human society.

“The domestic administration of Cromwell, though it discovers great ability, was conducted without any plan either of liberty or arbitrary power: perhaps his difficult situation admitted of neither. His foreign enterprises, though full of intrepidity, were pernicious to national interest; and seem more the result of impetuous fury or narrow prejudices, than of cool foresight and deliberation. An eminent personage, however, he was in many respects, and even a superior genius; but unequal and irregular in his operations: and, though not defective in any talent except that of elocution, the abilities which in him were most admirable, and which contributed most to his marvellous success, were the magnanimous resolution of his enterprises, and his peculiar dexterity in discovering the characters and practising on the weaknesses of mankind.

“If we survey the moral character of Cromwell, with that indulgence which is due to the blindness and infirmities of the human species, we shall not be inclined to load his memory with such violent reproaches as those which his enemies usually throw upon it. Amidst the passions and prejudices of that time, that he should prefer the parliamentary to the royal cause, will not appear extraordinary; since even at present many men of sense and knowledge are disposed to think, that the question, with regard to the justice of the quarrel, may be regarded as doubtful and ambiguous. The murder of the king, the most atrocious of all his actions, was to him covered under a mighty cloud of republican and fanatical illusions; and it is not impossible but he might believe it, as many others did, the most meritorious action which he could perform. His subsequent usurpation was the effect of necessity, as well as of ambition; nor is it easy to see how the various factions could at that time have been restrained without a mixture of military and arbitrary authority. The private deportment of Cromwell as a son, a husband, a father, a friend, is exposed to no considerable censure, if it does not rather merit praise. And, upon the whole, his character does not appear more extraordinary and unusual by the mixture of so much absurdity with so much penetration, than by his temper-

ing such violent ambition and such enraged fanaticism with so much regard to justice and humanity.” Cromwell

That Cromwell continued a most complete and bigotted enthusiast to the very last, appears from his behaviour in his last sickness. His disease, which at first was a kind of slow fever, brought on by the cares and anxiety of his mind, soon degenerated into a tertian ague. For about a week the disorder continued without any dangerous symptoms, inasmuch that every other day he walked abroad; but one day after dinner his five physicians coming to wait upon him, one of them having felt his pulse, said that it intermitted. At this Cromwell was surprised, turned pale, fell into a cold sweat, and, when he was almost fainting, ordered himself to be carried to bed; where, by the assistance of cordials, being brought a little to himself, he made his will with respect to his private affairs. The next morning when one of his physicians came to visit him, Cromwell asked him, why he looked so sad? and when answer was made, that so it became every one who had the weighty charge of his life and health upon him, “Ye physicians (says Cromwell), think I shall die: I tell you I shall not die this bout, I am sure of it. Do not you think (said he to the physician, looking more attentively at him), do not think that I am mad: I speak the words of truth upon surer grounds than your Hippocrates or Galen can furnish you with. God Almighty himself hath given that answer, not to my prayers alone, but also to the prayers of those who entertain a stricter commerce and greater interest with him. Go on cheerfully, banishing all sadness from your looks; and deal with me as you would do with a serving man. Ye may have a skill in the nature of things; yet nature can do more than all physicians put together, and God is far more above nature.” As this physician was coming out of the chamber, he accidentally met with another, to whom he expressed his fear that the protector was turning light-headed. But the other informed him that the chaplains, being dispersed the preceding night into different parts of the house, had prayed for the protector’s recovery, and unanimously received for answer that he should recover. Nay, to such a degree of madness did they at last arrive, that, a public fast being kept at Hampton-court, they did not so much pray to God for the protector’s health, as return thanks for the undoubted pledges they had of his recovery. On this account, though the physicians perceived his distemper increasing every hour, they took no notice of his danger, till it became necessary for him to appoint a successor while he had any breath remaining. But being then in a lethargic fit, he answered from the purpose; upon which he was again asked whether he did not name his eldest son Richard? and to this question he answered, Yes. Being then asked where his will was which he had formerly made concerning the heirs of the kingdom; he went to look for it in his closet and other places, but in vain; for somebody had either stole it, or he himself had burnt it. Soon after, he expired, on the 3d of September 1658, aged somewhat more than 59 years and four months. This day of September he had always reckoned to be the most fortunate for him in the whole year. A violent tempest, which immediately succeeded his death, served as a subject of discourse to the vulgar. His partizans, as well as his opponents,

Cromwell. were fond of remarking this event: and each of them endeavoured, by forced inferences, to interpret it as best suited their particular prejudices.

It has been imagined by some, that Oliver Cromwell was poisoned; but for this there seems to be no reasonable foundation. His body was opened by Dr Bates. He found the brain somewhat overcharged with blood, and the lungs a little inflamed; but what he reckoned to have been the principal cause of his disorder was a total degeneracy of the substance of the spleen into a matter resembling the lees of oil. This, he thought, also accounted for the hypochondriac dispositions to which Cromwell had from his infancy been subject. Though the bowels were taken out, and the body filled with spices wrapped in a fourfold core-cloth, put first into a coffin of lead, and then into one of wood, yet the corruption was so great that the humour wrought itself through the whole, and there was a necessity of interring the body before the solemnity of the funeral. A very pompous funeral was ordered at the public expence, and performed from Somerset-house, with a splendor not only equal but superior to that bestowed upon crowned heads. Some have related that his body was deposited in Naseby-field: others, that it was wrapped in lead, and sunk in the deepest part of the Thames, to prevent any insult that might afterwards be offered to it. But it seems beyond doubt that his body was interred at Westminster; as we are informed, that on the order to disinter him after the restoration, his corpse was found in a vault in the middle aisle of Henry VII.'s chapel. In the inside of the coffin, and on the breast of the corpse, was laid a copper plate finely gilt, inclosed in a thin case of lead. On one side of this plate were engraven the arms of England impaled with those of Oliver, and on the reverse the following legend: *Oliverius Protector Reipublicæ Angliæ, Scotiæ, et Hiberniæ, natus 25 Aprilis 1599, inauguratus 16 Decembris 1653, mortuus 3 Septembris ann. 1658, hic situs est.*

Cromwell was of a robust frame of body, and of a manly, though not agreeable aspect. His nose being remarkably red and shining, was often made the subject of ridicule. He left only two sons, Richard and Henry: and three daughters; one married to General Fleetwood, another to Lord Fauconberg, and a third to Lord Rich. His mother lived till after he was protector; and contrary to her orders he buried her with great pomp in Westminster Abbey. She could not be persuaded that ever his power or his person was in safety. At every noise she heard she would exclaim that her son was murdered; and was never satisfied that he was alive if she did not receive frequent visits from him. She was a decent woman; and by her frugality and industry had raised and educated a numerous family upon a small fortune. She had even been obliged to set up a brewery at Huntingdon, which she managed to good advantage. Hence Cromwell, in the investives of that age, is often stigmatized with the name of brewer. Ludlow, by way of insult, mentions the great accession which he would receive to his royal revenues upon his mother's death, who possessed a jointure of 60 pounds a-year upon his estate. She was of a good family, of the name of Stuart; and is by some supposed to have been remotely allied to the royal family.

CROMWELL (Richard), eldest son of Oliver Cromwell, was by his father appointed successor to the protectorship, but very soon deposed by the army*. They discharged his debts, took all the household stuff, plate, &c. gave him a protection for six months, and so he retired. He was by no means qualified to support the station gained by the aspiring talents of his father. He was of a moderate temper, and untainted with that fanatical spirit which his father had so successfully cultivated. On the restoration he went abroad; but returned in 1680 under the assumed name of Clark, and settled at Cheshunt in Hertfordshire, where he lived privately, and died in 1712, aged 86.

CRONENBURG, a town of Germany, in the circle of the upper Rhine, and in the landgravate of Hesse Cassel, with a strong castle. It is seated at the foot of a high mountain, on a fertile soil, and is surrounded with a double wall. E. Long. 8. 15. N. Lat. 50. 15.

CRONENBURG, a strong fortress of Denmark, in the isle of Zealand, at the entrance of the Sound, where the Danes take toll of such ships as are bound for the Baltic. It was very richly furnished, but pillaged by the Swedes in 1658, who took away the furniture, among which were some statues of massy silver. It is built upon piles. E. Long. 12. 50. N. Lat. 56. 0.

CRONIUS, in chronology, the ancient name of the Athenian month Hecatombæon; which was the first of their year, and answered to the latter part of our June and beginning of July.—There were feasts called *Cronienes* celebrated at Athens in this month, in honour of Saturn, answering to the Saturnalia of the Romans.

CRONSLLOT. See CRONSTADT.

CRONSTADT, a sea-port town of Russia, where the greatest part of the navy is situated. It stands upon the island of Retufari in the Gulf of Finland; and was founded by Peter I. as being provided with the safest harbour in these parts, and as forming a strong bulwark by sea for the defence of the new metropolis. The only passage by which ships of burden can approach Petersburg lies on the south side of Retufari, through a narrow channel; one side whereof is commanded by Cronstadt, and the opposite by Cronslot and the citadel. Cronslot, which stands upon a small island of sand, is a circular wooden building, and surrounded with fortifications of wood that jut into the water. It contains a garrison of 100 men. The citadel is another small wooden fortress, constructed also upon an adjacent sand-bank, and capable of holding about 30 soldiers. All large vessels must sail between Cronstadt and these two fortresses exposed to the fire of the opposite batteries; for the other parts of the gulf are only from one to eleven feet in depth. All these fortifications were, at the time of their construction, esteemed places of considerable strength; but now they derive their consequence more from their past importance than from any resistance they could make against the attack of a powerful fleet.

Cronstadt is built upon the south-eastern extremity of the island, and is defended towards the sea by wooden piers projecting into the water, and towards the land by ramparts and bastions. It is a very straggling place; and occupies, like all the Russian towns, a larger space of ground than the number of habitations.

Cronstadt
||
Crofs.

tions seem to require; the houses are mostly of wood, excepting a few fronting the harbour, which are of brick stuccoed white. Among the latter are the imperial hospital for sailors, the barracks, and the academy for marines and officers of the navy. That feminary usually contains between three and four hundred cadets, who are clothed, maintained, and taught at the expence of the crown. They are admitted at the age of five, and are suffered to remain until they reach their seventeenth year. They learn accounts, mathematics, drawing, fortification, and navigation; and have masters in the French, German, English, and Swedish languages. They are trained to naval affairs, and make an annual cruise in the Baltic as far as Revel.—Cronstadt has a separate haven appropriated to the men of war, and another to merchant ships. Close to the haven for merchant ships is a canal and several dry docks, begun in 1719 by Peter I. for the purpose of refitting the men of war. This useful work was neglected under his successors, and was not completed until the reign of his daughter Elizabeth. It has been still further beautified and improved by the present empress; and is now applied for building as well as careening ships of the line. At the extremity of these docks is a great reservoir, 568 feet in length, which contains water sufficient, and half the quantity over, to supply all the docks; which is pumped into it by means of a fire engine, the diameter of whose cylinder is six feet. The length of this work, from the beginning of the canal to the end of the last dock, is 4221 feet. The sides of the docks are faced with stone, and the bottom is paved with granite. They are 40 feet deep and 105 broad; and are capable of containing nine men of war upon the stocks.

CRONSTAT, a town of Transylvania, near the frontiers of Moldavia, subject to the house of Austria. E. Long. 25. o. N. Lat. 47. o.

CROP, the highest part or end of any thing cut off. It is particularly used for the corn gathered off a field in harvest. See AGRICULTURE, Part II.

CROSIER, or CROZIER, a shepherds crook: a symbol of pastoral authority, consisting of a gold or silver staff, crooked at the top, carried occasionally before bishops and abbots, and held in the hand when they give the solemn benedictions. The custom of bearing a pastoral staff before bishops is very ancient, as appears from the life of St Cæsarea of Arles, who lived about the year 500. Among the Greeks none but the patriarchs had a right to the crosier. The crosiers were at first no more than simple wooden staves in form of a T, used to rest and lean upon. By degrees they were made longer; and at length arrived to the form we now see them of. Regular abbots are allowed to officiate with a mitre and crosier.

CROSIER, in astronomy, four stars in the southern hemisphere, in the form of a cross, serving those who sail in south latitudes to find the antarctic pole.

CROSLET, in heraldry, is when a cross is crossed again at a small distance from each of the ends. Upton says it is not so often borne by itself in arms as other crosses are, but often in diminutives, that is, in small crosslets scattered about the field. See HERALDRY.

CROSS, a gibbet made with two pieces of wood placed crosswise, whether they cross with right angles

at the top like a T, or in the middle of their length like an X. The cross to which our Saviour was fastened, and on which he died, was of the former kind; being thus represented by old monuments, coins, and crosses; and St Jerom compares it to a bird flying, a man swimming, or praying with his arms extended. The punishment of the cross was common among the Syrians, Egyptians, Persians, Africans, Greeks, Romans, and Jews.

The death of the cross was the most dreadful of all others, both for the shame and pain of it; and so scandalous, that it was inflicted as the last mark of detestation upon the vilest of people. It was the punishment of robbers and murderers, provided that they were slaves too; but otherwise, if they were free, and had the privileges of the city of Rome, this was then thought a prostitution of that honour, and too infamous a punishment for such a one, let his crimes be what they would.

The Mosaic law ordained, that the persons executed should not be left upon the tree after sun-set, because he that is hanged in this manner is accursed of God. Deut. xxi. 22. The Jews believe, that the souls of those who remain upon the gibbet, and without burial, enjoy no peace, and receive no benefit from the prayers of other people; but wander up and down till their bodies are buried: which agrees with the notions that the Greeks and Romans had of this matter, as may be seen in *Hom. Il. 4.* and *Virg. Aeneid. 6.*

The form of a cross being such as has been already described, the body of the criminal was fastened to the upright piece by nailing the feet to it, and on the other transverse piece generally by nailing the hands on each side. Now, because these parts of the body, being the instruments of action and motion, are provided by nature with a much greater quantity of nerves than others have occasion for; and because all sensation is performed by the spirit contained in these nerves; it will follow, as Stanhope observes, that wherever they abound, the sense of pain must needs in proportion be more quick and tender.

The Jews confess, that indeed they crucified people in their nation, but deny that they inflicted this punishment upon any one alive. They first put them to death, and then fastened them to the cross either by the hands or neck. But there are indisputable proofs of their crucifying men frequently alive. The worshippers of Baal-peor and the king of Ai were hung up alive; as were also the descendants of Saul, who were put into the hands of the Gibeonites, 2 Sam. xxi. 9.

Before crucifixion the criminal was generally scourged with cords: sometimes little bones, or pieces of bones, were tied to these scourges, so that the condemned person might suffer more severely. It was also a custom, that he who was to be crucified should bear his own cross to the place of execution. After this manner we find Christ was compelled to bear his own cross; and as he sunk under the burden, Simon the Cyrenian was constrained to bear it after him and with him. But whereas it is generally supposed that our Lord bore the whole cross, *i. e.* the long and transverse part both, this seems to be a thing impossible; and therefore Lipsius (in his treatise *De Supplicio Crucis*) has set the matter in a true light, when he tells us that

ross. Jesus only carried the transverse beam; because the long beam, or the body of the cross, was either fixed in the ground before, or made ready to be set up as soon as the prisoner came: and from hence he observes, that painters are very much mistaken in their description of our Saviour carrying the whole cross.

There were several ways of crucifying; sometimes the criminal was fastened with cords to a tree, sometimes he was crucified with his head downwards. This way St Peter chose out of respect to his master Jesus Christ, not thinking himself worthy to be crucified like him; though the common way of crucifying was by fastening the criminal with nails, one through each hand, and one through both feet, or one through each of them: for this was not always performed in the same manner; the ancients sometimes representing Jesus Christ crucified with four nails, and sometimes with three. The criminal was fixed to the cross quite naked; and in all probability the Saviour of the world was not used with any greater tenderness than others upon whom this punishment was inflicted. The soldiers divided his cloaths among them, and cast lots for his tunic, which is an under garment worn over the flesh like a shirt.

The text of the Gospel shows clearly, that Jesus Christ was fastened to the cross with nails; and the Psalmist (xxxii. 17.) had foretold long before, that they should pierce his hands and his feet: but there are great disputes concerning the number of these nails. The Greeks represent our Saviour as fastened to the cross with four nails; in which particular Gregory of Tours agrees with them, one at each hand and foot. But several are of opinion, that our Saviour's hands and feet were pierced with three nails only, viz. one at each hand, and one through both his feet: and the custom of the Latins is rather for this last opinion; for the generality of the old crucifixes made in the Latin church have only three nails. Nonnus thinks that our Saviour's arms were besides bound fast to the cross with chains; and St Hilary speaks of the cords wherewith he was tied to it.

Sometimes they who were fastened upon the cross lived a good while in that condition. St Andrew is believed to have continued three days alive upon it. Eusebius speaks of certain martyrs in Egypt who were kept upon the cross till they were starved to death. Pilate was amazed at Jesus Christ's dying so soon; because naturally he must have lived longer, if it had not been in his power to have laid down his life and to take it up again. The thighs of the two thieves who were crucified together with our Saviour were broken in order to hasten their death, that their bodies might not remain upon the cross on the Sabbath day (John xix. 31, 32, 33.), and to comply with the law of Moses, which forbids the bodies to be left there after sun-set. But among other nations they were suffered to remain upon the cross a long time. Sometimes they were devoured alive by birds and beasts of prey. Guards were appointed to observe that none of their friends or relations should take them down and bury them. The story of the Ephesian matron and the soldier who was set to guard the cross, is very well known. The Roman soldiers who had crucified Jesus Christ and the two thieves continued near the crosses till the bodies were taken down and buried.

Crosses were usually, in former times, erected on

the tops of houses, by which tenants pretended to claim the privileges of the Templars Hospitaliers, to defend themselves against their rightful lords. This was condemned by the statute Wil. II. c. 37. It was usual also, in those days, to set up crosses in places where the corpse of any of the nobility rested as it was carried to be buried, that *a transcuribus pro ejus animo deprecetur*. Crosses, &c. are forbidden, to be brought into England by 13 Eliz. c. 2. on pain of a *præmunire*, &c.

Invention of the Cross, an ancient feast, solemnized on the third of May, in memory of St Helena's (the mother of Constantine) finding the true cross of Christ deep in the ground on mount Calvary; where she erected a church for the preservation of part of it: the rest being brought to Rome and repositied in the church of the Holy Cross of Jerusalem.

Theodoret mentions the finding of three crosses; that of Jesus Christ and those of the two thieves; and that they distinguished between them by means of a sick woman, who was immediately healed by touching the true cross. The place is said to have been pointed out to her by St Quiriacus, then a Jew, afterwards converted and canonized.

Exaltation of the Cross, an ancient feast, held on the 14th of September, in memory of this, that Heraclitus restored to mount Calvary the true cross in 642, which had been carried off 14 years before by Cosroes king of Persia, upon his taking Jerusalem from the emperor Phocas.

The adoration of the cross appears to have been practised in the ancient church; inasmuch as the Heathens, particularly Julian, reproach the primitive Christians with it. And we do not find that their apologists disclaimed the charge. Mornay, indeed, asserted, that this had been done by St Cyril, but could not support his allegation at the conference of Fontainebleau. St Helena is said to have reduced the adoration of the cross to its just principle, since she adored in the wood, not the wood itself, which had been direct idolatry and Heathenism, but him who had been nailed to this wood. With such modifications some Protestants have been induced to admit the adoration of the cross. John Hufs allowed of the phrase, provided it were expressly added, that the adoration was relative to the person of Christ. But however Roman Catholics may seem to triumph by virtue of such distinction and mitigations, it is well known they have no great place in their own practice. Imbert, the good prior of Gascony, was severely prosecuted in 1683 for telling the people, that in the ceremony of adoring the cross, practised in that church on Good Friday, they were not to adore the wood, but Christ, who was crucified on it. The curate of the parish told them the contrary: it was the wood! the wood! they were to adore. Imbert replied, it was Christ, not the wood: for which he was cited before the archbishop of Bourdeaux, suspended from his functions, and even threatened with chains and perpetual imprisonment. It little availed him to cite the bishop of Meaux's distinction; it was answered, that the church allowed it not.

Cross-Bearer (*port-croix*, *cruciger*), in the Romish church, the chaplain of an archbishop or a primate, who bears a cross before him on solemn occasions.

The pope has the cross borne before him every where; a patriarch any where out of Rome; and pri-

Cros.

mates, metropolitans, and those who have a right to the pallium, throughout their respective jurisdictions.

Gregory XI. forbade all patriarchs and prelates to have it borne in presence of cardinals. A prelate bears a single cross, a patriarch a double cross, and the pope a triple one on their arms.

Cross-Bearers also denote certain officers in the inquisition, who make a vow before the inquisitors or their vicars to defend the Catholic faith, though with the loss of fortune and life. Their business is to provide the inquisitors with necessaries. They were formerly of great use; but in process of time some of their constitutions were changed, and they were called of the penance of St Dominic.

Pectoral Cross, is a cross of gold or silver, or other precious materials, often enriched with diamonds, which the bishops, archbishops, &c. and regular abbesses, wear hanging from the neck.

Order of the Cross, or *Croisade*, an order of ladies instituted in 1668 by the empress Eleonora de Gonzaga, wife of the emperor Leopold; on occasion of the miraculous recovery of a little golden cross, wherein were inclosed two pieces of the true cross, out of the ashes of part of the palace. It seems the fire had burnt the case wherein it was inclosed, and melted the crystal, yet the wood remained untouched.

Maid of the Cross, a community of young women instituted in 1265 at Roze in Picardy, and since dispersed to Paris and other towns. They instruct young persons of their own sex. Some take the three vows of poverty, chastity, and obedience; others retain their liberty. They are under the direction of a superior.

Cross, in heraldry, is defined by Guillim, an ordinary composed of fourfold lines; whereof two are perpendicular, and the other two transverse; for so we must conceive of them, though they be not drawn throughout, but meet by couples, in four right angles, near the fesspoint of the escutcheon. See HERALDRY.

This bearing was first bestowed on such as had performed, or at least undertaken, some service for Christ, and the Christian profession; and is held by divers the most honourable charge in all heraldry. What brought it into such frequent use, was the ancient expeditions into the Holy Land; and the holy war pilgrims, after their pilgrimage, taking the cross for their cognizance; and the ensign of that war being the cross. In those wars, says Mackenzy, the Scots carried St Andrew's cross; the French a cross argent; the English a cross or; the Germans, sable; the Italians, azure; the Spaniards, gules.

St George's Cross, or the red cross, in a field argent, is now the standard of England; that saint being the reputed patron of this nation.

Nor is it only in crosses that the variety is so great; the like is found in many other bearings, and particularly in lions, and the parts of them; whereof Colombiere gives us no less than 96 varieties. Leigh mentions but 46 several crosses; Sylvanus Morgan, 26; Upton, 30; Johannes de Bado Aureo, 12; and so others, whom it is needless to mention. Upton owns he dares not presume to ascertain all the various crosses used in arms, for that they are at present almost innumerable; and therefore he only takes notice of such as he had seen used in his own time.

N^o 95.

Cros.

Cross, in mining, two nicks cut on the superficies of the earth, thus †, which the miners make when they take the ground to dig for ore. This cross gives the miners three days liberty to make and to set on stones. As many of these crosses as the miner makes, so many mears of ground he may have in the vein, provided he set on stones within three days after making his cross or crosses. But if he make but one cross, and a slander-by makes the second, and a stranger makes the third, every one is served with the next mear, according as they have first or last, sooner or later, made their cross or crosses upon the ground.

Cross, in coins, a name given to the right side or face, the other being called the *pile* or *reverse*. It has been a common error, that the reverse was meant by the cross; because at this time, with us, it is marked with figures disposed in that form; but the stamping the head of the prince in these kingdoms on the right side of the coin, was preceded by a general custom of striking on that part the figure of a cross; while the other, called the *pile*, contained the arms, or some other device.

Cross, instead of a signature to a deed, &c. is derived from the Saxon practice of affixing the sign of the cross, whether they could write or not.

Cross-Bar Shot, a bullet with an iron bar passing through it, and standing six or eight inches out at both sides. It is used at sea for destroying the enemy's rigging.

Cross-Bill, in ornithology. See LOXIA.

Cross-Bill, in chancery, is an original bill, by which the defendant prays relief against the plaintiff.

Cross-Bows. See BOWS and ARCHERY.

Cross-grained Stuff, in joinery. Wood is said to be cross-grained, when a bough or branch has shot out of it; for the grain of the branch shooting forward, runs athwart that of the trunk.

In wood well grown this defect is scarce perceivable, except in working; but in deal-boards these boughs make knots. If the bough grew up with the young trunk, instead of a knot is found a curling in the stuff, very sensible under the plane.

Cross-Jack, pronounced *cro-jack*, a sail extended on the lower yard of the mizen-mast, which is hence called the *cross-jack yard*. This sail, however, has generally been found of little service, and is therefore very seldom used.

Cross-Piece, a rail of timber extended over the windlafs of a merchant-ship from the knight-heads to the belfry. It is stuck full of wooden pins, which are used to fasten the running rigging as occasion requires. See WINDLASS.

Cross-Tining, in husbandry, a method of harrowing land, consisting in drawing the harrow up the interval it went down before, and down that which it was drawn up.

Cross-Trees, certain pieces of timber, supported by the cheeks and tressle-trees, at the upper ends of the lower masts, athwart which they are laid to sustain the frame of the top.

Cross-Tree Yard, is a yard standing square, just under the mizen-top, and to it the mizen-top is fastened below. See *Cross-Jack*.

Cross-Wort, in botany. See VALENTIA.

Ordeal of the Cross, a species of trial frequently practised in the days of superstition. See ORDEAL.

CROSS,

Cros
||
Crotalum.

CROSS, an English artist, famous only for copying, in the reigns of Charles I. and Charles II. Of this talent there is a story current, more to the credit of his skill than of his probity. He is said to have been employed by Charles I. to copy the celebrated Madona of Raphael in St Mark's church at Venice; and that, having obtained leave of the state for that purpose, he executed his piece so well as to bring away the original and leave his copy in the place of it. The deception was not detected until it was too late to recover the loss; and this piece was bought in Oliver's time by the Spanish ambassador for his master, who placed it in the Escorial.

CROSSEN, a handsome town of Silesia in Germany, and capital of a principality of the same name. It is situated at the confluence of the rivers Bobar and Oder, in a fertile country abounding in wine and fruits. There is a bridge over the Oder which is fortified. E. Long. 15. 20. N. Lat. 52. 5.

CROSSOSTYLUS, in botany: A genus of the polyandria order belonging to the monadelphia class of plants. The calyx is a quadrangular, quadrifid, turbinated perianthium: the corolla consists of four elliptical petals; the stamina are 20 filiform filaments, almost the length of the calyx; the antheræ small and roundish; the pericarpium an hemispherical, unilocular berry, with many striæ on its upper part; the seeds numerous and roundish.

CROTALARIA, RATTLE-WORT: A genus of the decandria order, belonging to the diadelphia class of plants; and in the natural method ranking under the 32d order, *Papilionacæ*. The legumen is turgid, inflated, and pedicellated; the filaments are coiled with a fissure on the back. There are 11 species, all of them natives of warm climates. They rise from 18 inches to 5 feet in height, and are adorned with flowers of a blue or yellow colour. The most remarkable species is the retusa, with simple oblong wedged leaves. It is a native of the island of Ceylon and some other parts of the East Indies. The flowers are yellow, the pods smooth, cylindrical, inflated, and placed horizontally: they are filled with seeds, which, when dried, and shaken by the slightest wind, emit a rattling noise: and this, by the rude inhabitants of the countries where the plant is native, is attributed to the devil, who is thought to deliver his oracles in this whimsical manner.

CROTALO, an instrument of military music, like that described in the next article. The Turks are the first, among the moderns, who introduced the use of it for their troops. It is now common in Flanders and Florence, and other territories on the continent. It has only one tone; but its effect in marking time may be distinctly heard through the noise of forty drums. This is the same instrument with the ancient cymbalum.

CROTALUM, an ancient kind of castagnetta, or musical instrument, found on medals, in the hands of the priests of Cybele. The crotalum differed from the strum; though authors frequently confound the two. It consisted of two little brass plates or rods, which were shaken in the hand, and in striking against each other made a noise.

It was sometimes also made of a reed split length-

wise; one part whereof they struck against the other; and as this made a noise somewhat like that of a crane's bill, they called that bird *crotaliflria*, a player on the crotala: and Aristophanes calls a great talker a *crotalum*.

Clemens Alexandrinus attributes the invention to the Sicilians; and forbids the use thereof to the Christians, because of the indecent motions and gestures that accompany it.

CROTALUS, or RATTLE-SNAKE, in zoology, a genus belonging to the order of amphibia serpentes; the characters of which are these: the belly is furnished with scuta, and the tail has both scuta and scales; but the principal characteristic of this genus is the rattle at the end of the tail. The rattles consist of several articulated crustaceous, or rather horny, bags, which make a considerable rattling noise when the creature moves, and serves to warn people of their approach. There are five species; and the bite of every one of them is so highly poisonous, that it generally kills in a short time. Of these we have no account that can be depended upon, except that given by Mr Catcby of the horridus, or American rattle-snake. This grows sometimes to the length of 8 feet, and weighs between 8 and 9 pounds. The colour of the head is brown; the eye red; the upper part of the body of a yellowish-brown colour, transversely marked with irregular broad black lists. The rattle is of a brown colour, composed of several horny, membranous, cells, of an undulated pyramidal figure. These are articulated within one another in such a manner that the point of the first cell reaches as far as the basis of the protuberant ring of the third, and so on; which articulation, being very loose, gives liberty to the parts of the cells that are inclosed within the outward rings to strike against the sides of them, and so to cause the rattling noise which is heard when the snake shakes its tail. This is the most inactive and slow moving of all the snakes, and is never the aggressor except in what it preys upon. The above gentleman is of opinion that no remedy is yet discovered for the bite of this animal. He had frequently seen to see Indians bit by it, and always thought that those who recovered were cured more through the force of nature, or by reason of the slightness of the bite, than by the remedies used. He tells us, that the Indians know their destiny the moment they are bit; and if the bite happens to be on any of the large veins, they apply no remedies, as knowing them to be entirely useless. He believes the reports of the fascinating power of this serpent, though he never had an opportunity of seeing it. See the articles POISON and SERPENT.

CROTALYSTRIÆ, in antiquity, a kind of music-dancers, admitted to entertainments, in order to divert the company with their dancing and playing on an instrument called *crotalum*, whence they had their name.

CROTCHET, in music, one of the notes or characters of time, equal to half a minim, and double of a quaver.

CROTCHETS are also marks or characters, serving to inclose a word or sentence which is distinguished from the rest, being generally in this form [].

CROTO, or CROTON, (anc. geog.), a noble city of the Bruttii, built by the Achæans; an hundred and

Crotalus
||
Croto.Plate
CXLIX.

Croton.

fifty stadia to the north of Lacinium, and in the neighbourhood of Metapontum. It was twelve miles in compass before the arrival of Pyrrhus into Italy; but after the desolation produced by that war, scarce half of it was inhabited. The citadel on one side hung over the sea, on the other towards the land. It was naturally strong from its situation, but afterwards walled round; on which side it was taken by Dionysius by stratagem, by means of the rocks behind it.

Pythagoras, after his long peregrinations in search of knowledge, fixed his residence in this place, which some authors think his native one, at least that of his parents, supposing him to have been born in the isle of Samos, and not at some town of that name in Italy. This incomparable sage spent the latter part of his life in training up disciples to the rigid exercise of sublime and moral virtue, and instructing the Crotonites in the true arts of government, such as alone can insure happiness, glory, and independence.

Under the influence of this philosophy, the Crotonites inured their bodies to frugality and hardships, and their minds to self-denial and patriotic disinterestedness. Their virtues were the admiration of Greece, where it was a current proverb, that the last of the Crotonites was the first of the Greeks. In one Olympiad, seven of the victors in the games were citizens of Croton; and the name of Milo is almost as famous as that of Hercules. The vigour of the men and beauty of the women were ascribed to the climate, which was believed to be endowed with qualities peculiarly favourable to the human system. Their physicians were in high repute; and among these, Alcmeon and Democides rendered themselves most conspicuous. Alcmeon was the first who dared to amputate a limb, in order to save the life of a patient; and also the first writer who thought of inculcating moral precepts under the amusing cloak of apologues. This invention is more commonly attributed to Æsop, as he was remarkably ingenious in this species of composition. Democides was famous for his attachment to his native soil. Though carressed and enriched by the king of Persia, whose queen he had snatched from the jaws of death, he abandoned wealth and honours, and by stratagem escaped to the humble comforts of a private life at Croton.—The Pythagoreans are said to have discovered that disposition of the solar system, which, with some modifications, has been revived by Copernicus, and is now universally received, as being most agreeable to nature and experiment. Theano, the wife of Pythagoras, and many other women, emulated the virtues of their husbands.

In those fortunate days the state of Croton was most flourishing. Its walls inclosed a circumference of 12 miles. Of all the colonies sent out from Greece, this alone furnished succour to the mother-country when invaded by the Persians. By its avenging arms the Sybarites were punished for their shameful degeneracy; but victory proved fatal to the conquerors, for riches, and all their pernicious attendants, insinuated themselves into Croton, and soon contaminated the purity of its principles. Indeed, the very constitution of human nature militates against any long continuance in such rigid practices of virtue; and therefore it is no wonder if the Crotonites fell by degrees

into the irregularities they once abhorred. Not long after, the Locrians, who were less corrupted, defeated them on the banks of the Sagra, and reduced the republic to distress and penury. This restored the remaining Crotonites to their pristine vigour of mind, and enabled them to make a brave, though unsuccessful, resistance, when attacked by Dionysius of Syracuse. They suffered much in the war with Pyrrhus, and, by repeated misfortunes, decreased in strength and numbers, from age to age, down to that of Hannibal, when they could not muster 20,000 inhabitants. This small population being incapable of manning the extensive works erected in the days of prosperity, Croton was taken by the Carthaginians, and its citizens transported to Locri. The Romans sent a colony hither 200 years before Christ. In the Gothic war, this city rendered itself conspicuous by its fidelity to Justinian, and Totila besieged it long in vain.

CROTON, WILD RICINUS: A genus of the adelpchia order, belonging to the monœcia class of plants; and in the natural method ranking under the 38th order, *Tricocca*. The male calyx is cylindrical and quinqueparted, the corolla is pentapetalous; the stamina from 10 to 15. The female calyx is polyphyllous; no corolla; three bifid styles; the capsule trilocular; one seed. There are 21 species; of which the most remarkable are, 1. The tinctorium, or plant from which the French turnsole is made. This grows naturally in the south of France: it is an annual plant, rising about 9 inches high, with an herbaceous branching stalk, garnished with irregular or rhomboidal figured leaves, which are near two inches long and an inch and a quarter wide in their widest part. These stand upon slender footstalks near four inches long. The flowers are produced in short spikes from the sides of the stalks, at the end of the branches; the upper part of the spike is composed of male flowers, having many stamina which coalesce at the bottom; the lower part hath female flowers, which have each a roundish, three-cornered, germen; these afterwards become a roundish capsule with three lobes, having three cells, each including one roundish seed. This flowers in July; but unless the plants are brought forward on a hot-bed, they do not ripen seeds in this country. From this plant is made the turnsole used for colouring wines and jellies. It is made of the juice which is lodged between the empalement and the seeds; which, if rubbed on cloths, at first appears of a lively green, but afterwards changes to a bluish purple colour. If these cloths are put into water, and afterwards wrung, they will dye the water to a claret colour. The rags thus dyed are brought to this country, and sold in the druggists shops under the name of *turnsole*. 2. The sebifera, or tallow-tree, with rhomboidal egg-shaped leaves, pointed, smooth and very entire. It is about the height of a cherry-tree; its leaves in form of a heart, of a deep, shining, red colour, and its bark very smooth. Its fruit is inclosed in a kind of pod, or cover, like a chestnut, and consists of three round white grains, of the size and form of a small nut, each having its peculiar capsula, and within that a little stone. This stone is encompassed with a white pulp, which has all the properties of true tallow, as to consistence, colour, and even smell: and accordingly the

Chi-

Croton
||
Crotophaga.

Chinese make their candles of it; which would doubtless be as good as those in Europe, if they knew how to purify their vegetable tallow as well as we do our animal kind, and to make their wicks as well. 3. The aromaticum, with heart-shaped serrated leaves, and an arborescent stem. The bark of this tree is the same as the cascarilla and eleutheria; though these have been considered by some as distinct barks, and sold in the shops as different productions. It is a hot, acrid, aromatic bitter, resembling in appearance the Peruvian bark, but is more bitter and pungent, though not so rough and astringent. It was first introduced into Europe about the end of the last century, and seems first to have been used in Germany, where it is still in very high esteem. There it is frequently employed against common intermittent fevers, in preference to the Peruvian bark, as being less subject to some inconveniences, which the latter on account of its great astringency is apt to occasion. It is also said to have been employed with great success in some very dangerous epidemic fevers attended with petechiæ; and it is frequently employed with advantage in flatulent colics, internal hemorrhagies, dysenteries, diarrhœas, and similar disorders. In Britain it has been used by some practitioners, particularly by the late Dr Keir of London, who was of opinion that it was by no means employed so generally as it deserved to be. Its virtues are partially extracted by water, and totally by rectified spirit, but it is most effectual when given in substance. 4. The cascarilla, described by Linnæus as producing the officinal bark of that name, is, according to Dr Wright †, the wild rosemary shrub of Jamaica, the bark of which has none of the sensible qualities of the true cascarilla or eleutheria above described.

CROTONA, a town of Italy, in the kingdom of Naples, seated on the gulph of Taranto, with a bishop's see and a citadel. E. Long. 17. 27. N. Lat. 39. 10.

CROTOPHAGA, in ornithology, a genus of birds belonging to the order of picæ; the characters of which are: The bill is thin, compressed, greatly arched, half oval, and cultrated at top; the nostrils are round; the tongue flat, and pointed at the end; the tail consists of ten feathers; and the toes are placed two and two. The most remarkable species is the ani, which is about the size of a blackbird: the colour of the whole bird is black, in some parts glossed with purple, and about the neck faintly tinged with green on the margins: the base of the bill is furnished with black bristles, which turn forwards: the eye-lids have long hairs like eye-lashes: the tail is six inches long, and much cuneated; and the legs are black. This species is found in Jamaica, St Domingo, and other islands in the West Indies; also at Cayenne and other parts of South America. Contrary to all other birds, they have the singularity of many laying in the same nest; to make which, they all unite in concert, and after laying their eggs, sit on them close to each other in order to hatch them, each unanimously striving to do the best for the general good; and when the young are hatched, the parents, without reserve, do the best to feed the whole flock. Still a greater singularity occurs, which is, that as soon as each female lays her eggs she covers them with leaves, doing the same thing whenever she is obliged to leave the

nest for food: this might be necessary in a cold climate; but why it should be wanted in a hot one seems not clear, especially as it has not been observed in other birds. It generally has two broods in a year, except accidents happen; in which case it has been known to make three nests. The eggs are about the size of those of a pigeon, of a sea-green colour, spotted at the ends. Their food is various; worms, insects, fruits, and grain, according to the season. There is a variety called the greater ani, which is about the size of a jay, differing no otherwise from the former but in size. They ought, however, to be considered as two distinct species: for they never mix together; though each have the same manners, with this difference only, that the smaller frequent the open savannas, the larger only the salt-marshes near the sea-coasts. It is said that they are easily made tame, and will learn to talk like parrots. The male and female are both alike. Both species are easy to be shot, not being so wild as many other birds; but are known to chatter much on the sight of a man, though they do not fly to a great distance; hence are not well relished by sportsmen, as, like the jays in England, they are the occasion of hindering his sport in respect to other game, without making him amends in their own flesh, which is never sought after for food, being rank and unfavoury.

CROTOY, a town of France, in Picardy, and in Ponthieu. The fortifications are demolished. It is seated at the mouth of the river Somme. E. Long. 1. 45. N. Lat. 50. 15.

CROUCHED FRIARS. See CROISIERS.

CROUP, in medicine. See MEDICINE-Index.

CROUP of a Horse, in the manege, the extremity of the reins above the hips.

CROUPADE, in the manege, a leap, in which the horse pulls up his hind legs, as if he drew them up to his belly.

CROUTE, SOUR CROUTE, or KROUTE. As this preparation of cabbage has been found of sovereign efficacy as a preservative in long voyages from the sea-scurvy, it may not be unacceptable to give a concise account of the process for making it, according to the information communicated by an ingenious German gentleman.

The soundest and most solid cabbages are selected for this use, and cut very small, commonly with an instrument made for this purpose, not unlike the plain which is used in this country for slicing cucumbers. A knife is used when the preparation is made with greater nicety. The cabbage thus minced is put into a barrel in layers, hand high, and over each is strewed a handful of salt and carraway seeds; in this manner it is rammed down with a rammer *stratum super stratum*, till the barrel be full; when a cover is put over it and pressed down with a heavy weight. After standing some time in this state it begins to ferment; and it is not till the fermentation has entirely subsided that the head is fitted to it, and the barrel is finally shut up and preserved for use. There is not a drop of vinegar employed in this preparation. The Germans write this preparation in the following manner: *Sauer kraut*, or *sauer kohl*; that is, in their language, "sour herb, or sour cabbage."

CROUSAZ (John Peter de), a learned philosopher

Crotoy
||
Croufaz.

Medical
Journal,
ol. viii.

plate CLI.

Crow.
Crowd,

and mathematician, was born in 1663: having made great progress in the mathematics and the philosophy of Des Cartes, he travelled to Geneva, Holland, and France; was successively professor in several universities; and at length was chosen governor to Prince Frederic of Hesse-Cassel, nephew to the king of Sweden. He wrote many works; the most esteemed of which are, 1. His Logic, the best edition of which is that of 1741, in 6 vols 8vo. 2. A Treatise on Beauty. 3. A Treatise on the Education of Children, 2 vols 12mo. 4. Several Treatises on Philosophical and Mathematical Subjects, &c. He died at Laufanne in 1748.

CROW, in ornithology. See CORVUS.

CROW, in mechanics, a kind of iron lever, with a claw at one end and a sharp point at the other; used for heaving or purchasing great weights.

Crow's Bill, among surgeons, a kind of forceps for drawing bullets and other foreign bodies out of wounds.

Crow's Feet, in the military art, machines of iron, having four points, each about three or four inches long, so made, that whatever way they fall there is still a point up: they are thrown upon breaches, or in passes where the enemy's cavalry are to march, proving very troublesome, by running into the horse's feet and laming them.

Crow-Foot, on ship-board, a complication of small cords spreading out from a long block, like the smaller parts which extend from the back bone of a herring (Plate CL.). It is used to suspend the *ownings*; or to keep the top-sails from striking violently, and fretting against the tops.

Crow-Net, is an invention for catching wild-fowl in the winter season, and may be used in the day-time. This net is made of double thread, or fine pack thread; the meshes should be two inches wide, the length about ten yards, and the depth three; it must be verged on the side with good strong cord, and stretched out very stiff on long poles prepared for that purpose. When you are come to the place where you would spread your net, open it, and lay it out at its full length and breadth; then fasten the lower end of the net all along the ground, so as only to move it up and down; the upper end of the net must stand extended on the long cord; the further end thereof being staked first to the earth by a strong cord about five yards distant from the net. Place this cord in an even line with the lower edge of the net. The other end must be at least 25 yards distant to reach into some natural or artificial shelter, by the means of which you may lie concealed from the fowl, otherwise no good success can be expected. The net must be placed in such exact order that it may give way to play on the fowl on the least pull of the cord, which must be done smartly, lest the fowl should prove too quick for you. This net may be used for pigeons, crows, or other birds, on corn-fields newly sown; as also in stubble-fields, provided the stubble conceals the net from the birds.

CROWD, in a general sense, signifies a number of people assembled in a place scarce big enough to hold them all.

To CROWD, in the sea-language, is to carry an extraordinary force of sail upon a ship, in order to ac-

celerate her course on some important occasion; as in pursuit of, or flight from, an enemy; to escape any immediate danger, &c.

CROWLAND, a town in Lincolnshire, seated in the fens, in a dirty soil, and had formerly an abbey of very great note. There is no coming at it but by narrow caufeways, which will not admit a cart. It has three streets, separated from each other by water-courses, whose banks are supported by piles, and set with willow trees. Their chief trade is in fish and fowl, which are in great plenty in the adjacent pools and marshes. W. Long. o. 10. N. Lat. 52. 40.

CROWN, an ornament worn on the head by kings, sovereign princes, and noblemen, as a mark of their dignity.

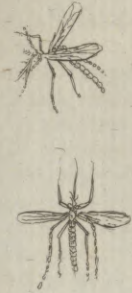
In scripture there is frequent mention of crowns, and the use of them seems to have been very common among the Hebrews. The high priest wore a crown, which was a fillet of gold placed upon the forehead, and tied with a ribbon of hyacinth colour, or azure blue. It seems also as if private priests, and even common Israelites, wore also a sort of crown, since God commands Ezekiel not to take off his crown, nor assume the marks of one in mourning. This crown was no more than a ribbon or fillet, with which the Jews and several people in the east girt their heads. And indeed the first crowns were no more than a bandelet drawn round the head, and tied behind, as we still see it represented on medals round the heads of Jupiter, the Ptolemies, and kings of Syria. Afterwards they consisted of two bandelets; by degrees they took branches of trees of divers kinds; at length they added flowers, insomuch that Claudius Saturninus says, there was not any plant whereof crowns had not been made. The woods and groves were searched to find different crowns for the several deities; and they were used not only on the statues and images of the gods, by the priests in sacrificing, and by kings and emperors, but also on altars, temples, doors of houses, sacred vessels, victims, ships, &c.

The Roman emperors had four kinds of crowns, still seen on medals, viz. a crown of laurel, a radial or radiating crown, a crown adorned with pearls and precious stones, and the fourth a kind of bonnet or cap, something like the mortar.

The Romans had also various kinds of crowns, which they distributed as rewards of military achievements; as, 1. The oval crown, made of myrtle, and bestowed upon generals, who were intitled to the honours of the lesser triumph, called *ovation*. 2. The naval or rostral crown, composed of a circle of gold, with ornaments representing beaks of ships, and given to the captain who first grappled, or the soldier who first boarded, an enemy's ship. 3. The crown called in Latin *vallis*, or *castrensis*, a circle of gold raised with jewels or palisades; the reward of him who first forced the enemy's entrenchments. 4. The mural crown, a circle of gold indented and embattled; given to him who first mounted the wall of a besieged place, and there lodged a standard. 5. The civic crown, made of the branch of a green oak, and given him who had saved the life of a citizen. 6. The triumphal crown, consisting at first of wreaths of laurel, but afterwards made of gold; proper to such generals

Crowland
Crown.

Culex



Curculio



Shining Cuckoo.

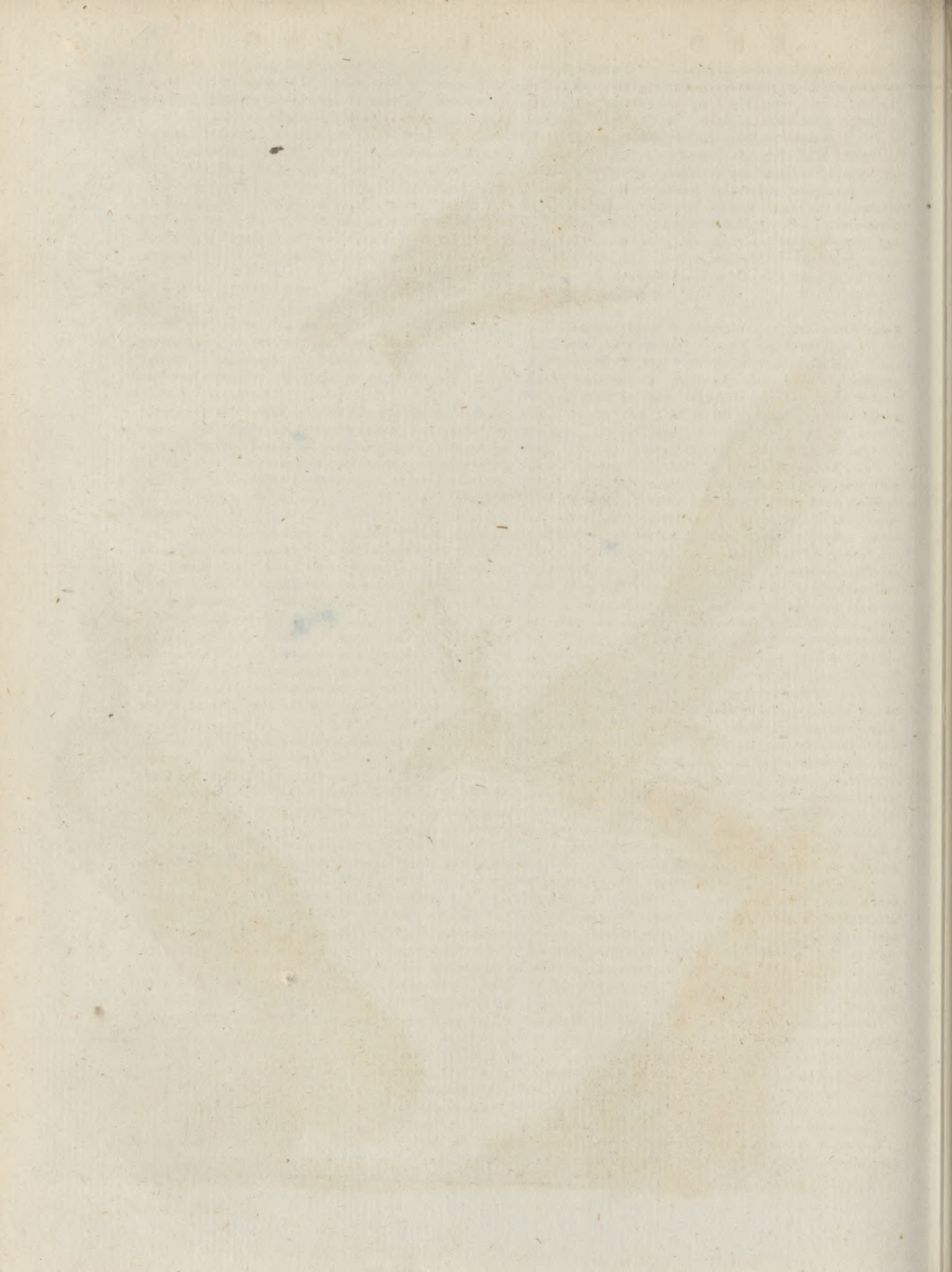


Crotophaga.
Ari.



Craze subra.





Crown. as had the honour of a triumph. 7. The crown called *obfidionalis*, or *graminea*, made of grass growing on the place; the reward of a general who had delivered a Roman army from a siege. 8. The radial crown, given to princes at their translation among the gods. We meet also with the corona aurea, often bestowed on soldiers, without any other additional term; athletic crowns, and crowns of laurel, destined to crown victims at the public games, poets, orators, &c. All these crowns were marks of nobility to the wearers; and upon competitions with rivals for rank and dignities, often determined the preference in their favour, See Plate CL. For an account of modern crowns, see HERALDRY.

CROWN is also used to signify the possessions and dignity of a king. The crown of England, according to Sir William Blackstone, is, by common law and constitutional custom, hereditary; and this in a manner peculiar to itself: but the right of inheritance may from time to time be changed or limited by act of parliament, under which limitations the crown still continues hereditary. See SUCCESSION.

Pleas of the CROWN. See PLEAS.

CROWN, in commerce, is a general name for coins, both foreign and domestic, of or near the value of five shillings Sterling. In its limited sense, crown is only applicable to that popular English coin which bears the name, and which is equivalent to sixty English pence or five shillings, or to six livres French money. But, in its extensive sense, it takes in several others; as the French ecu, which we call the French crown, struck in 1641 for sixty sols, or three livres; also the patagon, dollar, ducatoon, rixdollar, and piastre or piece of eight.

CROWN, in an ecclesiastical sense, is used for the clerical tonsure; which is the mark or character of the Romish ecclesiastics. This is a little circle of hair shaved off from the crown of the head; more or less broad, according to the quality of the orders received: That of a mere clerk is the smallest; that of priests and monks the largest. The clerical crown was anciently a round list of hair, shaved off around the head, representing a real crown: this is easily observable in several ancient statues, &c. The religious of St Dominic and St Francis still retain it.

CROWN, among jewellers, the upper work of the rose diamond, which all centres in the point at the top, and is bounded by the horizontal ribs.

CROWN-Office, an office belonging to the king's bench court, of which the king's coroner or attorney is commonly master. In this office, the attorney-general and clerk of the crown severally exhibit informations for crimes and misdemeanours at common law, as in the case of batteries, conspiracies, libelling, &c. on which the offender is liable to pay a fine to the king.

CROWN-Glass, denotes the finest sort of window-glass. See GLASS.

CROWN-Scabs, in farriery. See there, § xxxvi. 2.

CROWN-Wheel of a Watch, the upper wheel next the balance, which by its motion drives the balance, and in royal pendulums is called the *swing-wheel*.

CROWN Imperial, in botany. See FRITILLARIA.

CROWN-Work, in fortification, is an out-work running into the field; designed to keep off the enemy,

gain some hill or advantageous post, and cover the other works of the place. The crown-work consists of two demi-bastions at the extremes, and an entire bastion in the middle, with curtains.

CROWNE (John), a celebrated dramatic writer, born in Nova Scotia, where his father was a minister. Being impatient of the gloomy restraint of that country, he came to England, where he was reduced to enter into the service of an old lady; of which he was soon as weary as he had been of America. He then had recourse to his pen, which quickly procured him favour at court; but this kind of subsistence proving precarious, he ventured to solicit Charles II. for some establishment. Charles promised to provide for him, but insisted first on having another comedy; and suggested to him the plan of a Spanish play, from which Crowne produced the comedy of *Sir Courtly Nice*: but the sudden death of the king on the last day of the rehearsal, plunged him at once from his pleasing expectations into disappointment and distress, and left him no resource but his wits. He died some time about the year 1703; and left behind him 17 tragedies and comedies, some of which are acted with great success. His chief excellency lay in comedy; yet his tragedies are far from being contemptible. His plots are for the most part his own invention; his characters are in general strongly coloured and highly finished; and his dialogue lively and spirited, attentively diversified, and well adapted to the several speakers. So that on the whole he may assuredly be allowed to stand at least in the third rank of our dramatic writers.

CROWNING, in architecture, is understood, in the general, of any thing that terminates or finishes a member or decoration. Thus, a cornice, a pediment, &c. are called *crownings*. Thus also the abacus is said to crown the capital; and thus any member or moulding is said to be crowned when it has a fillet over it; and a niche is crowned when it is covered with a capital.

CROWNING, in sea-language, denotes the finishing part of a knot made at the end of a rope. It is performed by interweaving the ends of the different strands artfully amongst each other, so as that they may not become loosened or untwisted. They are useful in all kinds of stoppers.

CROWTH, or CRUTH. See CRUTH.

CROXAL (Samuel), an ingenious English divine, who in his youth wrote the celebrated poem intitled *The Fair Circassian*. He had the livings of Hampton in Middlesex; and the united parishes of St Mary Somerset, and St Mary Mounthaw, in London; both which he held till his death in 1751. He published many other poems and translations, with an entire English edition of Esop's Fables. In consequence of his attachment to Whig principles, he enjoyed some other preferments, and was chaplain in ordinary to George II.

CROYDON, a town in Surry in England. Its situation is low, near the spring-head of the river Wandel, and it is in a manner surrounded with hills. It is pretty large, and is chiefly noted for being the seat of the archbishop of Canterbury. It has a large handsome church, an hospital, and a free school. W. Long. o. 5. N. Lat. 51. 22.

Crowne
||
Croydon.

Crucial
||
Crumen-
tata.

CRUCIAL INCISION, in surgery, an incision made in the form of a cross.

CRUCIANELLA, PETTY MADDER: A genus of the monogynia order, belonging to the tetrandria class of plants; and in the natural method ranking under the 47th order, *Stellata*. The corolla is monopetalous and funnel-shaped, with the tube filiform and the limb unguiculated, or having an inflexed segment on the top of each segment; the calyx is diphyllous, and there are two linear seeds. There are five species, natives of the southern parts of Europe; but none of them possessed of any remarkable quality.

CRUCIBLE, a chemical vessel made of earth, and so tempered and backed as to endure the greatest fire. They are used to melt metals, and to flux minerals, ores, &c. See *CHEMISTRY-Index*.

CRUCIFIX, a cross upon which the body of Christ is fastened in effigy, used by the Roman Catholics to excite in their minds a strong idea of our Saviour's passion.

They esteem it an essential circumstance of the religious worship performed at the altar; and on Good Friday they perform the ceremony of adoring it, which is done in these words, *O crux ave, spes unica*; "Hail, thou cross, our only hope." The officiating priest uncovers the crucifix, elevates it with both his hands, and says, *Ecce lignum crucis*; "Behold the wood of the cross." The people answer, *in quo salus mundi pependit*; "on which the Saviour of the world suffered death." Then the whole congregation bow with great reverence, and devoutly kiss the holy wood.

CRUCIFIXION, a capital punishment by nailing the criminal to a cross. See *CROSS*.

CRUCIFORM, in general, something disposed cross-ways; but more especially used by botanists, for flowers consisting of four petals disposed in the form of a cross.

CRUCITA, in botany, a genus of the digynia order, belonging to the tetrandria class of plants, and in the natural method ranking with those the order of which is doubtful. The interior calyx is tetraphyllous, the exterior calyx triphyllous; there is no corolla, and only one seed.

CRUDE, an epithet given to something that has not passed the fire or had a proper degree of coction.

CRUDITY, among physicians, is applied to undigested substances in the stomach; to humours in the body which are unconcocted, and not prepared for expulsion; and to the excrements.

CRUISE, from the German *kruifs*, "across," signifies to cross to and fro, to sail up and down within a certain space of the sea, called the *cruising* latitude, in quest of vessels, or fleets of an enemy, &c.

CRUISERS, in the navy, are small men of war made use of to and fro in the channel, and elsewhere, to secure our merchant ships and vessels from the enemy's small frigates and privateers. They are generally such as sail well, and are commonly well manned: and indeed the safety of the trade in the channel, and up and down the soundings, and other places, absolutely requires the constant keeping out such ships at sea.

CRUMENTATA, among zoologists, animals fur-

lined with a pouch or bag, wherein to receive their young in time of danger; as the opossum. See *DIPLODIPS*.

CRUOR, sometimes signifies the blood in general; sometimes only the venous blood; and sometimes extravasated or coagulated blood; but is most frequently used for the red globules of the blood, in contradistinction to the limpid or serous part.

CRUPPER, in the manege, the buttocks of a horse, the rump; also a thong of leather put under a horse's tail, and drawn up by thongs to the buckle behind the saddle, so as to keep him from casting the saddle forwards on his neck.

CRURÆUS, or **CRUREUS**, *Musculus*, in anatomy, a fleshy mass, covering almost all the foreside of the os femoris, between the two vasti, which likewise cover the edges of this muscle on each side. See *ANATOMY, Table of the Muscles*.

CRURAL, in anatomy, an epithet given to the artery which conveys the blood to the crura or legs, and to the vein by which this blood returns towards the heart. See *ANATOMY, p. 751*.

CRUS, in anatomy, all that part of the body contained between the buttocks and the toes.

CRUSADO, in commerce, a Portuguese coin, struck under Alphonso V. about the year 1457, at the time when pope Calixtus sent thither the bull for a croisade against the infidels. This coin has a cross on one side and the arms of Portugal on the other.

CRUSCA, an Italian term signifying *bran*, is in use amongst us to denote that celebrated academy called *della Crusca*, established at Florence for purifying and perfecting the Tuscan language. See *ACADEMY, n° 11*. The academy took its name from its office, and the end proposed by it; which is, to refine the language, and as it were to separate the bran from it. Accordingly, its device is a sieve; and its motto, *Il piu bel fior ne coglie*; that is, "It gathers the finest flour thereof." In the hall or apartment where the academy meets, M. Monconis informs us, that every thing bears an allusion to the name and device: the seats are in form of a baker's basket; their backs like a shovel for moving of corn; the cushions of grey fatin, in form of sacks or wallets; and the branches where the lights are placed resembling sacks. The vocabulary *Della Crusca* is an excellent Italian dictionary, composed by this academy.

CRUSTA LACTEA, in medicine, the same with *ACHOR*.

CRUSTACEOUS FISH, in natural history, are those covered with shells, consisting of several pieces or scales; as those of crabs, lobsters, &c.

These are usually softer than the shells of the testaceous kind, which consist of a single piece, and generally much thicker and stronger than the former; such as those of the oyster, scallop, cockle, &c.

Dr Woodward observes, in his *Natural History*, that of all the shells found in beds of all the different matters dug out of the earth, there are scarce any of the crustaceous kind: the reason he gives for it is, that these being much lighter than the rest, must have floated on the surface at the time of the deluge, when all the strata were formed; and there have corrupted and perished.

CRUTH,

Cruc
||
Crusta
conus.

Cruth
||
Crypta.

CRUTH, or **CRUITH**, a kind of musical instrument formerly in use among the common people in Wales. It is of the fiddle kind, somewhat resembling a violin, 72 inches in length, and an inch and a half in thickness. It has six strings supported by a bridge, and is played on with a bow: the bridge differs from that of a violin, in that it is flat and not convex on the top; a circumstance from which it is to be inferred, that the strings are to be struck at the same time, so as to afford a succession of concords. The bridge is not placed at right angles with the sides of the instrument, but in an oblique direction; and, which is further to be remarked, one of the feet of the bridge goes through one of the sound-holes, which are circular, and rests on the inside of the back; the other foot, which is proportionably shorter, resting on the belly before the other sound-hole. Of the strings, the four first are conducted from the bridge down the finger-board, as in a common violin; but the fifth and sixth, which are about an inch longer than the others, leave the small end of the neck about an inch to the right. The whole six are wound up either by wooden pegs in the form of the letter T, or by iron pins, which are turned with a wrest like those of a harp or spinet. Of the tuning, it is to be remarked, that the fifth and sixth strings are the unison and octave of G; the fourth and fifth, the same of C; and the second and first, the same of D; so that the second pair of strings are a fourth, and the third a fifth, to the first. See Plate CL.

Concerning the antiquity of this instrument, there is but little written evidence to carry it further back than the time of Leland; nevertheless the opinion of its high antiquity is so strong among the inhabitants of the country where it was used, as to afford a probable ground of conjecture, that the cruth might be the prototype of the whole fiducial species of musical instruments. Another evidence of its antiquity, but which tends also to prove that it was not peculiar to Wales, arises from a discovery lately made and communicated to the society of antiquarians, respecting the abbey-church of Melrose in Scotland, supposed to have been built about the time of Edward II. It seems that among the outside ornaments of that church there is the representation of a cruth, very little different from the description above given. The instrument is now dispersed, in so much that Sir John Hawkins, from whom we extract, tells us, that there is but one person in the whole principality of North Wales that can play upon it; and as he was at that time near 60 years of age, the succession of performers is probably near an end.

CRUX, or **St Croix**, one of the Caribbee islands, situated about 60 miles south-east of Porto-Rico, and subject to Denmark. From being a perfect desert, it has begun to flourish exceedingly, being made a free port, and receiving great encouragement from government. W. Long. 64. o. N. Lat. 17. 30.

CRYMODES, among physicians, a kind of fever attended with a shivering cold, and inflammation of the internal parts of the body.

CRYPTA, a subterraneous cell or vault, especially under a church, for the interment of particular families or persons. S. Ciampini, describing the outside of the Vatican, speaks of the *crypta* of St Andrew, St Paul,

&c. The word is formed of *κρυπτο*, *abscendo*, "I hide;" whence *κρυπτα*, *crypta*.

Vitruvius uses the word *crypta* for a part of a building, answering nearly to our cellar; Juvenal for a *cloaca*. Hence *crypto-porticus*, a subterraneous place arched or vaulted; used as an under-work or passage in old walls. The same is also used for the decoration at the entry of a grotto.

CRYPTA is also used by some of our ancient writers for a chapel or oratory under-ground.

CRYPTÆ, in anatomy, a name given by Ruysch to glands situated on the back of the tongue, and to glands of the intestines.

CRYPTOGAMIA, (from *κρυπτο*, *occultus*, "concealed," and *γαμο*, *nuptia*, "nuptials"), the 24th class in the Linnæan system, comprehending those plants whose fructification is concealed, either through minuteness, or within the fruit. See **BOTANY**, the *Scheme* and *Explanation*, Vol. III. p. 430.

CRYPTOGRAPHY, the art of writing in cipher, or with sympathetic ink. See **CIPHER** and **INK**.

CRYSTAL, a species of stones of the quartz kind, belonging to the siliceous class. It always appears, when there has been no interruption to its crystallization, in hexagonal prisms pointed at both ends. It is found of different kinds and colours. 1. Opaque or semitransparent, and white or of a milk colour. 2. Opaque and red, or of a cornelian colour, from Oran in Barbary. 3. Opaque and black, from the same place. 4. Clear. The specific gravity of these kinds of crystals is from 2650 to 2700. Professor Bergman extracted from them about six parts of argilla and one of calcareous earth per hundred weight; but Mr Gerhard found some so pure as to contain neither. 5. Clear and blackish brown, the smoky topaz, or *rauch topaz* of the Germans. It is found at Egan in Norway, and at Lovisa in Finland. These crystals are said to become clear by boiling them in tallow. 6. Clear and yellow; found in Bohemia, and sold instead of topazes. 7. Clear and violet-coloured; the amethyst, from Saxony, Bohemia, and Damemore in Upland. The most transparent of these are called false diamonds. Bristol, Kerry stones, Alençon diamonds, &c. 8. Colourless rock crystal, properly so called, found in Bohemia, the province of Jemtland, and many other places. 9. Pyramidal crystal with one or two points. These have no prismatic shape, but either stand upon a base in cavities of quartz-veins, have only a single pyramid, and are of various colours; or they lie in a clayey earth, and have both pyramids, but no prism. They are found at Blackenburg upon the Hartz, and at Morferosh in the Silverland in Transylvania.

The coloured transparent crystals derive their tinge from an exceedingly small portion of metallic calces, but lose them entirely when strongly heated. They are called *false gems*; viz. the red from Oran in Barbary, false rubies; the yellow from Saxony, false topazes; the green from Dauphiny, very rare, false emeralds or prases; the violet from Vil in Catalonia, false amethysts; the blue from Puy in Valay in France, false sapphires. There are likewise opal or rainbow crystals, the various colours of which are thrown out in zones across the surface. They make a very fine appearance, though they never shine like the oriental opal.

Crypta
||
Crystal.

Crystal.

M. Fourcroy makes a remarkable difference between the crystals and quartz, by affirming that the former are unalterable in the fire, in which they neither lose their hardness, transparency, nor colour, while the quartz loses the same qualities, and is reduced by it to a white and opaque earth. He classes the rock-crystals,

I. According to their form, *viz.* 1. Insulated hexagonal crystals ending in pyramids of six faces, which have a double refraction, or show two images of the same object when looked through. 2. Hexagonal crystals united, having one or two points. 3. Tetrahedral, dodcaedral, flattened crystals; and which, though hexagonal, have nevertheless their planes irregular. 4. Crystals in large masses, from the island of Madagascar, which have a simple refraction.

II. With regard to their colour, as being either diaphanous, reddish, smoky, or blackish.

III. With regard to accidental changes, some are hollow; some contain water within one or more cavities; some are cased one within the other; some are of a round form, as the pebbles of the Rhine; some have a crust of metallic calces or of a pyrites; some are found crystallized in the inside of a cavity; while some seem to contain amianthus or asbestos; and others contain shirls. The same author reckons among crystals the oriental topaz, the hyacinth, the oriental sapphire, and the amethyst. Mr Daubenton has always looked upon this last as a quartz of a crystal.

When the rock-crystals are semitransparent or intermixed with opaque veins, they are called by the Swedish lapidaries *milk-crystals*. When they are found in the form of round pebbles, which is occasioned by their being tossed about and rubbed against one another by floods or by the sea, they are called by the English lapidaries *pebble-crystals*. They come from the Indies, Siberia, and other places,

According to Bomare, the rock-crystals are generally formed upon or among quartz, which shows their great affinity, and are to be found in all parts of the world. The greatest quantity of them is brought from Mount Saint Gothard in Switzerland. Large pieces of these, weighing from 5 to 800 pounds, were found there at Grimfelberg; another of about 1200 pounds weight was found some years ago at Fribach in the Wallais; and a piece six feet long, four wide, and equally thick, was found in the island of Madagascar, where these natural productions are of the most extraordinary size and perfection.

In the imperial collection at Vienna, there is a pyramidal crystal vase two ells in height, cut wholly out of one piece. It is usual with the largest crystals of the German mountains to be full of cracks and flaws, and to be so constructed internally as to show all the prismatic colours; but the above mentioned ones were quite free from these blemishes, and resembled columns of the purest glass, only much clearer than any glass can be made. Crystal is also found in many parts of Britain and Ireland. About Bristol it is found of an amethystine tinge. In Silesia and Bohemia in Germany it is found stained with the colours of the ruby, sapphire, emerald, and topaz; in which case jewellers take great advantage of it, selling it under the name of *accidental sapphire*.

The orders of pure crystal are three: The first is

N^o 95.

perfect columnar crystals, with double pyramids, composed of 18 planes, in an hexangular column, terminated by an hexangular pyramid at each end: the second order is that of perfect crystals, with double pyramids, without a column, composed either of 12 or of 16 planes, in two hexangular pyramids, joined closely base to base, without the intervention of any column: the third order is that of imperfect crystals, with single pyramids, composed either of 12 or 10 planes, in an hexangular or pentangular column, affixed irregularly at one end to some solid body, and terminated at the other by an hexangular or pentangular pyramid.

These are all the general forms into which crystal, when pure, is found concentered: but under these there are almost infinite varieties in the number of angles, and the length, thickness, and other accidents of the columns and pyramids.

When crystal is blended with metalline particles at the time of its formation, it assumes a variety of figures wholly different from these, constituting a fourth order, under the name of *metalline crystals*: when that metal is lead, the crystal assumes the form of a cube; when it is tin, of a quadrilateral pyramid, with a broad base; when iron, the crystal is found concentered in rhomboidal figures: these crystals are very common about mines; but the common spars, which are liable to be influenced in the same manner by the metals, and to appear in the very same form, are to be carefully distinguished from them. There is one very easy test for this purpose, which is, that all spars are subject to be dissolved by aquafortis, and effervesce violently only on its touching them: but it has no such effects on crystal.

The pebble-crystal is common enough in all parts of the world; but that which is formed of hexangular columns, affixed to a solid base at one end, and terminated by a hexangular column at the other, is infinitely more so: this is what we call *spring* or *rock crystal*, and is the species described by most authors under the name of *crystal of the shops*, or that kept for medicinal uses.

With regard to the formation of crystals, it is certain that they must have been once in a soft state, since some are found to have water in their cavities. Professor Bergman obtained 13 regular formed crystals, by suffering the powder of quartz to remain in a vessel with fluor acid for two years. These were about the size of small peas, and were less hard than quartz. Mr Magellan informs us, that he received from Mr Achard two crystals, one of the sparry kind, and the other as hard and transparent as rock-crystal. The first he procured by means of calcareous earth, and the latter from the earth of alum, both dissolved in water impregnated with fixed air, the water filtrating very slowly through a porous bottom of baked clay. The apparatus is described by the author in the *Journal de Physique* for January 1778: but though the process was attempted by Mr Magellan, and afterwards a second time by Mr Achard himself, neither of them were able to succeed. Mr Mo-vean, however, in the first volume of the Dijon Memoirs for 1785, asserts that he has produced a very small artificial crystal; and gives the proper method for succeeding in the process.

In

Crystal.

In the natural way many of the more compound fossil bodies are formed chiefly either of crystal, or of spar, a body in many things resembling it. The original formation and coalescence of those bodies of which spar is the basis, we know, may have been but of yesterday, since we have evident proofs that spar is concreting to this day, and that sparry bodies are forming every moment. This is evident from the sparry stalactites in the arches of modern buildings, particularly in one so lately built as the new bridge at Westminster; the roofs of the arches of which were filled with these spars within a year after they were built. It is also demonstrable that the spars are not formed of matter exuding from the stone, since brick arches abound equally with them; and the brick vault which supports part of the grand terrace at London, was some time ago so full of them that there was not room to walk. These observations sufficiently demonstrate the growth of spar; but the vegetation of crystal remained dubious till Dr Hill showed by some experiments that *crystal*, as well as spar, is dissolved in every kind of water, even such as appears to be most pure and clear. This is also probable from an observation of Neumann's, who tells us, that he has seen leaves, stalks of plants, hay, straw, hogs bristles, &c. inclosed in sprigs of crystal. From the regular forms in which these natural crystals are found, the regular arrangement of salts into different figures takes the name of *crystallization*, and both are probably owing to the same cause*. Henckel gives us a remarkable account of the formation of crystal out of human urine. He once filled a large round glass-vessel half way up with the recent urine of a young lad, and tying a bladder over the mouth of the vessel, set it in a stove for four years together, never stirring it during that whole time. At the end of this time he found a number of small white stones growing to the inside of the glass; they were of the size of an oat-seed, of a prismatic figure, and tolerably pellucid: they stuck so fast to the sides of the glass that they could not be washed off by the shaking about of the urine; and when taken out had no saline taste, and were not soluble even in hot water.

Crystal is frequently cut; and lustres, vases, and toys, are made of it as of other beautiful stones. For this purpose it is to be chosen perfectly clear and transparent. It is to be tried by aquafortis, or by drawing it along a pane of glass. The genuine crystal will not be affected by the acid, and will cut glass almost like a diamond. When any piece of workmanship of natural crystal is become foul and dark, the following method is to be used for recovering its brightness without hurting the polish. Mix together six parts of common water and one part of brandy; boil these over a brisk fire, and let the crystal be kept in it, in a boiling state, a quarter of an hour; then take it out and rub it carefully over with a brush dipped in the same liquor; after this it is to be wiped with a napkin, and by that means its surface will be perfectly cleaned, and rendered as bright as at first, without any injury to the points of the cutting or the polish of the planes or faces, which would probably have happened had the cleaning been attempted by mere rubbing with a cloth.

Natural crystal may be reduced by calcination into

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a state proper for making glass with alkaline salts, and thus becomes a very valuable fritt. The method of doing it is as follows: calcine natural crystal in a crucible; when it is red-hot, throw it into cold water. Repeat this eight times, covering the crucible that no dust or ashes may get in among the crystal. Dry this calcined mass, and reduce it to an impalpable powder.

Colouring Crystal, for the imitation of gems. See DOUBLET.

CRYSTAL is also used for a fictitious body, cast in glass-houses, called *crystal-glass*; being in fact no more than glass carried, in the composition and manufacture, to a greater perfection than the common glass.

The best kind of glass-crystal is that called *Venice-crystal*, made at Moran near Venice. See GLASS.

Iceland or Iceland Crystal, a transparent fissile stone, brought from Iceland, soft as talc, clear as rock-crystal, and without colour; remarkable for its unusual refractions.

It is there found in great abundance all over the country, but is particularly plentiful in a mountain, not far from the bay of Roesfiord, where the finest and most pellucid pieces are found on digging. The mountain lies in 65 degrees latitude, and has its whole outside made up of it; but though this makes a very bright and glittering appearance, it is not so fine as that which lies at a little depth, and is met with on opening the surface. This is generally taken up out of the earth in masses a foot long, and its corners very frequently are terminated in these large masses, by a sort of crystals, very different in figure and qualities from the rest of the mass. The stone itself is of a parallelopiped figure; but these excrescences are either single pyramids, affixed to columns like common crystal, or double pyramids with or without columns between. The stone itself is soft; these are hard, and cut glass: the stone calcines to lime in the fire; these run into glass: in short, the stone itself is true spar, and these are true crystal. Beside these, there sometimes grows out of the ends of the larger masses a pure fine asbestos. This likewise is the case sometimes in the spar found about Barege in France, and shows how nearly together the formation of bodies, wholly different from one another, may happen. The general figure of the stone is parallelopiped; or, as some express it, rhomboide; and it retains this not only while whole, but also when broken to pieces. Every fragment it naturally falls into, though ever so small, being truly of that shape. But it is remarkable, that in some places of this mountain, the same sort of matter is found in form of triangular pyramids, all which have the same property of the double refraction with the parallelopipeds of the same substance; so that the original error of supposing its qualities owing to its shape, is refuted by this, as well as by the trials made with other pellucid bodies of the same figure, which do not show this remarkable property.

The Iceland crystal is electrical, and when rubbed will draw up straws, feathers, and other light substances, in the same manner that amber does.

The vast masses of white spar which are found in the lead mines of Derbyshire, though they are not externally of the parallelopiped figure of the Iceland crystal, nor have any thing of its brightness or transparency

Crystal.

Crystal.

in the general lump; yet when they are broken they separate into rhomboidal fragments, and some of these are found to be tolerably pellucid: all those which are so have the property of the Iceland crystal; and being laid upon paper, where a black line is drawn, they all show that line double in the same manner as the real Iceland crystal does.

Iceland crystal bears a red heat without losing its transparency; and in a very intense heat calcines without fusion: steeped a day or two in water, it loses its natural polish. It is very soft and easily scratched with the point of a pin; it will not give fire on being struck against steel; and ferments and is perfectly dissolved in aquafortis. It is found in Iceland, from whence it has its name; and in France, Germany, and many other places. In England fragments of other spars are very often mistaken for it, many of them having in some degree the same property. It has none of the distinguishing characters of crystal; and is plainly a genus of spars, called from their figure *parallelopipedia*, which, as well as some other bodies of a different genus, have the same properties. Bartholine, Huygens, and Sir Isaac Newton, have described the body at large, but have accounted it either a crystal or a talc; errors which could not have happened, had the criterions of fossils been at that time fixed; since Sir Isaac Newton has recorded its property of making an ebullition with aquafortis, which alone must prove that it is neither talc nor crystal, both those bodies being wholly unaffected by that menstruum. It is always found in form of an oblique parallelopiped, with six sides, and is found of various sizes, from a quarter of an inch to three inches or more in diameter. It is pellucid, and not much less bright than the purest crystal, and its planes are all tolerably smooth, though when nicely viewed they are found to be waved with crooked lines made by the edges of imperfect plates. What appears very singular in the structure of this body is, that all the surfaces are placed in the same manner, and consequently it will split off into thin plates, either horizontally or perpendicularly; but this is found, on a microscopic examination, to be owing to the regularity of figure, smoothness of surface, and nice joining of the several small parallelopiped concretions, of which the whole is composed, and to the same cause is probably owing its remarkable property in refraction.

The phenomena of this stone are very remarkable, were first suggested by Bartholin, and have been examined with great accuracy by M. Huygens and Sir Isaac Newton.

1. Whereas in other pellucid bodies there is only one refraction, in this there are two; so that objects viewed through it appear double.

2. Whereas in other transparent bodies, a ray falling perpendicularly on the surface, passes straight through, without suffering any refraction; and an oblique ray is always divided; in Iceland crystal, every ray, whether perpendicular or oblique, becomes divided into two, by means of the double refraction. One of these refractions is, according to the ordinary rule, the sine of incidence out of air into crystal, being to the sine of refraction as five to three; but the other is perfectly new. The like double refraction is also observed in crystal of the rock, though much less sensibly. When an incident ray is thus divided, and each moiety ar-

Crystal.

rives at the farther surface, that refracted in the first surface after the usual manner, is refracted entirely after the usual manner at the second; and that refracted in the unusual manner in the first is entirely refracted after the like manner in the second; so that each emerges out of the second surface parallel to the first incident ray. Again, if two pieces of this crystal be placed over each other, so that the surfaces of the one be parallel to the corresponding ones of the other; the rays refracted in the usual manner in the first surface of the first, are refracted after the usual manner in all the other surfaces; and the same uniformity appears in the rays refracted after the unusual manner; and this in any inclination of the surfaces, provided their planes of perpendicular refraction be parallel.

From these phenomena Sir Isaac Newton infers, that there is an original difference in the rays of light; by means whereof some are here constantly refracted after the usual manner; and others in the unusual manner. Were not the difference original, and did it arise from any new modifications impressed on the rays at their first refraction, it would be altered by new modifications in the three following ones; whereas, in fact, it suffers no alteration at all. Again, he hence takes occasion to suspect, that the rays of light have several sides, endued with several original properties: for it appears from the circumstances, that these are not two sorts of rays differing in their nature from each other, one constantly, and in all positions, refracted in the usual, and the other in the unusual manner; the difference in the experiment mentioned being only in the position of the sides of the rays to the plane of perpendicular refraction. For one and the same ray is refracted sometimes after the usual, and sometimes after the unusual manner, according to the position of its sides to the crystal: the refraction being alike in both, when the sides of the rays are posited the same way to both, but different when different. Every ray therefore may be considered as having four sides or quarters; two of which, opposite to each other, dispose the ray to be refracted after the unusual manner; and the other two in the usual. These dispositions, being in the rays before their incidence on the second, third, and fourth surfaces, and suffering no alterations; for what appears in their passage through them must be original and connate.

Father Beccaria corrects the observations of Huygens and Newton concerning the refraction of rock or mountain crystal. The double refraction of the latter happens when a ray passes through two sides that are inclined to each other, and consequently issues coloured; whereas that of the Iceland crystal is made by the passage of a ray through two parallel sides, and therefore it issues colourless. He suggests, that there may be other substances in which there is a manifold refraction. Gravesande had a prism of Brasil pebble, which had a double refraction at each angle, but of a different kind from one another. Mr B. Martin prepared several prisms of Iceland crystal, which exhibited not only a double but a multiple refraction. A single prism produced a six-fold refraction; and by combining several prisms, a number of refractions was obtained equal to the product of those of the single prisms; *i. e.* a prism which afforded two images applied to one of six, produced a prism of twelve images, &c. He farther

Crystaline
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crystalliza-
tion.

ther observes, with respect to Iceland crystal, that tho' the sides of its plane of perpendicular refraction be parallel to one another, a beam of light transmitted thro' them will not be colourless; in which property it differs from all other known substances.

CRYSTALLINE, in general, something composed of, or resembling, crystal. See CRYSTAL.

CRYSTALLINE Heavens, in ancient astronomy, two spheres, imagined between the primum mobile and the firmament, in the Ptolemaic system, which supposes the heavens solid, and only susceptible of a single motion. See ASTRONOMY, n^o 247.

CRYSTALLINE Humour. See ANATOMY, p. 767.

CRYSTALLINÆ, or CRYSTALLINES, in medicine, are pustules filled with water, and so called on account of their transparency. They are one of the worst symptoms attendant on a gonorrhœa. They are lodged on the prepuce, without pain; and though caused by coition, have nothing of infection attending them. The cause is supposed to be a contusion of the lymphatic vessels in the part affected. Dr Cockburn, who hath described this case, recommends for the cure a mixture of three parts of lime-water and two of rectified spirit of wine, to be used warm, as a lotion, three times a-day.

CRYSTALLIZATION, in general, signifies the natural formation of any substance into a regular figure, resembling that of crystal. Hence the phrases of crystallized ores, crystallized salts, &c. and even the basaltic rocks are now generally reckoned to be effects of this operation: (See BASALTES and VOLCANO). The term, however, is most commonly applied to bodies of the saline kind, and their separation in regular figures from the water, or other fluid in which they are dissolved, is called their *crystallization* *. The word *crystallization* is never applied to the freezing of water, or to the consolidation of metals after they have been melted; though it might certainly be applied with as much justice to these substances as to any others; for all of them concrete into a certain regular form, from which they never deviate, unless disturbed. When water freezes slowly, it always forms regular crystals of ice, which are constantly of the same form. They are long, needle-like masses, flattened on one side, and joined together in such a manner, that the smaller are inserted into the sides of the greater; and thus these compound crystals have the appearance of feathers, or branches of trees with leaves. The most remarkable circumstance attending this crystallization is, that the angle formed by the insertion of the smaller pieces into the larger is either 60 or 120 degrees. The figures assumed by metals of different kinds have not been so exactly investigated, except in the regulus of antimony, which is observed always to take a stellated form. Experience also shows, that all kinds of earths, or other mineral matters, are capable of assuming a crystalline form, and may easily be made to do so by taking away part of the water which dissolves them.

Different salts assume different figures in crystallization, and are thus most easily distinguished from one another. The methods of reducing them into this form, for sale, are mentioned under the article CHEMISTRY, n^o 573. But besides the large crystals produced in this way, each salt is capable of assuming a

very different appearance of the crystalline kind, when only a single drop of the saline solution is made use of, and the crystallization viewed through a microscope. For our knowledge of this species of crystallization we are indebted to Mr Henry Baker, who was presented with a gold medal for the discovery, in the year 1744. These microscopical crystals he distinguishes from the large ones by the name of *configurations*; but this term seems inaccurate, and the distinction may well enough be preserved by calling the large ones the *common*, and the small ones the *microscopical*, crystals of the salt. His method of making these observations he gives in the following words:

" I dissolve the subject, to be examined, in no larger a quantity of rain or river water than I am certain it is sufficient to saturate. If it is a body easily dissolvable, I make use of cold water; otherwise I make the water warm, hot, or even boiling, according as I find it necessary. After it is perfectly dissolved, I let it rest for some hours, till, if overcharged, the redundant saline particles may be precipitated and settle to the bottom, or shoot into crystals; by which means I am most likely to have a solution of the same strength at one time as at another; that is, a solution fully charged with as much as it can hold up, and no more; and by these precautions the configurations appear alike, how often soever tried: whereas, if the water be less saturated, the proportions at different times will be subject to more uncertainty; and if it be examined before such separation and precipitation of the redundant salts, little more will be seen than a confused mass of crystals.

" The solution being thus prepared, I take up a drop of it with a goose quill cut in fashion of a scoop, and place it on a flat slip of glass of about three quarters of an inch in width, and between three and four inches long, spreading it on the glass with the quill, in either a round or an oval figure, till it appears a quarter of an inch, or more, in diameter, and so shallow as to rise very little above the surface of the glass. When it is so disposed, I hold it as level as I can over the clear part of a fire that is not too fierce, or over the flame of a candle, at a distance proportionable to the heat it requires (which experience only can direct), and watch it very carefully till I discover the saline particles beginning to gather and look white, or of some other colour, at the extremities of the edges. Then (having adjusted the microscope before-hand for its reception, armed with the fourth glass, which is the fittest for most of those experiments), I place it under my eye, and bring it exactly to the focus of the magnifier; and, after running over the whole drop, I fix my attention on that side where I observe any increase or pushing forwards of crystalline matter from the circumference towards the centre.

" This motion is extremely slow at the beginning, unless the drop has been overheated, but quickens as the water evaporates; and, in many kinds, towards the conclusion, produces configurations with a swiftness inconceivable, composed of an infinity of parts, which are adjusted to each other with an elegance, regularity, and order, beyond what the exactest pencil in the world, guided by the ruler and compasses, can ever equal, or the most luxuriant imagination fancy.

Crystalliza-
tion.

2
Microscopical crystals discovered by Mr Baker.

3
His method of procuring them.

* See Chemistry-Index.

I
Similarity between congelation and crystallization.

Crystallization.

"When this action once begins, the eye cannot be taken off, even for a moment, without losing something worth observation: for the figures alter every instant till the whole process is over; and, in many sorts, after all seems at an end, new forms arise, different entirely from any that appeared before, and which probably are owing to some small quantity of salt of another kind, which the other separates from, and leaves to act after itself has done: and in some subjects, three or four different sorts are observable, few or none of them being simple and homogeneous.

"When the configurations are fully formed, and all the water evaporated, most kinds of them are soon destroyed again by the moisture or action of the air upon them; their points and angles lose their sharpness, become uneven and defaced, and moulder, as it were, away. But some few are permanent, and being inclosed between glasses, may be preserved months, or even years, entertaining objects for the microscope.

"It happens oftentimes that a drop of saline solution can hardly be spread on the slip of glass, by reason of the glass's smoothness, but breaks into little globules, as it would do if the surface were greasy: this was very troublesome, till I found a way of preventing it, by rubbing the broken drop with my finger over the glass, so as to leave the surface smeared with it; on which smeared place, when dry, another drop of the solution may be spread very easily in what form one pleases.

"It likewise sometimes happens, that when a heated drop is placed properly enough for examination, the observer finds he can distinguish nothing: which is owing to saline steams that, rising from the drop, cover and obscure the object-glass, and therefore must immediately be wiped away with a soft cloth or leather.

"In all examinations by the microscope of saline solutions, even though made in the day-time, I always employ the light of a candle, and advise every observer to do so likewise: for the configurations being exceedingly transparent, are rendered much more distinguishable by the brown light a candle affords, than by the more white and transparent day-light; and besides, either by moving the candle or turning the microscope, such light may be varied or directed just as the object requires."

4
Description
of the microscopical
crystals of
various
salts.

In this manner were produced the beautiful crystallizations represented Plate CLII. They are vastly different from such crystals of the same salts as are obtained by the common processes; but Mr Baker assures us they are no less constant and invariable than they, and that he has repeated the experiments a great number of times with the same success.

Fig. 1. shows the microscopical crystals of *nitre* or *salt-petre*. These shoot from the edges, with very little heat, into flattish figures of various lengths, exceedingly transparent, and with straight and parallel sides. They are shown in their different degrees of progression at the letters *a, b, c, d, e*; where *a* represents how they first begin. After numbers of these are formed, they will often dissolve under the eye, and disappear entirely; but if one waits a little, new shoots will push out, and the process go on afresh. These first figures sometimes enlarge only without altering

their shapes, and sometimes form in such sort as the drop represents; but if the heat has been too great, they shoot hastily into ramifications very numerous and beautiful, but very difficult to be drawn; and which Mr Baker therefore did not attempt. There seems all the while a violent agitation in the fluid, and most commonly, towards the conclusion, a few octaedra (composed of eight triangular planes, or two quadrangular pyramids, joined base to base) make their appearance.

2. *Blue vitriol*, produces crystals round the edges, very short at the beginning, but increasing gradually, as represented at the figures 1, 2, 3, which denote their difference of form, and the progress of their growth. These crystalline shoots are solid, regular, transparent, and reflect the light very beautifully from their polished sides and angles. As the watery part evaporates, numbers of long slender bodies like hairs are seen here and there, some lying side by side, or crossing each other as at 4, others forming star-like figures with many radiations (5, 5). This salt shoots but slowly, and therefore requires patience. At last the true crystals begin to appear commonly in the middle of the drop, and are very prettily branched, as at 6.

3. *Distilled verdigrease*, dissolved as above directed; and immediately applied to the microscope, shows abundance of the regular figures, 1, 2, 3, 4, 5, 6, 7: but if the solution is suffered to stand for a few hours, and a drop of it is then heated over the fire on a slip of glass, till it begins to concrete about the sides, and then examined, sharp-pointed, solid, figures, bisected by a line cut through the middle, from which they are cut away towards the edges, begin to appear, and shooting forwards (1, 1, 1). These figures are often striated very prettily from the middle line to the edges obliquely (2, 2); and frequently they arise in clusters; and shooting from a centre (3, 3). These figures are a long time in growing; and whilst they are doing so, regular crystals appear forming in several parts of the drop, of the most lovely emerald colour, and reflecting the light from their sides and angles, which are most exactly disposed, and finely polished. No crystals are formed in the middle till the water is nearly evaporated; and then they begin to form hastily, for which reason they must be carefully attended. Their common figure resembles two long *ff* crossing each other in an angle of about 60°, and shooting branches every way: each of which again protrudes other branches from one, and sometimes from both, its sides; making together an appearance like four leaves of fern conjoined by their stalks (5, 5). Separate clusters of the same sharp pointed figures, as those at the edges of the drop, are also formed in the middle of it (6). Sometimes also they put on another form, like the leaves of dandelion (7). Very beautiful figures are likewise produced by a kind of combination of sharp points and branches (8, 8). All these crystals are of a most beautiful green colour, but deeper or lighter, according to the time of their production. The deepest are constantly produced first, and the paler ones afterwards. Towards the end of the process some circular figures are formed, extremely thin, and so slightly tinged, with green lines radiating from a centre, as to be almost colourless (9, 9). When all

seems

Fig. 1. Nitre or Salt Petre.



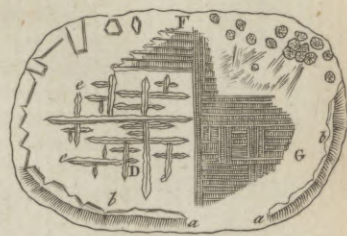
2. Blue Vitriol.



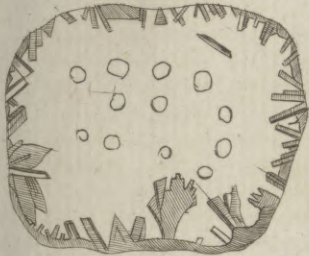
3. Verdigrise distilled.



4. Alum.



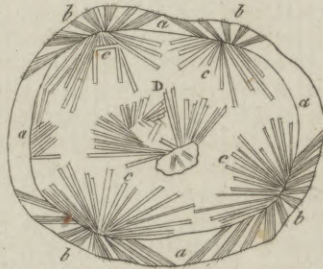
5. Borax.



6. Salt Armoniac.



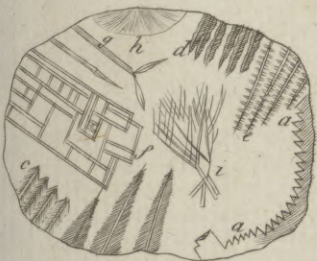
7. Salt of Lead.



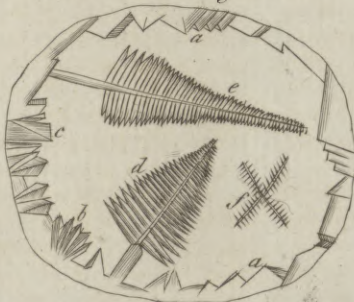
8. Salt of Tin.



9. Epsom Salt.



10. Scarborough Salt.



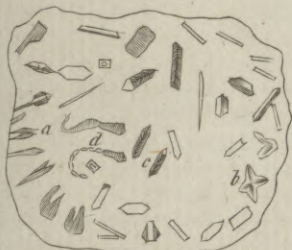
11. Glaubers Salts.



12. Salt of Jesuits Bar.



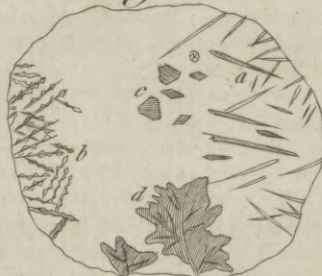
13. Salt of Liquorice.



14. Salt of Wormwood.



15. Salt of Tobacco.



16. Salt of Hartshorn.



17. Salt of Urine.



18. Rheum.



19. Camphire.



20. Manna.



Crystallization. seems in a manner over, bundles of hair-like bodies appear frequently scattered here and there throughout the drop, like those of blue vitriol already described.

4. *Alum.* The microscopical crystals of this salt prove more or less perfect according to the strength of the solution and the degree of heat employed in making the experiment. The solution of alum, however saturated with the salt, will not be found overstrong after standing some days; for in that time many crystals will have formed in it. This separation will often leave the remainder too weak for the purpose; but by holding the vial over, or near the fire, the crystals will again dissolve. After it has stood about half an hour, it may then be used. The drop put on the glass, and properly heated, exhibits commonly at first a dark cloud which appears in motion somewhere near the edge, and runs pretty swiftly both to the right and left, until it is either stopped by the intervention of regular crystals, or else it proceeds both ways at once, till having surrounded the whole drop, the two ends rush together, and join into one (*a, a*). This cloudy part, which seems to be violently agitated while it is running round, appears on a strict examination to consist of salts, shot into long and very slender lines, much finer than the smallest hair, crossing each other at right angles. As they go along, rows of solid crystals are produced from their internal edges. These are composed of many oblique plain sides (*b, b*), and which have all a tendency towards the figures of the regular crystals to be described presently. But it frequently happens, that, in some parts of the drop, many minute and circular figures are seen, rising at some little distances from the edge, which enlarging themselves continually, appear at last of a star-like form (*c, c*). The crystals in the middle seldom appear till the fluid seems almost wholly evaporated; when, on a sudden, many straight lines appear pushing forwards, whose sides or edges are jagged, and from which other similar straight and jagged lines shoot out at right angles with the first. These again have other small ones of the same kind shooting out likewise from themselves, and compose altogether a most beautiful and elegant configuration (*D*). Each of these lines increasing in breadth towards its end, appears somewhat club-headed (*e, e, e*). Sometimes, instead of sending branches from their sides, many of these lines rise parallel to each other, resembling a kind of palisadoe, and having numberless minute transverse lines running between them (*F*). But the most wonderful part of all, though not producible without an exact degree of heat and right management, is the dark ground work (*G*). It consists of an infinity of parallel lines, having others crossing them at right angles, and producing a variety scarce conceivable from lines disposed in no other manner: the direction of the lines (which are exquisitely straight and delicate) being so frequently and differently changed, that one would think it the result of long study and contrivance. During the time this ground work is framing, certain lucid points present themselves to view most commonly on one side. These grow continually larger, with radiations from a centre, and become star-like figures as before mentioned. Some of them send out long tails, which give them the appearance of comets: and at the end of all, a dark lueation in various directions darts frequently through,

and occupies all or most of the spaces between them, making thereby no ill representation, when viewed by candle-light, of a dark sky, illuminated with stars and comets. The regular crystals are often formed in the same drop with the others (*f*).

5. *Borax.* If a drop of solution of borax is held too long over the fire, it hardens on the slip of glass in such a manner that no crystals can appear. The best method is to give it a brisk heat for about a second, and then applying it to the microscope, the crystals will quickly form themselves as represented in the figure.

6. *Sal ammoniac* begins with shooting from the edges great numbers of sharp, but thick and broad, spiculæ; from whose sides are protruded, as they rise, many others of the same shape, but very short; parallel to each other, but perpendicular to their main stem (1). These spiculæ arrange themselves in all directions; but for the most part obliquely to the plane from whence they rise, and many are frequently seen parallel to one another (1, 1). As they continue to push forwards, which they do without increasing much in breadth, some shoot from them the small spiculæ only (2); others divide in a singular manner by the splitting of the stem (3); and others branch out into smaller ramifications (4). Before the middle of the drop begins to shoot, several exceedingly minute bodies may be discerned at the bottom of the fluid. These in a little while rise to the top, and soon distinguish their shape as at (5). Their growth is very quick, and for some time pretty equal; but at last some branch gets the better of the rest, and forms the figure (6). The other branches enlarge but little after this, all the attraction seeming to be lodged in that one that first began to lengthen; and from this, more branches being protruded, and they again protruding others, the whole appears as at (8). It is not uncommon to see in the middle of the drop some crystals, where, instead of the straight stems above described, there is formed a kind of zig-zag, with spiculæ like those in the other figures (7).

7. *Salt of Lead, or saccharum saturni.* A little of this salt dissolved in hot water, which it immediately renders milky, after standing a quarter of an hour to subside, is in a fit condition for an examination by the microscope. A drop of it then applied on a slip of glass, and held over the fire to put the particles in action, will be seen forming round the edge a pretty even and regular border of a clear and transparent film or glewy substance (*aaaa*); which if too sudden and violent a heat be given, runs over the whole area of the drop, and hardens so on the glass as not to be got off without great difficulty. But if a moderate warmth be made use of, which likewise must not be too long continued, this border proceeds only a little way into the drop, with a kind of radiated figure composed of fine lines, or rather bundles of lines, beginning from the centres in the interior edge of the border, and spreading out at nearly equal distances from each other every way, towards the exterior (*bbbb*). From the same centres are produced afterwards a radiation inwards, composed of parallelograms of different lengths and breadths; from one, and sometimes both the angles of these, are frequently seen shootings so exceedingly slender, that they are

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perhaps the best possible representations of a mathematical line. The extremities of the parallelograms are generally cast off at right angles; but they are sometimes also seen oblique (*cccc*). Centres with the like radii issuing from them, and some of the glutinous matter for their root, are sometimes formed in the drop, entirely detached from the edges; and in these it is very frequent to find a kind of secondary radii proceeding from some of the primary ones; and others from them again to a great number of gradations, forming thereby a very pretty figure (*D*).

8. *Salt of Tin*, produces at the edges of the drop a number of octaedra, partly transparent, standing on long necks, at small distances from each other, with angular shoots between them (*aa*). At the same time, solid and regular opaque cubes will be seen forming themselves in other parts of the drop (*bb*). In the middle of the same drop, and in several other parts of it, very different figures will also be formed; particularly great numbers of flat, thin, transparent, hexangular bodies (*ccc*); some among which are thicker (*e*), and a few appear more solid, and with six sloping sides rising to a point, as if cut and polished (*d*). The figure (*f*) is composed of two high pyramids united at their base. Some in this kind of form are found truncated at one of their ends, and others at both. Several of the hexagonal bodies may be observed with sloping sides, forming a smooth, triangular, rising plane, whose angles point to three intermediate sides of the hexagon (*g*).

9. *Epsom Salt*, begins to shoot from the edge in jagged figures (*a*). From other parts differently figured crystals extend themselves towards the middle, some of which have fine lines proceeding from both sides of a main stem, in an oblique direction; those on one side shooting upwards in an angle of about 60° , and those on the other downwards in the same obliquity (*c, f*). Others produce jags from their sides nearly perpendicular to the main stem, thereby forming figures that resemble some species of the polipody (*e*); but in others the jags are shorter (*d*). Now and then one of the main stems continues shooting to a considerable length, without any branchings from the sides; but at last sends out two branches from its extremity (*g*). Sometimes a figure is produced having many fine and minute lines radiating from a centre (*b*). The last shootings in the middle of the drop (*b*) are not unlike the frame-work for the flooring or roofing of a house, but with the angles oblique: and sometimes a form of another kind presents itself (*i*).

10. *Scarborough Salt*, begins to shoot from the edges: first of all in portions of quadrilateral figures, much resembling those of common salt; but two of their angles, instead of 90° , are about 100° . They shoot in great numbers round the borders of the drop, having their sides as nearly parallel to one another as the figure of the drop will allow: some proceed but a little way, others farther, before they renew the shoot (*aa*). In some places they appear more pointed and longer (*b*); and sometimes, instead of the diagonal, one of the sides is seen towards the edge, and the other shooting into the middle (*c*). The middle crystals (*def*) seem to be of the vitriolic kind.

11. *Glauber's Salt*, produces ramifications from the side of the drop, like the growth of minute plants, but

extremely transparent and elegant (*c*). Some of them, however, begin to shoot from a centre at some distance from the edge, and protrude branches from that centre in a contrary direction (*b*). Sometimes they shoot from one, and sometimes from more sides of the central point in different varieties (*d*). Other figures are produced from different parts of the edge of the drop (*a, f, e*); but the most remarkable and beautiful crystallization forms last of all near the middle of the drop. It is composed of a number of lines proceeding from one another at right angles with transparent spaces and divisions running between them, appearing altogether like streets, alleys, and squares, (*gg*). When this crystallization begins, it forms with great rapidity, affording the observer a very agreeable entertainment: but its beauty is of very short duration: in a few moments it dissolves and vanishes like melted ice, which renders the drawing of it very difficult.

12. *Salt of Jesuits bark*. The few shootings which this salt produces at the edge of the drop are of no regular figure (*a*). The whole area becomes quickly filled with great numbers of rhombi, of different sizes, extremely thin and transparent (*b*). Some of these enlarge greatly and acquire a considerable thickness, forming themselves into solids of many sides (*cc*). Near the conclusion some crystals of sea-salt are formed (*dd*), and likewise a few odd triangular figures (*e*).

13. *Salt of Liquorice*, begins shooting from the edge with a sort of rhombic spiculæ (*a*). Some four-branched figures like those of vitriol commonly appear, but moulder away before their ramifications are completed, leaving only their stamina behind (*bb*). The middle of the drop is usually overspread with great numbers of parallelograms, some exceedingly transparent, being mere planes; having sometimes one, sometimes more, of the angles canted in such a manner as to produce pentagonal, hexagonal, and other figures. Others have much thickness, and form parallelopipeds or prisms (*c*). Some of the plane figures now and then protrude an irregular kind of shooting which appears very pretty (*d*).

14. *Salt of Wormwood*. The first shootings of this salt from the edges of the drop appear of a considerable thickness in proportion to their length: their sides are deeply and sharply jagged or indented, being made up of many somewhat obtuse angles, and their ends pointed with angles of the same kind (*a*). But other shoots frequently branch out from these original ones, and they again send forth others, making altogether a very pretty appearance (*bb*). The crystals of this salt are very different from each other, consisting of squares, rhombi, parallelograms, &c. (*c*).

15. *Salt of Tobacco*. If a moderate degree of heat is given to a solution of this salt, its first shootings will be from the edges of the drop, in slender tapering figures, ending with very sharp points, but at considerable distances from one another. Along with these are formed other crystals, nearly of the same kind, but entirely detached, and farther within the drop, having the thicker ends towards the centre of the drop, and the sharp points turned towards its edge (*a*). When a little more heat has been given, other spiculæ are produced from the edge, whose ends spread on either side, and then terminate in a point; and

Crystallization.

crystallization. and which have all along their sides triangular pointed crystals, placed alternately so as to represent a zig-zag, with a line drawn through its middle (*b*). The regular crystals are produced in the middle of the drop, and are either hexagons or rhombi (*c*). When the moisture is nearly exhale, there are sometimes seen to shoot from, or rather under the spiculæ, upon the plane of the glass, a representation of leaves very small at their first appearance, but gradually increasing (*d*). A violent agitation may be discovered in the fluid by the first magnifier during the whole process; but especially at the beginning, and extremely minute crystals rising from the bottom.

16. *Salt of Hartshorn*. On the application of a very small degree of heat, salt of hartshorn shoots near the edges of the drop into solid figures somewhat resembling razors or lancets, where the blade turns into the handle by a clasp (*d*). The crystals of this salt are produced with great velocity, and are somewhat opaque, shooting from the edges of the drop, on both sides a main stem, and with a kind of regularity, rugged branches like those of some sorts of coral (*aa*). But sometimes, instead of these branches, sharp spiculæ, some plain, and others jagged, are protruded to a considerable depth on one side only (*b*). As the fluid exhales, some one of the branching figures generally extends to a great length, producing on one side shoots that are rugged and irregular, and on the other curious regular branches resembling those of some plant (*c*).

17. *Salt of Urine*, shoots from the edges of the drop in long parallelograms like nitre (*aa*). But in other places, along the sides of the drop solid angles are formed, that seem to be the rudiments of common salt (*b*). Some of the parallelograms increase much in size, and spread themselves in the middle, so as to change their first figure, and become three or four times bigger than the rest: and these have a dividing line that runs through their whole length from end to end, whence issue other short lines at small distances, opposite to one another; all pointing with the same degree of obliquity towards the base (*cc*). Among these enlarged figures, some few shoot still forward and tapering towards a point, but, before they form one, swell again, and begin as it were anew; and thus they proceed several times before their figure is quite finished (*aa*). The figures 1, 2, 3, 4, 5, 6, are the regular crystals of this salt when it is allowed to dissolve in the air, and no heat at all is given.

18. *Rheum*, or the clear liquor which distils from the nostrils when people catch cold, is strongly saturated with salt. A drop of it on a slip of glass will soon crystallize in a beautiful manner, either with or without heat; but if heated to about the warmth of the blood, and then viewed through the microscope, many lucid points will be seen rising and increasing gradually, till their form is shown to be quadrangular, with two transparent diagonals crossing each other (*dd*). These diagonals shoot soon after far beyond the square, protruding other lines at right angles from their sides; and thus they go on to form the most elegant and beautiful crystals (*bb, cc*). When a drop of rheum is set to crystallize without any heat, instead of branched crystals over the whole area, such are formed only in the middle; but, about the edges, plant-like figures are

produced shooting several stems from one point, and resembling a kind of sea-moss (*E*).

19. *Campfire*, though insoluble in water, dissolves very readily in spirit of wine. A drop of this solution spread upon a slip of glass crystallizes instantly in the beautiful manner represented in the figure.

20. *Manna* easily dissolves in water, and a drop of the solution is a very pretty object. Its first shootings are radiations from points at the very edge of the drop: the radiating lines seem opaque, but are very slender (*aaa*). Amongst these arise many minute transparent columns, whose ends grow wider gradually as they extend in length, and terminate at last with some degree of obliquity (*b*). Some few figures radiating from a centre every way, and circumscribed by an outline, are produced within the drop (*dd*). But the most surprising and elegant configuration is composed of many clusters of radiations shooting one from another over great part of the drop, and making all together a figure not unlike a certain very beautiful sea-plant (*C*).

The phenomena of crystallization have much engaged the attention of modern chemists, and a vast number of experiments has been made with a view to determine exactly the different figures assumed by salts in passing from a fluid to a solid form. It does not, however, appear, from all that has yet been done, that any certain rule can be laid down in these cases, as the figure of saline crystals may be varied by the slightest circumstances. Thus, sal ammoniac, when prepared by a mixture of pure volatile alkali with spirit of salt, shoots into crystals resembling feathers; but if, instead of a pure alkali, we make use of one just distilled from bones, and containing a great quantity of animal oil, we shall, after some crystallizations of the feathery kind, obtain the very same salt in the form of cubes.

Such salts as are sublimable crystallize not only in the aqueous way by solution and evaporation, but also by sublimation; and the difference betwixt the figures of these crystals is often very remarkable. Thus sal ammoniac by sublimation never exhibits any appearance of feathery crystals, but always forms cubes or parallelepipeds. This method of crystallizing salts by sublimation has not as yet been investigated by chemists: nor indeed does the subject seem capable of investigation without much trouble; as the least augmentation of the heat beyond the proper degree would make the crystals run into a solid cake, while a diminution of it would cause them fall into powder. In aqueous solutions, too, the circumstances which determine the shapes of the crystals are innumerable; and the degree of heat, the quantity of salt contained in the liquor, nay, the quantity of liquor itself, and the various constitutions of the atmosphere at the time of crystallization, often occasion such differences as seem quite unaccountable and surprising.

Mr Bergman has given a dissertation on the various forms of crystals; which, he observes, always resemble geometrical figures more or less regular. Their variety at first appears infinite; but by a careful examination it will be found, that a great number of crystals, seemingly very different from each other, may be produced by the combination of a small number of original figures, which therefore he thinks may be called *primitive*. On this principle he explains the formation

Crystallization.

5
Excessive variety in the forms of crystals.

6
Mr Bergman's account of their formation.

of

Crystallization. of the crystalline gems as well as salts; and the results of his observations are as follow.

I. One of the primitive forms is that named by our author *spathaceous*; and these, he says, properly agglutinated, may form the great variety of dissimilar bodies found among crystals.

7 Of the schoerlaceous crystal. In the calcareous spar we find a combination of rhombi, whose obtuse angles contain $101\frac{1}{2}$ degrees, and the acute $78\frac{1}{2}$. By a combination of these is formed the calcareous spar, which appears in the form of a tessera or oblique paralleliped; but by other combinations of the same planes, crystals apparently of the most opposite forms may be generated. Thus, for the formation of an hexaedral prism, consisting of six equal and similar parallelograms terminating at both ends in three rhombi which form a solid angle, we have only to suppose a continual addition of rhombi equal, similar, and parallel to the oblique paralleliped or crystal of the calcareous spar. Thus, suppose the figure ABCDE (fig. 1.) to represent a nucleus of the kind just mentioned, the axis of which passes through the two opposite angles B E; it is evident, that by a continual application of rhombi, such as FG, HI, &c. to both sides of the axis, we shall at last produce the figure A B, fig. 2. and which represents the hexaedral prism required. This kind of crystal, our author tells us, belongs chiefly to the stones called *schoerls*, and is therefore called the *schoerlaceous* form. It belongs likewise to some others of the calcareous tribe.

8 Garnet crystal. From the schoerlaceous crystal that of the garnet is easily produced by a stoppage of the accumulation of the planes as soon as the sides of the prism have acquired a rhomboidal figure. Thus a complete dodecahedron is formed, which is always the figure of the garnet when perfect.

9 Hyacinth. The figure of the garnet is easily changed into another, frequently assumed by the hyacinth, by the regular application of equal and similar rhombi to each of the solid angles, which angles are formed by four planes. The garnet, when complete, has six angles composed of four planes, and eight with three. The formation of this kind of crystal will be understood from an inspection of fig. 3. In this operation the four rhombi are changed into an equal number of oblong hexagons; L H A B into L H b a b B: and so of the other rhombi represented by the different letters of the figure.

10 Pyramidal crystals. In some cases the original planes decrease according to a certain law; and this, from whatever cause it may arise, must necessarily change the appearance of the terminating planes, and occasionally either augment or diminish their number. Thus, instead of a prism, we shall have a double pyramid, one tending upwards and the other downwards, as will be easily understood from what has been already said. This is the form assumed by the calcareous crystals commonly called *pig-tooth* by the miners.

If the decreasing series of rhombi is stopped before they vanish ultimately in a point, the formation of truncated pyramids, of which many examples are to be met with in the mineral kingdom, must necessarily take place. In cases of this kind, it is easy to see why the pyramids, if struck in one direction, will break over smoothly and easily, but not in another.

It is not uncommon to find the original crystals themselves imperfect; in which case the large crystals, formed by combining them together, must deviate more or less from the perfect form. Thus, let ABCDEFG (fig. 4) represent the three rhombi which constitute the apex of a perfect schoerlaceous crystal; and let us next suppose the rhombus A G truncated in the direction of the line *ab*, CG along *cd*, and EG along *ef*. Thus, the regular hexagonal figure of the prism ABCDEF will be changed into an irregular one *abcdDefF*, consisting of nine unequal sides, whose apex is composed of three irregular pentagons, *ab B G F*, *cd D C B*, and *ef F G D*. The rough tourmalins of Tyrol and Ceylon particularly assume this form, though it sometimes belongs to bodies both of the calcareous and schoerlaceous kind.

12 Triangular crystals. Triangular crystals may be supposed to arise from those of the pentagonal kind; it being obvious, that the periphery of a pentagon, as *ab B G F*, approaches more nearly to a triangle in proportion as the distance between *ab* and B F grows less: and when these distances vanish entirely, a triangular prism is formed, terminated by three triangles: if the cutting line *ab* approach still nearer to the centre G, the form still remains the same.

13 Varieties of the garnet crystal. Let us now suppose, that the garnet crystal, whose shape is represented fig. 5. instead of complete rhombi, has others accumulated about its axis, whose three external angles are truncated; or, which is the same thing, if the longitudinal margins of the prism be cut by planes parallel to the axis, crystals will be formed, whose shape is represented by the small letters in the figure. Calcareous crystals are sometimes found of this shape; but generally so low, that *e* nearly coincides with *a*, *c* with *d*, &c. and hence the pentagon *abcde* becomes almost of a triangular figure, which has been attributed to these crystals by some authors who did not understand their true origin. The pyritaceous crystals sometimes afford instances of this kind complete. Sometimes the garnet consists of 24 sides, by having all the margins truncated; a change which may easily be understood from what has been already mentioned. If the intersection *cd* of the planes *ec* and *cr* fall without the plane B G, a figure of a very different kind will be generated.

14 Cruciform hyacinth crystal. Sometimes the hyacinthine crystal assumes the cruciform appearance ABCDEFGHIKLM, fig. 6. Here the apex is at C, the figure *ABCbca* being all in the same inclined plane, which is the case with the other three homologous figures. Now, in order to investigate the formation of these crystals, let us suppose the rhombi CO, CP, and CQ, to be completed, which to an eye placed in the high axis C will appear like as many squares situated in the subjacent plane. Thus we may understand the formation of the crystals of granite as well as of the hyacinth. The former may be supposed a quadrangular prism composed of four rhombi, touching one another only at their apices, and terminated at each end by four rhombi meeting at the apex. When this form is a little protracted, or augmented by applying to the apices similar and equal planes, it becomes that of the hyacinth; whence the granite crystal may be called the rudiment of the hyacinth also. The variety here mentioned

CHRYS TALLIZATION.

Plate CLIII.

Fig. 2.

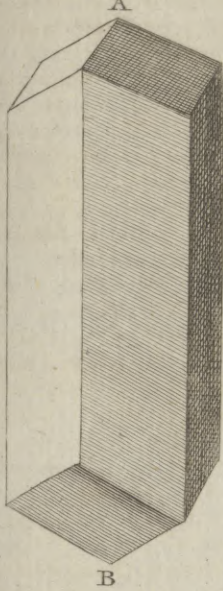


Fig. 1.

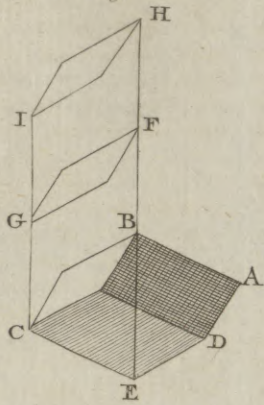


Fig. 3.

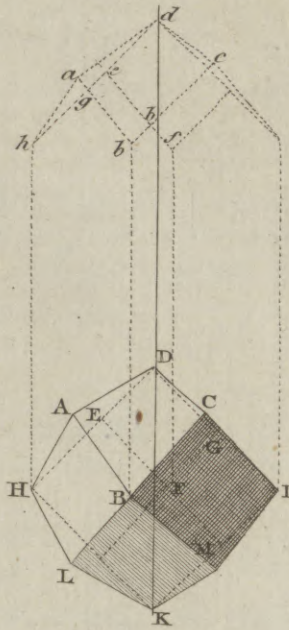


Fig. 6.

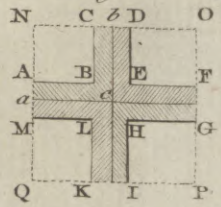


Fig. 7.

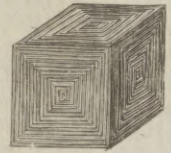


Fig. 10.

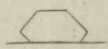


Fig. 5.

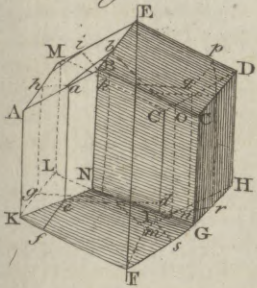


Fig. 11.

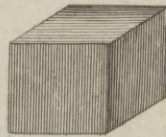


Fig. 8.

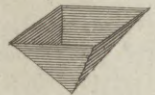


Fig. 9.



Fig. 12.



Fig. 14.

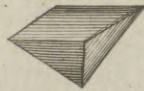


Fig. 15.



Fig. 4.

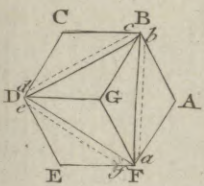


Fig. 13.



Fig. 19.

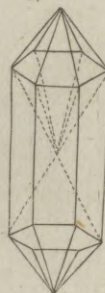


Fig. 20.

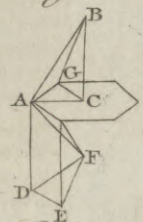


Fig. 16.

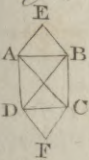


Fig. 17.

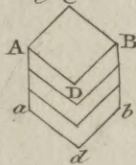
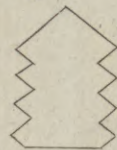
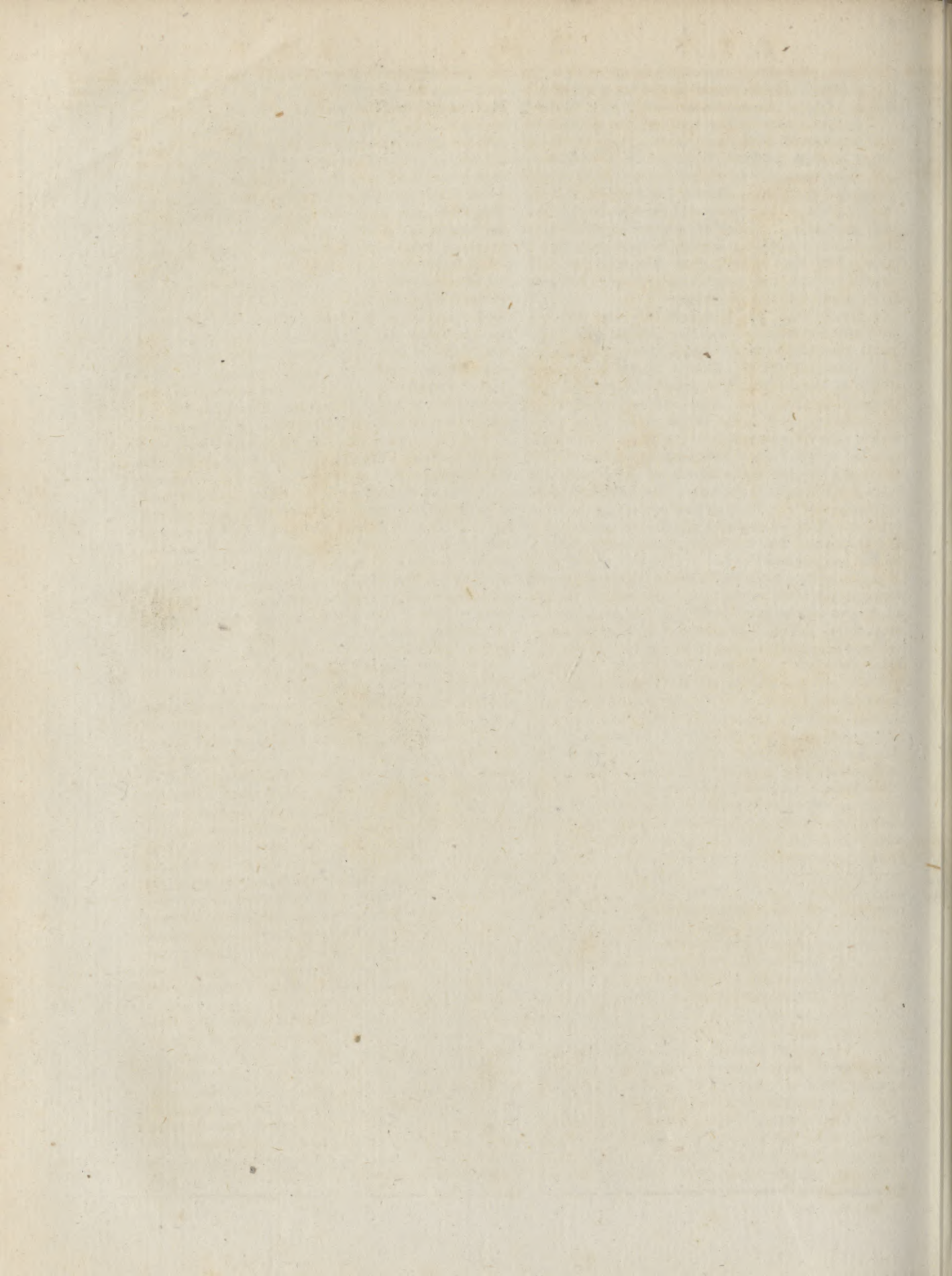


Fig. 18.



A. Bell Pin. W. al. Sculptor. fecit.



Crystallization.

15
her varieties of forms crystals.

mentioned, of hyacinthine crystals, is met with in the Hartz mines. Mr Ehrhart says, that they are of a siliceous, and not of a calcareous, nature.

If planes similar to one another, but dissimilar to the fundamental ones, be added, a vast variety of shapes may be produced, of which it is needless to give more examples at present. Our author appeals to experience for the truth of it; and asserts, that the loose texture of calcareous crystals will clearly show their construction, if carefully and completely broken. The harder crystals can scarcely be broken in such a manner as to show their structure; but the schoerls discover it very plainly, and even the garnets show themselves to be composed of laminae.

“Finally (says Mr Bergman), we may add one particular observation concerning prismatic and hexagonal calcareous crystals truncated perpendicularly; such sometimes occur, and they cannot derive their origin, in the manner above described, from the spathaceous particles, and by no other way can hexagonal prisms be generated. What, then, is the cause which destroys their apices? I confess this to be a question which I am wholly unable to answer, unless we may assume an accumulation of planes more and more deficient around the axis. We may from hence conclude, that something unusual occurs; as the truncated extremity is opaque, while the rest of the prism is transparent; but the upper hexagonal section is smooth and polished.”

On the whole, our author observes, that the greatest varieties may occur in the figures of crystals, though all of them may be generated from those of the spathaceous form, and the substance of all may be ultimately the same; whence we should be induced to put but little confidence in the figure. “If, then, (says he), this test, which undoubtedly is the most remarkable so far as externals reach, is of so little use, of what value can the others be? and with what success can we hope to form a system of mineralogy upon such distinctions? External criteria should certainly not be neglected, but he who trusts implicitly to them deceives himself.”

II. From a consideration of the larger lamellæ of which crystals are composed, our author naturally proceeds to an investigation of their smaller constituent parts. Here he is of opinion, that the different external appearance of all crystals is owing to varieties in their mechanical elements. A question, however, occurs, Whether those very minute molecules, which may, as it were, be called the *stamina* of crystals, be naturally possessed of a determinate angular figure, or whether they acquire it by crystallization? In answer to this, he mentions the following facts, which he has had an opportunity of observing himself.

1. “If the small particles which separate from lime-water, when exposed to the air, be inspected with a microscope, they will be found spathaceous.

2. “The greater spathous tessellæ, when accurately examined, are frequently found with striæ running diagonally, such as often appear in saline crystals, by which their internal structure is discovered.

3. “The cubes of common salt not only exhibit diagonal striæ, but frequently, upon each side, show squares parallel to the external surface, and gradually decreasing inwards (fig. 7.), by which we discover their internal structure: for every cube is composed of

six quadrangular hollow pyramids, joined by their apices and external surfaces; each of these filled up by others similar, but gradually decreasing, completes the form. By a due degree of evaporation, it is no difficult matter to obtain these pyramids separate and distinct, as in fig. 8. or six of such, either hollow, or more or less solid, joined round a centre. This is the whole course of the operation from beginning to end. This takes place in the salited vegetable alkali, or *sal digestivus Sylvii*; in the crystallized luna cornea; the galena or sulphurated lead; and quadrangular nitre, which is of the spathaceous form, produces a similar congeries of pyramids, and these almost equally distinct with the preceding cubic crystals. A solution of alum, upon evaporation, generally produces solid octaedra; but sometimes also it exhibits hollow pyramids, and upon such of them as are complete, the junctures are very distinctly marked by conspicuous lines.

4. “Sometimes, too, other salts indicate the same construction by visible diagonals. Fig. 9. represents a section of the hexagonal prism formed by Rochelle salt. The arrangement of the internal particles of this salt cannot be known when the crystal is complete: but when it is formed on the bottom of the vessel, as represented fig. 10. the lower side cannot be perfect; and this parallelogram exhibits two diagonals distinctly, as represented fig. 11. This is likewise the case with the salt extracted from human urine, called *microcosmic salt*. Besides, we should observe of the vertical triangles, that they are alternately transparent and opaque in pairs; which plainly points out a difference in the situation of their elements. Some crystals of nitre are also marked with diagonals; a circumstance which in others is generally concealed by the close connection of the particles.

5. “If we examine the hollow pyramid of common salt farther, we shall find it composed of four triangles, and each of these formed of threads parallel to the base; which threads, upon accurate examination, are found to be nothing else than a series of small cubes: Therefore, although the above circumstances seem plainly to point out the formation of all crystals from the union and cohesion of pyramids, whose sides, being different in form and magnitude, occasion the differences of forms; it yet remains uncertain whether the same internal structure takes place in those whose minuteness renders them totally invisible; and whether the primary stamina possess a determinate figure, or are composed by the union of many shapeless particles. We have long known, that the smallest concretions which are visible by a microscope possess a determined figure; but these are compounds. In the mean time, until this veil be removed in some measure at least, we cannot avoid comparing the process of crystallization with the congelation of water.

“While the watery particles are concreting, they exert a double tendency; by one of which they are formed into spiculæ, by the other these spiculæ are ranged in such a manner with respect to one another as to form angles of 60 degrees: from hence the varieties observed in the particles of snow may be easily explained. The most simple figure is that where six equal radii diverge from a centre in the angle above mentioned, as in fig. 12. The same angle will be preserved if the extremities of these be joined by right lines; which will also be the case, if each of the tri-

Crystallization.

Crystallization.

angles thus formed be filled with right lines parallel to the base, as in fig. 13.

“ Let us now suppose the particles which are employed in crystallization endowed with a tendency to form spiculæ, and these spiculæ with a tendency to arrange themselves at equal angles of inclination, and we shall have both the triangles and the pyramids composed of them, even although the primary stamina had not a determined figure. As the angles of inclination vary, the triangles and pyramids will also vary; and hence the different forms of crystals will be produced, which may to a certain degree be investigated geometrically, the angles being given.

17
Different ways in which they may be produced.

III. Mr Bergman now considers the various ways in which crystals may be produced; which are, 1. By water; 2. By a liquefying heat; 3. By a volatilizing heat.

1. The most common method of obtaining crystals is by means of water; as by this medium saline substances are very readily taken up, and appear again in a solid form when the liquid is properly diminished by evaporation. It is not only when dissolved in water that they acquire determinate forms; this happens also when they are sufficiently attenuated and mixed with it; for substances not soluble in water will remain suspended in it, when, by sufficient division, they have acquired as much surface as makes them approach the specific gravity of the fluid; and it seems very probable, that many of the earths met with in the mineral kingdom, which have a regular form, have coalesced in this way. We must, however, carefully distinguish between mechanical mixture and true solution, even though both should agree in weight. When solid bodies are mechanically mixed with water, they will remain at the bottom of the vessel if laid there in powder, unless diffused by agitation; but soluble substances totally and spontaneously distribute themselves through the menstruum even without any agitation, though this certainly accelerates the solution.

2. Another method of obtaining crystals is by fusion and slow cooling. Thus sulphur, when melted and cooled, shoots into long striz, acquiring at the same time an electrical property: bismuth, zinc, and regulus of antimony, acquire a tessellated appearance; nay, the last of these, when set to cool in a conical mould, becomes stellated, not only on the upper surface or basis of the mass, but along the whole axis. Glass also, when melted and slowly cooled, will sometimes shoot into beautiful crystals. Our author mentions his having sometimes seen the scoria of furnaces, where iron had been melted with the addition of calcareous earth, of a regular prismatic figure; and when crude iron has been melted with lime, he has sometimes also found complete octaedra in the scoria. In large metallic masses, however, the under parts are generally so much pressed by the weight of those above, that they show no signs of crystallization, though beautiful crystals are often formed on the surface of gold, silver, iron, &c.

3. The particles of bodies volatilized by heat, if during cooling they are sufficiently at liberty, often obey the laws of attraction, and form crystals. To this class we may refer those which are condensed from the vapours of regulus of antimony, called the *flores argentinæ*. The galena which is frequently interspersed among the copper-ore at Fahlun sends forth a vapour which condenses on the upper strata, forming hollow

pyramids, which are the bases of the cubes of galena, entirely similar to those which compose common salt. In the heaps of arsenical ore exposed to the fire at Loefa, our author has collected very beautiful crystals, of white, yellow, and red colours, partly tetraedral and partly octaedra. Some of these exhibit hollow pyramids, whose sides consist of threads parallel to the base, and exactly similar to those formed in the moist way. These crystals, when complete, frequently show the junctures of the pyramids very distinctly by straight lines; and by careful examination, we may be able to trace the whole process through its various steps, from the very beginning to the end of the operation.

Prisms of any kind may be formed by the apices of proper pyramids meeting together in a certain number round the same point. The apex may also be formed by a single pyramid having its vertical angle turned outward. Thus, by adding to the cube ABCD the quadrangular pyramids ABE DCF, we shall have a four-sided prism (fig. 16.); and thus, though very seldom, common salt sometimes acquires an apex. If we apply to one or both of the apices of the octaedron ACBD, fig. 17. a hollow pyramid *adb*, similar and equal to the fundamental figure, we will have a prism of the same kind: alum, however, has never been observed of a prismatic form by our author, though sometimes consisting of octaedra imperfectly joined together, as in fig. 18. Four-sided pyramids may be composed of four tetraedra, and consequently 24 of the same may make up a cube; “ and (says our author) it has also a double apex of 32. Thus we have a new construction, which undoubtedly sometimes takes place; for, as I have already said, arsenical crystals sometimes take the tetraedral, sometimes the octaedra, form, which may therefore easily be mutually exchanged.

“ It is with less facility that hexagonal prisms are formed of such pyramids as have the same number of sides, unless tetraedra be admitted. In fig. 19. four hexagonal and six tetragonal pyramids meet; the former are easily resolved into six and the latter into four tetraedra (fig. 20.); 48 of which consequently make up the whole mass, supposing this to be the method followed by nature. I have no doubt that this construction is probable on many accounts; for it requires only the most simple elements, and such as are conformable to the figures of all crystals. That tetraedra adapted to this purpose have sometimes dissimilar and unequal sides, makes not against the supposition: but what is most to the purpose is, that sometimes such tetraedra are employed without the smallest doubt. All these circumstances are of no small weight; but as long as no traces of tetraedra are to be found among the pyramids of common salt, the laws of sound reasoning forbid us to draw any general conclusion. I am perfectly certain that nature does frequently employ pyramids in this operation; it remains for future experiments to determine whether this be always the case.”

IV. We come now to consider the ultimate cause of crystallization, concerning which there have been many different theories. Some have been of opinion that there cannot be any crystallization without a saline principle in some degree existing in the crystallizing substance. This opinion, however, is opposed by Mr Bergman on the following grounds:

1. He supposes crystallization to be an effect of attraction;

Crystallization.

18
Form of prism of various kinds.

19
Different theories of crystallization.

crystallization.

traction; consequently, as all other matters as well as salts are subject to the laws of that attraction, we cannot consider the regular and symmetrical form in which they arrange themselves as peculiar to saline bodies; and hence crystals are also produced by such methods as will sufficiently attenuate and disengage the ingredient parts from each other.

2. The more simple that any saline body is, and the more free from any kind of heterogeneous matter, the more difficult it is to reduce it into a crystalline form. Thus the pure acids and caustic alkali cannot be made to assume the form of crystals without the greatest difficulty.

3. The similarity of forms in crystals, Mr Bergman observes, "does not depend upon the acid; as the prismatic and quadrangular nitre are formed from the same acid, though joined indeed to different alkalies. Neither is the basis sufficient to determine the figure; for the vegetable, as well as the mineral alkali, when saturated with marine acid, will produce cubical crystals. The external appearance, therefore, depends on the menstruum and the base jointly. We are not, however, to imagine from thence that there is present a neutral or middle salt whenever the figure of such a one is discoverable; for not the smallest particle of alum is found in nickel or lead when united with nitrous acid, though both these compounds yield octaedra crystals." Here we may again remark, that the figure of crystals depends upon circumstances altogether unknown, of which Dr Eason, in a paper on this subject in the Manchester Transactions, gives a remarkable instance in gypsum, which is known to be a combination of the vitriolic acid with a calcareous basis; yet this compound is found naturally crystallized in five ways, so very different from each other, that mineralogists have distinguished them by five distinct names, viz. 1. Lapis specularis. 2. Striated gypsum. 3. Gypseous alabaster. 4. Selenites properly so called. 5. A gypseous spar frequently adhering to the veins of ore in mountains. All of these, when chemically examined, exhibit precisely the same phenomena, and are really nothing but different crystallizations of the same compound salt.

4. Mr Bergman likewise observes, that there is a great variety in the forms of crystals, though the matter remains the same; of which examples have been given in the calcareous crystals, and in the different kinds of gypsum just mentioned. Among the pyrites also we meet with cubes striated in a very singular manner; the lines of one side being perpendicular to those which distinguish the different sides, as represented fig. 14.; but among these there are likewise tetraedra, octaedra, dodecaedra, and icosaedra, to be met with.

5. A great number of crystals are either totally destitute of any saline matter, or possess it in such a small degree that no experiments hitherto tried have been able to discover the smallest sensible traces of it. Thus mica sometimes shoots into hexangular prisms composed of parallel lamellæ, the elementary spiculæ of which are disposed as in fig. 15.; gems, schoerls, granites, and other earthy bodies, are frequently found figured, though no saline matter can be discovered by analysis; and the same holds good of gold, silver, lead, tin, bismuth, and zinc, united with mercury, all of which regular forms, according to the quantity of the mercury.

"If we have recourse (concludes Mr Bergman) to

the supposition of an hidden saline substance which cannot be discovered by art, it must surely be unreasonable to attribute to such a principle so great a power as that of arranging the particles in the order necessary for crystallization; a cause, beyond question, unequal to the magnitude of the effect: for how is it possible that a saline matter, the presence of the smallest atom of which cannot be discovered by the most delicate tests, shall in pure water have yet power to effect the icy crystallization with such force as to overcome the strongest obstacles? How can a saline matter, which by no test can be discovered, have power, in an amalgam of gold, to arrange the ponderous particles of both metals in a particular manner? What salt is able to form the stellated regulus of antimony? What the hexagonal lamellæ of mica?"

On this subject we may remark, that whether we affirm or deny a saline principle to be the cause of crystallization, the ultimate power by which it is effected must be equally unknown. A saline principle can make other bodies crystallize along with it only by virtue of the disposition it has of itself to assume a crystalline appearance; and we must therefore seek for the cause of this crystallization of the salt, as well as of the substance with which it is mixed. Mr Bergman, as well as others, have endeavoured to account for this on the principle of attraction; but with little success. Sir Isaac Newton supposes the particles of salt to be diffused through the solvent fluid at equal distances from each other; on which account he concludes that they must come together in regular figures. Mr Bergman considers the particles which form saline substances as endowed with a twofold tendency; one to arrange themselves in spiculæ, the other for the spiculæ to arrange themselves at certain angles of inclination; and as these angles vary, different forms of crystals must be produced. Both these effects, he thinks, may be owing to the same cause, viz. a mutual attraction between the particles; which, according to the various shapes and particular figures of the atoms, at one time arranges them in the form of spiculæ, and again connects the spiculæ already formed under different angles of inclination.

This seems to be much the same with what other chemists understand by the *polarity* of the saline particles, by which they are arranged in certain directions. All this, however, is totally insufficient to explain the phenomenon. If, according to Sir Isaac Newton's supposition, the particles were brought together by a general attraction, after being placed at equal distances by the solvent for some time, we must expect to find all kinds of salts crystallized in the same manner, or rather running into one solid lump. The arrangement of the particles, or their tendency to arrangement, assigned by Mr Bergman as a cause, is only explaining the phenomenon by itself; for it is the *cause* of this tendency which is the point in question. Now, that the attraction of the saline particles to each other cannot be the cause of crystalline arrangements, is evident from the following considerations: 1. The crystals of every kind of salt contain water as an essential part of their composition; and if deprived of this, they lose their crystalline form entirely, and fall into powder. It is plain, therefore, that the saline particles attract not only one another, but some part of

Crystallization.

20
All of them
insufficient.

Crystallization
||
Ctesibius.

the water which dissolves them; whence it seems probable that the processes of crystallization and vegetation are analogous to each other. This is likewise confirmed by the many curious vegetations of salts known by the name of *efflorescences*. These cannot be owing merely to attraction; because they frequently protrude from a large saline mass, in which they ought rather to be detained by the attraction of the rest. Thus, if a quantity of the residuum of Glauber's spirit of nitre distilled with a large proportion of vitriolic acid, be exposed to a moist air, beautiful ramifications somewhat resembling shrubs will sometimes shoot out to the length of more than an inch. This surely cannot be the effect of attraction; but rather of some repulsive power by which the particles of the large mass at first tend to separate from one another †. 2. Attraction, in such a manner as would dispose the particles into certain determinate forms, cannot take place where they are all homogeneous, which must be the case with metals; all of which are capable of forming crystals when slowly cooled; such crystallizations, therefore, must be produced by some other power.

† See *Efflorescence*.

Mr Bergman considers the congelation of water as a species of crystallization; and in order to prove the similitude, he takes notice, that it is by means of the matter of heat that this element becomes fluid. He observes likewise, that salts, in the act of crystallizing, part with heat as water does in the act of being converted into ice. It would seem, therefore, that the particles were arranged in certain forms by the action of the heat when passing from a latent to a sensible state. From a late experiment, it would seem that the electric fluid was principally concerned. This was first discovered by Lichtenberg, and consists only in sprinkling powdered rosin upon an electrophorus, which in certain circumstances arranges itself into stars with radii similar to those of the crystals of snow. See **ELECTRICITY**.

CRYSTALS, in chemistry, salts or other matters shot or congealed in the manner of crystal. See **CHEMISTRY-Index**; and **CRYSTALLIZATION**.

CTESIAS, a native of Cnidos, who accompanied Cyrus the son of Darius in his expedition against his brother Artaxerxes; by whom he was taken prisoner. But curing Artaxerxes of a wound he received in the battle, he became a great favourite at the court of Persia, where he continued practising physic for 17 years, and was employed in several negotiations. He wrote the History of Persia in 23 books, and a History of the Indies: but these works are now lost, and all we have remaining of them is an abridgement compiled by Photius. The most judicious among the ancients looked upon Ctesias as a fabulous writer; yet several of the ancient historians and modern Christian writers have adopted in part his chronology of the Assyrian kings.

CTESIBIUS, a mathematician of Alexandria, about 120 years before Christ. He was the first who invented the pump. He also invented a clepsydra, or a water clock. This invention of measuring time by water was wonderful and ingenious. Water was let drop upon wheels which it turned: the wheels communicated their regular motion to a small wooden image, which by a gradual rise pointed with a stick to

the proper hours and months, which were engraved on a column near the machine. This artful invention gave rise to many improvements; and the modern manner of measuring time with an hour-glass is in imitation of the clepsydra of Ctesibius.

Ctesiphon
||
Cuba.

CTESIPHON, a celebrated Greek architect, who gave the designs for the famous temple of Ephesus, and invented a machine for bringing thither the columns to be used in that noble structure. He flourished 544 B. C.

CTESIPHON (anc. geog.), a large village, or rather a fine city, of Chalonitis, the most southern province of Assyria. It was situated on the left or east side of the Tigris, opposite to Seleucia on this side; and built by the Parthians, to rival Seleucia. Here the kings of Parthia passed the winter (Strabo); as they did the summer at Ecbatana.

CTESIPHON was also the name of several noted persons of antiquity. 1. An Athenian, who advised his fellow-citizens to crown publicly Demosthenes with a golden crown for his probity and virtue. This was opposed by the orator Æschines, the rival of Demosthenes, who accused Ctesiphon of seditious views. Demosthenes undertook the defence of his friend, in a celebrated oration still extant, and Æschines was banished. 2. A Greek architect, who made the plan of Diana's temple at Ephesus. 3. An elegiac poet, whom king Attalus set over his possessions in Æolia. 4. A Greek historian, who wrote an history of Bœotia.

CUB, a bear's whelp. Among hunters, a fox and marten of the first year are also called *cubs*. See **URSUS**.

CUBA, a large and very important island in the West Indies, belonging to Spain. On the east side it begins at 20. 20. N. Lat. touches the tropic of Cancer on the north, and extends from 74. to 85. 15. W. Long. It lies 60 miles to the west of Hispaniola, 25 leagues north of Jamaica, 100 miles to the east of Jucatan, and as many to the south of Cape Florida; and commands the entrance of the gulphs both of Mexico and Florida, as also the windward passages. By this situation it may be called the *key* of the West Indies. It was discovered by Columbus in 1492, who gave it the name of Ferdinando, in honour of king Ferdinand of Spain; but it quickly after recovered its ancient name of *Cuba*. The natives did not regard Columbus with a very favourable eye at his landing; and the weather proving very tempestuous, he soon left this island, and sailed to *Hayta*, now called *Hispaniola*, where he was better received. The Spaniards, however, soon became masters of it. By the year 1511 it was totally conquered; and in that time they had destroyed, according to their own accounts, several millions of people. But the possession of Cuba was far from answering the expectations of the Spanish adventurers, whose avarice could be satiated with nothing but gold. These monsters finding that there was gold upon the island, concluded that it must come from mines; and therefore tortured the few inhabitants they had left, in order to extort from them a discovery of the places where these mines lay. The miseries endured by these poor creatures were such that they almost unanimously resolved to put an end to their own lives; but were prevented by one of

Cuba. the Spanish tyrants called *Vasco Porcellos*. This wretch threatened to hang himself along with them, that he might have the pleasure, as he said, of tormenting them in the next world worse than he had done in this; and so much were they afraid of the Spaniards, that this threat diverted these poor savages from their desperate resolution. In 1511, the town of Havannah was built, now the principal place on the island. The houses were at first built only of wood; and the town itself was for a long time so inconsiderable, that in 1536 it was taken by a French pirate, who obliged the inhabitants to pay 700 ducats to save it from being burnt. The very day after the pirate's departure, three Spanish ships arrived from Mexico, and having unloaded their cargoes, sailed in pursuit of the pirate ship. But such was the cowardice of the officers, that the pirate took all the three ships, and returning to the Havannah, obliged the inhabitants to pay 700 ducats more. To prevent misfortunes of this kind, the inhabitants built their houses of stone; and the place has since been strongly fortified. See HAVANNAH.

According to the Abbé Raynal, the Spanish settlement at Cuba is very important, on three accounts: 1. The produce of the country, which is considerable. 2. As being the staple of a great trade; and, 3. As being the key to the West Indies. The principal produce of this island is cotton. The commodity, however, through neglect, is now become so scarce, that sometimes several years pass without any of it being brought into Europe. In place of cotton, coffee has been cultivated: but, by a similar negligence, that is produced in no great quantity; the whole produce not exceeding 30 or 35 thousand weight, one-third of which is exported to Vera Cruz, and the rest to Madrid. The cultivation of coffee naturally leads to that of sugar; and this, which is the most valuable production of America, would of itself be sufficient to give Cuba that state of prosperity for which it seems designed by nature. Although the surface of the island is in general uneven and mountainous, yet it has plains sufficiently extensive, and well enough watered, to supply the consumption of the greatest part of Europe with sugar. The incredible fertility of its new lands, if properly managed, would enable it to surpass every other nation, however they may have now got the start of it: yet such is the indolence of the Spaniards, that to this day they have but few plantations, where, with the finest canes, they make but a small quantity of coarse sugar at a great expence. This serves partly for the Mexican market, and partly for the mother-country; while the indolent inhabitants are content to import sugar for themselves at the expence of near 220,000 l. annually. It has been expected with probability, that the tobacco imported from Cuba would compensate this loss; for after furnishing Mexico and Peru, there was sufficient, with the little brought from Caracca and Buenos Ayres, to supply all Spain. But this trade too has declined through the negligence of the court of Madrid, in not gratifying the general taste for tobacco from the Havannah. The Spanish colonies have an universal trade in skins; and Cuba supplies annually about 10 or 12 thousand. The number might easily be increased in a country abounding with wild cattle where some gentlemen possess large

tracts of ground, that for want of population can scarce be applied to any other purpose than that of breeding cattle. The hundredth part of this island is not yet cleared. The true plantations are all confined to the beautiful plains of the Havannah, and even those are not what they might be. All these plantations together may employ about 25,000 male and female slaves. The number of whites, mestees, mulattoes, and free negroes, upon the whole island, amounts to about 30,000. The food of these different species consists of excellent pork, very bad beef, and cassava bread. The colony would be more flourishing, if its productions had not been made the property of a company, whose exclusive privilege operates as a constant and invariable principle of discouragement. If any thing could supply the want of an open trade, and atone for the grievances occasioned by this monopoly at Cuba, it would be the advantage which this island has for such a long time enjoyed, in being the rendezvous of almost all the Spanish vessels that sail to the new world. This practice commenced almost with the colony itself. Ponce de Leon, having made an attempt upon Florida in 1512, became acquainted with the new canal of Bahama. It was immediately discovered that this was the best route the ships bound from Mexico to Europe could possibly take; and to this the wealth of the island is principally, if not altogether, owing.

CUBE, in geometry, a solid body consisting of six equal sides. See GEOMETRY.

CUBE Root of any Number or Quantity, is such a number or quantity, which, if multiplied into itself, and then again the product thence arising by that number or quantity, being the cube-root, this last product shall be equal to the number or quantity whereof it is the cube-root; as 2 is the cube-root of 8; because two times 2 is 4, and two times 4 is 8; and $a+b$ is the cube-root of $a^3 + 3aab + 3abb + b^3$. See ALGEBRA.

CUBEBS, in the materia medica, a small dried fruit resembling a grain of pepper, but often somewhat longer, brought into Europe from the island of Java. In aromatic warmth and pungency, they are far inferior to pepper.

CUBIC EQUATION. See ALGEBRA.

CUBIDIA, a genus of spars. The word is derived from *cuſ*, "a die;" and is given them from their being of the shape of a common die, or of a cubic figure. These bodies owe this shape to an admixture of lead, and there are only two known species of the genus. 1. A colourless crystalline one, with thin flakes, found in the lead-mines of Yorkshire, and some other parts of the kingdom; and, 2. A milky white one with thicker crusts. This is found in the lead-mines of Derbyshire and Yorkshire, but is usually small, and is not found plentifully.

CUBIT, in the mensuration of the ancients, a long measure, equal to the length of a man's arm, from the elbow to the tip of the fingers.

Dr Arbuthnot makes the English cubit equal to 18 inches; the Roman cubit equal to 1 foot 5.406 inches; and the cubit of the scripture equal to 1 foot 9.888 inches.

CUBITÆUS MUSCLES, the name of two muscles of the hand. See ANATOMY, *Table of the Muscles*.

CUBITUS, in anatomy, a bone of the arm, reaching

Cuboides ||
Cucubalus.
ing from the elbow to the wrist; otherwise called *ulna*, or the *greater fossile*. Some use the word for all that part of the arm between the elbow and the wrist; including the *ulna* or *cubitus*, properly so called, and the *radius*.

CUBOIDES, or *Os CUBIFORME*, in anatomy, the seventh bone of the foot; so called from its being in form of a cube or die.

CUCKING-STOOL, an engine invented for punishing scolds and unquiet women, by ducking them in water; called in ancient times a *tumbrel*, and sometimes a *trebuchet*. In *Domesday*, it is called *cathedra stercoreis*: and it was in use even in the Saxons time, by whom it was described to be *cathedra in qua rixosæ mulieres sedentes aquis demergebantur*. It was anciently also a punishment inflicted upon brewers and bakers transgressing the laws; who were thereupon in such a stool immersed over head and ears in *stercore*, some stinking water. Some think it a corruption from *ducking-stool*; others from *choaking-stool*, *quia hoc modo demersæ aquis fere suffocantur*. See **CASTIGATORY**.

CUCKOW, in ornithology. See **CUCULUS**.

Cuckow-Spit, the same with *froth-spit*. See **FROTH-Spit**, and **CICADA**.

CUCUBALUS, **BERRY-BEARING CHICKWEED**: A genus of the trigynia order, belonging to the decandria class of plants; and in the natural method ranking under the 22d order, *Caryophylli*. The calyx is inflated; the petals five, unguiculated without a nectariferous corona at the throat; the capsule is trilocular. There are 13 species, the most remarkable of which are,

1. The *beken*, Swedish *lychnis*, or *gumsepungar*, is a native of several parts of Europe. The empalement of its flower is curiously wrought like a network, and is of a purplish colour. The leaves have somewhat of the flavour of pease, and proved of great use to the inhabitants of Minorca in 1685, when a swarm of locusts had destroyed the harvest. The Gothlanders apply the leaves to erysipelatous eruptions. Horses, cows, sheep, and goats, eat this plant.

2. The *noctiflora*, or *night-flowering lychnis*, grows naturally in Spain and Italy. It is a perennial plant, rising with an upright branching stalk, a foot and an half high, garnished with very narrow leaves placed opposite. The upper part of the stalk branches very much; the flowers stand upon long naked footstalks, each supporting three or four flowers which have long tubes with striped empalements: the petals are large, deeply divided at top, and of a pale-bluish colour. The flowers are closed all the day; but when the sun leaves them, they expand, and then emit a very agreeable scent. It may be propagated by seeds sown in the spring on a bed of light earth; and when the plants are fit to remove, they should be planted in a nursery-bed at about four inches distance, where they may remain till autumn. They may then be planted in the borders where they are to remain, and will flower the following year.

3. The *otites*, or *catch-fly*, is a native of Britain, and other European countries. It hath a thick, fleshy, perennial root, which strikes deep into the ground,

from whence rises a jointed stalk three or four feet high. At the joints there exudes a viscous clammy juice, that sticks to the fingers when handled; and the small insects which settle upon those parts of the stalks are thereby so fastened that they cannot get off. The flowers are small, and of a greenish colour. The plant is propagated by seeds.

CUCULUS, the *Cuckow*, in ornithology, a genus belonging to the order of *picæ*: the characters of which are: The bill is smooth, and more or less bending; the nostrils are bounded by a small rim; the tongue is short and pointed; the feet and toes formed for climbing. The most remarkable species are:

1. The *canorus*, or common *cuckow*, weighs about five ounces; and is in length 14 inches, in breadth 25. The bill is black, and about two thirds of an inch in length. The head, hind part of the neck, coverts of the wings and rump, are of a dove colour; darker on the head and paler on the rump. The throat and upper part of the neck are of a pale grey; the breast and belly white, crossed elegantly with undulated lines of black. The tail consists of ten feathers of unequal lengths; the two middle tail-feathers are black tipped with white; the others are marked with white spots on each side their shafts. The legs are short; and the toes disposed two backwards and two forwards, like those of the wood-pecker, though it is never observed to run up the sides of trees. The female differs in some respects. The neck before and behind is of a brownish-red; the tail barred with the same colour and black, and spotted on each side the shaft with white. The young birds are brown mixed with black, and in that state have been described by some authors as old ones.

This bird appears in our country early in the spring, and makes the shortest stay with us of any bird of passage. It is compelled here, as Mr *Stillingfleet* observes, by that constitution of the air which causes the fig-tree put forth its fruit: though it has been supposed that some of these birds do not quit this island during the winter; but that they seek shelter in hollow trees and lie torpid, unless animated by unusually warm weather. Mr *Pennant* gives two instances of their being heard in February; one in 1771, in the end of that month; the other in 1769, on the 4th day; but after that they were heard no more, being probably chilled again into torpidity. There is a remarkable coincidence between the song of these birds and the mackarels continuing in full roe; that is, from about the middle of April to the latter end of June. The cuckow is silent for some time after his arrival; his note is a call to love, and used only by the male, who sits perched generally on some dead tree or bare bough, and repeats his song, which he loses as soon as the amorous season is over. His note is so uniform, that his name in all languages seems to have been derived from it; and in all countries it is used in the same reproachful sense:

The plain-song *cuckow* grey,
Whose note full many a man doth mark,
And dares not answer nay. *Shake/peare.*

The reproach seems to arise from the cuckow's making use of the bed or nest of another to deposit its eggs in, leaving the care of its young to an improper parent;

Cuculus. parent; but Juvenal with more justice gives the infamy to the bird in whose nest the supposititious eggs were laid:

Tu tibi nunc corruca places.

On the natural history of this singular bird, we have a very curious paper by Mr Jenner, published in the Philosophical Transactions for 1788†. The first appearance of cuckows in this country, as already observed, is about the middle of April; (the 17th, according to Mr Jenner, whose observations were made in Gloucestershire). The song of the male, which is well known, soon proclaims its arrival. The song of the female (if the peculiar notes of which it is composed may be so called) is widely different, and has been so little attended to, that perhaps few are acquainted with it: the cry of the dab-chick bears some resemblance to it.

Unlike the generality of birds, cuckows do not pair. When a female appears on the wing, she is often attended by two or three males, who seem to be earnestly contending for her favours. From the time of her appearance till after the middle of summer the nests of the birds selected to receive her egg are to be found in great abundance; but, like the other migrating birds, she does not begin to lay till some weeks after her arrival.

It is on all hands allowed, that the cuckow does not hatch its own eggs; for which different reasons have been given, as will be afterwards noticed. The hedge-sparrow, the water-wagtail, the titlark, the redbreast, the yellow hammer, the green linnet, or the whinchat, is generally the nurse of the young cuckow: but Buffon enumerates 20 sorts of nests at least in which they have deposited their eggs. It may be supposed, that the female cuckow lays her egg in the absence of the bird in whose nest she intends to deposit; as it has been known, that on sight of one of these a redbreast and its mate jointly attacked her on approaching the nest, putting her to flight; and so effectually drove her away, that she did not dare to return. Among the birds above mentioned, it generally, according to Mr Jenner's observations, selects the three first, but shows a much greater partiality to the hedge sparrow. This last commonly takes up four or five days in laying her eggs. During this time (generally after she has laid one or two) the cuckow contrives to deposit her egg among the rest, leaving the future care of it entirely to the hedge-sparrow. This intrusion often occasions some discomposure; for the old hedge-sparrow at intervals, whilst she is sitting, not unfrequently throws out some of her own eggs, and sometimes injures them in such a way that they become addle; so that it more frequently happens that only two or three hedge-sparrows eggs are hatched with the cuckow's than otherwise. But whether this be the case or not, she sits the same length of time as if no foreign egg had been introduced, the cuckow's egg requiring no longer incubation than her own.

When the hedge-sparrow has sat her usual time, and disengaged the young cuckow and some of her own offspring from the shell*, her own young ones, and any of her eggs that remain unhatched, are soon turned out, the young cuckow remaining possessor of the nest, and sole object of her future care. The young birds are not previously killed, nor are the eggs

demolished; but all are left to perish together, either entangled about the bush which contains the nest, or lying on the ground under it.

† The early fate of the young hedge-sparrows (Mr Jenner observes) is a circumstance that has been noticed by others, but attributed to wrong causes. A variety of conjectures have been formed upon it. Some have supposed the parent cuckow the author of their destruction; while others, as erroneously, have pronounced them smothered by the disproportionate size of their fellow-nestling. Now the cuckow's egg being not much larger than the hedge-sparrow's (as I shall more fully point out hereafter), it necessarily follows, that at first there can be no great difference in the size of the birds just burst from the shell. Of the fallacy of the former assertion also I was some years ago convinced, by having found that many cuckows eggs were hatched in the nests of other birds after the old cuckow had disappeared, and by seeing the same fate then attend the nestling sparrows as during the appearance of old cuckows in this country. But before I proceed to the facts relating to the death of the young sparrows, it will be proper to lay before you some examples of the incubation of the egg, and the rearing of the young cuckow; since even the well-known fact, that this business is intrusted to the care of other birds, has been controverted by an author who has lately written on this subject †; and since, as it is a fact so much out of the ordinary course of nature, it may still probably be disbelieved by others.

Example 1. The titlark is frequently selected by the cuckow to take charge of its young one; but as it is a bird less familiar than many that I have mentioned, its nest is not so often discovered. I have, nevertheless, had several cuckows eggs brought to me that were found in titlarks nests, and had one opportunity of seeing the young cuckow in the nest of this bird. I saw the old birds feed it repeatedly; and, to satisfy myself that they were really titlarks, shot them both, and found them to be so.

Example 2. A cuckow laid her egg in a water-wagtail's nest in the thatch of an old cottage. The wagtail sat her usual time, and then hatched all the eggs but one; which, with all the young ones except the cuckow, was turned out of the nest. The young birds, consisting of five, were found upon the rafter that projected from under the thatch, and with them was the egg not in the least injured. On examining the egg, I found the young wagtail it contained quite perfect, and just in such a state as birds are when ready to be disengaged from the shell. The cuckow was reared by the wagtails till it was nearly capable of flying, when it was killed by an accident.

Example 3. A hedge-sparrow built her nest in a hawthorn-bush in a timber-yard. After she had laid two eggs, a cuckow dropped in a third. The sparrow continued laying as if nothing had happened, till she had laid five, her usual number, and then sat.

† June 20. 1786. On inspecting the nest, I found that the bird had hatched this morning, and that every thing but the young cuckow was thrown out. Under the nest I found one of the young hedge-sparrows dead, and one egg by the side of the nest entangled with the coarse woody materials that formed its outside covering. On examining the egg, I found one end of the shell

Cuculus.

shell a little cracked, and could see that the sparrow it contained was yet alive. It was then restored to the nest, but in a few minutes was thrown out. The egg being again suspended by the outside of the nest, was saved a second time from breaking. To see what would happen if the cuckow was removed, I took out the cuckow, and placed the egg containing the hedge-sparrow in the nest in its stead. The old birds, during this time, flew about the spot, showing signs of great anxiety; but when I withdrew, they quickly came to the nest again. On looking into it in a quarter of an hour afterwards, I found the young one completely hatched, warm, and lively. The hedge-sparrows were suffered to remain undisturbed with their new charge for three hours (during which time they paid every attention to it), when the cuckow was again put into the nest. The old sparrows had been so much disturbed by these intrusions, that for some time they showed an unwillingness to come to it. However, at length they came; and on examining the nest again in a few minutes, I found the young sparrow was tumbled out. It was a second time restored, but again experienced the same fate.

“ From these experiments, and supposing, from the feeble appearance of the young cuckow just disengaged from the shell, that it was utterly incapable of displacing either the egg or the young sparrows, I was induced to believe that the old sparrows were the only agents in this seeming unnatural business. But I afterwards clearly perceived the cause of this strange phenomenon, by discovering the young cuckow in the act of displacing its fellow-nestlings, as the following relation will fully evince.

“ June 18. 1787, I examined the nest of a hedge-sparrow, which then contained a cuckow's and three hedge-sparrow's eggs. On inspecting it the day following, I found the bird had hatched, but that the nest now contained only a young cuckow and one young hedge-sparrow. The nest was placed so near the extremity of a hedge, that I could distinctly see what was going forward in it; and, to my astonishment, saw the young cuckow, though so newly hatched, in the act of turning out the young hedge-sparrow.

“ The mode of accomplishing this was very curious. The little animal, with the assistance of its rump and wings, contrived to get the bird upon its back; and making a lodgement for the burden by elevating its elbows, clambered backward with it up the side of the nest till it reached the top; where resting for a moment, it threw off its load with a jerk, and quite disengaged it from the nest. It remained in this situation a short time, feeling about with the extremities of its wings, as if to be convinced whether the business was properly executed, and then dropped into the nest again. With these (the extremities of its wings) I have often seen it examine, as it were, an egg and nestling before it began its operations; and the nice sensibility which these parts appeared to possess, seemed sufficiently to compensate the want of sight, which as yet it was destitute of. I afterwards put in an egg; and this, by a similar process, was conveyed to the edge of the nest and thrown out. These experiments I have since repeated several times in different nests, and have always found the young cuckow disposed to act in the same manner. In climbing up the nest, it

N^o 95.

sometimes drops its burden, and thus is foiled in its endeavours; but, after a little respite, the work is resumed, and goes on almost incessantly till it is effected. It is wonderful to see the extraordinary exertions of the young cuckow, when it is two or three days old, if a bird be put into the nest with it that is too weighty for it to lift out. In this state it seems ever restless and uneasy. But this disposition for turning out its companions begins to decline from the time it is two or three till it is about twelve days old; when, as far as I have hitherto seen, it ceases. Indeed, the disposition for throwing out the egg appears to cease a few days sooner; for I have frequently seen the young cuckow, after it had been hatched nine or ten days, remove a nestling that had been placed in the nest with it, when it suffered an egg, put there at the same time, to remain unmolested. The singularity of its shape is well adapted to these purposes; for, different from other newly-hatched birds, its back, from the scapulæ downwards, is very broad, with a considerable depression in the middle. This depression seems formed by nature for the design of giving a more secure lodgement to the egg of the hedge-sparrow or its young one when the young cuckow is employed in removing either of them from the nest. When it is about 12 days old, this cavity is quite filled up, and then the back assumes the shape of nestling birds in general.

“ Having found that the old hedge-sparrow commonly throws out some of her own eggs after her nest has received the cuckow's, and not knowing how she might treat her young ones if the young cuckow was deprived of the power of dispossessing them of the nest, I made the following experiment.

“ July 9. A young cuckow, that had been hatched by a hedge-sparrow about four hours, was confined in the nest in such a manner that it could not possibly turn out the young hedge-sparrows which were hatched at the same time, though it was almost incessantly making attempts to effect it. The consequence was, the old birds fed the whole alike, and appeared in every respect to pay the same attention to their own young as to the young cuckow, until the 13th, when the nest was unfortunately plundered.

“ The smallness of the cuckow's egg, in proportion to the size of the bird, is a circumstance that hitherto, I believe, has escaped the notice of the ornithologist. So great is the disproportion, that it is in general smaller than that of the house-sparrow; whereas the difference in the size of the birds is nearly as five to one. I have used the term *in general*, because eggs produced at different times by the same bird vary very much in size. I have found a cuckow's egg so light that it weighed only 43 grains, and one so heavy that it weighed 55 grains. The colour of the cuckow's eggs is extremely variable. Some, both in ground and penciling, very much resemble the house-sparrow's; some are indistinctly covered with bran-coloured spots; and others are marked with lines of black, resembling, in some measure, the eggs of the yellow hammer.

“ The circumstance of the young cuckow's being destined by nature to throw out the young hedge-sparrows, seems to account for the parent cuckow's dropping her egg in the nests of birds so small as those I have particularised. If she were to do this in the nest of a bird which produced a large egg, and consequently,

Cuculus.

quently a large nestling, the young cuckow would probably find an insurmountable difficulty in solely possessing the nest, as its exertions would be unequal to the labour of turning out the young birds. Besides, though many of the larger birds might have fed the nestling cuckow very properly had it been committed to their charge, yet they could not have suffered their own young to have been sacrificed for the accommodation of the cuckow in such great number as the smaller ones, which are so much more abundant; for though it would be a vain attempt to calculate the numbers of nestlings destroyed by means of the cuckow, yet the slightest observation would be sufficient to convince us that they must be very large."

Here Mr Jenner remarks, that though nature permits the young cuckow to make this great waste, yet the animals thus destroyed are not thrown away or rendered useless. At the season when this happens, great numbers of tender quadrupeds and reptiles are seeking provision; and if they find the callow nestlings which have fallen victims to the young cuckow, they are furnished with food well adapted to their peculiar state.

It appears a little extraordinary, that two cuckows eggs should ever be deposited in the same nest, as the young one produced from one of them must inevitably perish; yet two instances of this kind fell under our author's observation, one of which he thus relates: "June 27. 1787. Two cuckows and a hedge-sparrow were hatched in the same nest this morning; one hedge-sparrow's egg remained unhatched. In a few hours after, a contest began between the cuckows for the possession of the nest, which continued undetermined till the next afternoon, when one of them, which was somewhat superior in size, turned out the other, together with the young hedge-sparrow and the unhatched egg. This contest was very remarkable. The combatants alternately appeared to have the advantage, as each carried the other several times nearly to the top of the nest, and then sunk down again, oppressed by the weight of its burden; till at length, after various efforts, the strongest prevailed, and was afterwards brought up by the hedge-sparrows."

But the principal circumstance that has agitated the mind of the naturalist respecting the cuckow is, Why, like other birds, it should not build a nest, incubate its eggs, and rear its own young?

There is no apparent reason, Mr Jenner thinks, why this bird, in common with others, should not perform all these several offices; for it is in every respect perfectly formed for collecting materials and building a nest. Neither its external shape nor internal structure prevent it from incubation; nor is it by any means incapacitated from bringing food to its young. It would be needless to enumerate the various opinions of authors on this subject from Aristotle to the present time. Those of the ancients appear to be either visionary or erroneous; and the attempts of the moderns towards its investigation have been confined within very narrow limits: for they have gone but little further in their researches than to examine the constitution and structure of the bird; and having found it possessed of a capacious stomach with a thin external covering, concluded that the pressure upon this part, in a sitting posture, prevented incubation. They have

not considered that many of the birds which incubate have stomachs analogous to those of cuckows. The stomach of the owl, for example, is proportionably capacious, and is almost as thinly covered with external integuments. Nor have they considered, that the stomachs of nestlings are always much distended with food; and that this very part, during the whole time of their confinement to the nest, supports in a great degree the weight of the whole body: whereas, in a sitting bird, it is not nearly so much pressed upon, for the breast in that case fills up chiefly the cavity of the nest; for which purpose, from its natural convexity, it is admirably well fitted.

These observations may be sufficient to show, that the cuckow is not rendered incapable of sitting through any peculiarity either in the situation or formation of the stomach; yet, as a proof still more decisive, our observer adduces the following fact.

"In the summer of the year 1786, I saw, in the nest of a hedge-sparrow, a cuckow, which, from its size and plumage, appeared to be nearly a fortnight old. On lifting it up in the nest, I observed two hedge-sparrows eggs under it. At first I supposed them part of the number which had been fat upon by the hedge-sparrow with the cuckow's egg, and that they had become addle, as birds frequently suffer such eggs to remain in their nests with their young; but on breaking one of them I found it contained a living fœtus: so that of course these eggs must have been laid several days after the cuckow was hatched; as the latter now completely filled up the nest, and was by this peculiar incident performing the part of a sitting-bird. At this time I was unacquainted with the fact, that the young cuckow turned out the eggs of the hedge-sparrow; but it is reasonable to conclude, that it had lost the disposition for doing this when these eggs were deposited in the nest.

"Having under my inspection, in another hedge-sparrow's nest, a young cuckow about the same size as the former, I procured two wagtails eggs which had been fat upon a few days, and had them immediately conveyed to the spot, and placed under the cuckow. On the ninth day after the eggs had been in this situation, the person appointed to superintend the nest (as it was some distance from the place of my residence) came to inform me that the wagtails were hatched. On going to the place, and examining the nest, I found nothing in it but the cuckow and the shells of the wagtail's eggs. The fact, therefore, of the birds being hatched, I do not give you as coming immediately under my own eye; but the testimony of the person appointed to watch the nest was corroborated by that of another witness."

In considering to what causes may be attributed the singularities of the cuckow, Mr Jenner suggests the following as the most probable: "*The short residence this bird is allowed to make in the country where it is destined to propagate its species; and the call that nature has upon it, during that short residence, to produce a numerous progeny.* The cuckow's first appearance here is about the middle of April, commonly on the 17th. Its egg is not ready for incubation till some weeks after its arrival, seldom before the middle of May. A fortnight is taken up by the sitting-bird in hatching the egg. The young bird generally continues three weeks

Cuculus.

in the nest before it flies, and the foster-parents feed it more than five weeks after this period; so that if a cuckow should be ready with an egg much sooner than the time pointed out, not a single nestling, even one of the earliest, would be fit to provide for itself before its parent would be instinctively directed to seek a new residence, and be thus compelled to abandon its young one; for old cuckows take their final leave of this country the first week in July.

“Had nature allowed the cuckow to have staid here as long as some other migrating birds, which produce a single set of young ones (as the swift or nightingale, for example), and had allowed her to have reared as large a number as any bird is capable of bringing up at one time, these might not have been sufficient to have answered her purpose; but by sending the cuckow from one nest to another, she is reduced to the same state as the bird whose nest we daily rob of an egg, in which case the stimulus for incubation is suspended. Of this we have a familiar example in the common domestic fowl. That the cuckow actually lays a great number of eggs, dissection seems to prove very decisively. Upon a comparison I had an opportunity of making between the ovarium, or racemus vitellorum, of a female cuckow, killed just as she had begun to lay, and of a pullet killed in the same state, no essential difference appeared. The uterus of each contained an egg perfectly formed, and ready for exclusion; and the ovarium exhibited a large cluster of eggs, gradually advanced from a very diminutive size to the greatest the yolk acquires before it is received into the oviduct. The appearance of one killed on the third of July was very different. In this I could distinctly trace a great number of the membranes which had discharged yolks into the oviduct; and one of them appeared as if it had parted with a yolk the preceding day. The ovarium still exhibited a cluster of enlarged eggs, but the most forward of them was scarcely larger than a mustard-feed.

“I would not be understood to advance, that every egg which swells in the ovarium at the approach or commencement of the propagating season is brought to perfection; but it appears clearly, that a bird, in obedience to the dictates of her own will, or to some hidden cause in the animal economy, can either retard or bring forward her eggs. Besides the example of the common fowl above alluded to, many others occur. If we destroy the nest of a blackbird, a robin, or almost any small bird, in the spring, when she has laid her usual number of eggs, it is well known to every one who has paid any attention to inquiries of this kind, in how short a space of time she will produce a fresh set. Now, had the bird been suffered to have proceeded without interruption in her natural course, the eggs would have been hatched, and the young ones brought to a state capable of providing for themselves, before she would have been induced to make another nest, and excited to produce another set of eggs from the ovarium. If the bird had been destroyed at the time she was sitting on her first laying of eggs, dissection would have shown the ovarium containing a great number in an enlarged state, and advancing in the usual progressive order. Hence it plainly appears, that birds can keep back or bring forward (under certain limitations) their eggs at any

time during the season appointed for them to lay; but the cuckow, not being subject to the common interruptions, goes on laying from the time she begins till the eve of her departure from this country: for although old cuckows in general take their leave the first week in July (and I never could see one after the 5th day of that month, though I conceive it possible that here and there a straggling cuckow may be seen after this time); yet I have known an instance of an egg's being hatched in the nest of an hedge-sparrow so late as the 15th. And a farther proof of their continuing to lay till the time of their leaving us may, I think, be fairly deduced from the appearances on dissection of the female cuckow above mentioned, killed on the 3d of July.”

Among the many peculiarities of the young cuckow, there is one that shows itself very early. Long before it leaves the nest, it frequently, when irritated, assumes the manner of a bird of prey, looks ferocious, throws itself back, and pecks at any thing presented to it with great vehemence, often at the same time making a chuckling noise like a young hawk. Hence probably the vulgar opinion, that this bird changes into a hawk and devours its nurse on quitting its nest; whence the French proverb, *Ingrat comme un coucou*. Sometimes, when disturbed in a smaller degree, it makes a kind of hissing noise, accompanied with a heaving motion of the whole body.

The growth of the young cuckow is uncommonly rapid. Its chirp is plaintive, like that of the hedge-sparrow; but the sound is not acquired from the foster-parent, as it is the same whether it be reared by the hedge-sparrow or any other bird. It never acquires the adult note during its stay in this country.

The stomachs of young cuckows contain a great variety of food. On dissecting one that was brought up by wagtails, and fed by them at the time it was shot (though it was nearly of the size and fullness of plumage of the parent-bird), Mr Jenner found in its stomach the following substances: Flies and beetles of various kinds; small snails with their shells unbroken; grasshoppers; caterpillars; part of a horse-bean; a vegetable substance, resembling bits of tough grass, rolled into a ball; and the seeds of a vegetable that resembled those of the goose-grass. In the stomach of one fed by hedge-sparrows, the contents were almost entirely vegetable; such as wheat, small vetches, &c. “But this (says our author) was the only instance of the kind I had ever seen, as these birds in general feed the young cuckow with scarcely any thing but animal food. However, it served to clear up a point which before had somewhat puzzled me; for having found the cuckow's egg in the nest of a green linnet, which begins very early to feed its young with vegetable food, I was apprehensive, till I saw this fact, that this bird would have been an unfit foster-parent for the young cuckow.

“The titlark, I observe, feeds it principally with grasshoppers.

“But the most singular substance, so often met with in the stomachs of young cuckows, is a ball of hair curiously wound up. I have found it of various sizes, from that of a pea to that of a small nutmeg. It seems to be composed chiefly of horse hairs; and from the resemblance it bears to the inside covering of the nest,

Cuculus. nest, I conceive the bird swallows it while a nestling. In the stomachs of old cuckows are often seen masses of hair; but these had evidently once formed a part of the hairy caterpillar, which the cuckow often takes for its food."

There seems to be no precise time fixed for the departure of young cuckows. Mr Jenner believes they go off in succession, probably as soon as they are capable of taking care of themselves; for although they stay here till they become nearly equal in size and growth of plumage to the old cuckow, yet in this very state the fostering care of the hedge-sparrow is not withdrawn from them. "I have frequently (says he) seen the young cuckow of such a size that the hedge-sparrow has perched on its back, or half-expanded wing, in order to gain sufficient elevation to put the food into its mouth. At this advanced stage, I believe that young cuckows procure some food for themselves; like the young rook, for instance, which in part feeds itself, and is partly fed by the old ones, till the approach of the pairing season. If they did not go off in succession, it is probable we should see them in large numbers by the middle of August; for as they are to be found in great plenty when in a nestling state, they must now appear very numerous, since all of them must have quitted the nest before this time. But this is not the case; for they are not more numerous at any season than the parent-birds are in the months of May and June.

"The same instinctive impulse which directs the cuckow to deposit her eggs in the nests of other birds, directs her young one to throw out the eggs and young of the owner of the nest. The scheme of nature would be incomplete without it; for it would be extremely difficult, if not impossible, for the little birds destined to find succour for the cuckow, to find it also for their own young ones after a certain period; nor would there be room for the whole to inhabit the nest."

It is supposed, that there are more male cuckows than females; since two are often seen in dispute where a third has been in fight; which, no doubt, was of the opposite sex. Mr Pennant observed, that five male birds were caught in a trap in one season; and Mr Latham says, that "out of at least half a dozen that I have attended to, my chance has never directed me to a female; and it is to be wished, that future observers may determine whether our observations have rise only in chance, or are founded on the general circumstance." He believes that the male birds are more liable to be shot, their note directing the gunner where to take aim, while the female is secured by her silence.

Cuckows may be, and often are, brought up tame, so as to become familiar. They will eat in this state bread and milk, fruits, insects, eggs, and flesh either cooked or raw; but in a state of nature, I believe, chiefly live on caterpillars; which, in the few I have observed, were all of the smooth kind; others have found vegetable matter, beetles, and small stones. When fat, they are said to be as good eating as a land rail. The French and Italians eat them to this day. The ancient Romans admired them greatly as food: Pliny says that there is no bird which can be compared to them for delicacy.

In migrating, the major part of these birds are supposed to go into Africa, since they are observed to visit

the island of Malta twice in a year, in their passage backwards and forwards, as is supposed, to that part of the world. They are well known also at Aleppo. To the north, it is said to be common in Sweden; but not to appear so early by a month as with us. Russia is not destitute of this bird; and Mr Latham has seen a specimen brought from Kamtschatka, now in the possession of Sir Joseph Banks.

2. The Americanus, or cuckow of Carolina. It is about the size of a blackbird, the upper mandible of the bill black, the lower yellow; the large wing-feathers are reddish; the rest of the wing, and all the upper part of the body, head and neck, is of an ash-colour; all the under part of the body, from the bill to the tail, white; the tail long and narrow, composed of six long and four shorter feathers; their legs short and strong. Their note is very different from the cuckow of this country, and not so remarkable to be taken notice of. It is a solitary bird, frequenting the darkest recesses of woods and shady thickets. They retire on the approach of winter.

3. The indicator, or honey-guide, is a native of Africa. The following description is given of it by Dr Sparman in the Philosophical Transactions for 1777. "This curious species of cuckow is found at a considerable distance from the Cape of Good Hope, in the interior parts of Africa, being entirely unknown at that settlement. The first place I heard of it was in a wood called the *Groot-vader's Bosch*, "the Grand-father's Wood," situated in a desert near the river which the Hottentots call *T'kau'kai*. The Dutch settlers thereabouts have given this bird the name of *honiguyzer*, or "honey-guide," from its quality of discovering wild honey to travellers. Its colour has nothing striking or beautiful. Its size is considerably smaller than that of our cuckow in Europe: but in return, the instinct which prompts it to seek its food in a singular manner is truly admirable. Not only the Dutch and Hottentots, but likewise a species of quadruped named *ratel* (probably a new species of badger), are frequently conducted to wild bee-hives by this bird, which, as it were, pilots them to the very spot. The honey being its favourite food, its own interest prompts it to be instrumental in robbing the hive, as some traps are commonly left for its support. The morning and evening are its times of feeding, and it is then heard calling in a shrill tone, *cherr, cherr*; which the honey-hunters carefully attend to as the summons to the chase. From time to time they answer with a soft whistle; which the bird hearing, always continues its note. As soon as they are in sight of each other, the bird gradually flutters toward the place where the hive is situated, continually repeating its former call of *cherr, cherr*: nay, if it should happen to have gained a considerable way before the men (who may easily be hindered in the pursuit by bushes, rivers, or the like), it returns to them again, and redoubles its note, as it were to reproach them with their inactivity. At last the bird is observed to hover for a few moments over a certain spot, and then silently retiring to a neighbouring bush or resting-place, the hunters are sure of finding the bees nest in that identical spot; whether it be in a tree or in the crevice of a rock, or (as is most commonly the case) in the earth. Whilst the hunters are busy in taking the honey, the bird is

Cuculus.

Plate
CLIV.

Cuculus.

seen looking on attentively to what is going forward, and waiting for its share of the spoil. The bee-hunters never fail to leave a small portion for their conductor; but commonly take care not to leave so much as would satisfy its hunger. The bird's appetite being whetted by this parsimony, it is obliged to commit a second treason, by discovering another bee's nest, in hopes of a better salary. It is further observed, that the nearer the bird approaches the hidden hive, the more frequently it repeats its call, and seems the more impatient. I have had frequent opportunities of seeing this bird, and have been witness to the destruction of several republics of bees by means of its treachery. I had, however, but two opportunities of shooting it, which I did to the great indignation of my Hottentots. It is about seven inches in length, and is of a rusty brown colour on the back, with a white breast and belly." A nest which was shown to Dr Sparman for that of this bird, was composed of slender filaments of bark, woven together in the form of a bottle; the neck and opening hung downwards, and a string, in an arched shape, was suspended across the opening fastened by the two ends, perhaps for the bird to perch on.

4. The Cape cuckow (*Buff.*), is a trifle smaller than ours: the bill a deep brown; the upper part of the body greenish brown: throat, checks, fore part of the neck, and upper wing coverts, of a deep rufous colour: tail feathers rufous, but paler, tipped with white: the breast, and all the under parts of the body, white, crossed with lines of black: the legs reddish brown. It inhabits the Cape of Good Hope; and is most likely the same bird which is called *Edolio*, from its pronouncing that word frequently in a low melancholy tone.—Voyagers also mention another cuckow, which is common to Loango in Africa. It is bigger than ours, but of the same colour; and repeats the word *cuckow* like that bird, but in different inflexion of voice. It is said that the male and female together go through the whole eight notes of the gamut; the male, beginning by itself, sounds the three first, after which he is accompanied by the female through the rest of the octave.

5. The honoratus, or sacred cuckow, is somewhat less than our cuckow: the general colour is blackish ash on the upper parts, marked with two spots of white on each feather; beneath white, transversely spotted with ash-colour: the quills are cinereous, transversely spotted with white: the tail is much cuneated, five inches and a half long, and of the same colour as the quills; the outer feather only three inches long: the legs and claws are of a pale ash-colour. This species inhabits Malabar, where the natives hold it sacred. It feeds on reptiles, which, perhaps, may be such as are the most noxious; if so, this seeming superstition may have rise from a more reasonable foundation than many others of the like sort.

6. The shining cuckow is the size of a small thrush: the bill is bluish: the upper part of the body green, with a rich gilded gloss; the under parts are white, transversely waved with green gold: the under tail coverts almost white; the quills and tail dusky-brown; the legs are bluish. This inhabits New Zealand, where it is called *Poopo-aroworo*. See Plate CLI.

7. The vetula is a trifle bigger than a blackbird: the bill above an inch and a half long: the upper

mandible black; the lower whitish: crown of the head brown, the feathers of it soft and silky: the upper parts of the body and the quills cinereous olive: throat and fore part of the neck whitish; the rest of the under parts rufous: the tail is much cuneated; the two middle feathers cinereous olive, the others dusky black tipped with white; the outer feather very short: legs blue-black. This species inhabits Jamaica, where it is frequent in the woods and hedges all the year round. It feeds on seeds, small worms, and caterpillars, and is very tame. This bird has the name *tacco* from its cry, which is like that word; the first syllable of this is pronounced hardly, the other following in a full octave lower than the first. It has also another cry like *qua, qua, qua*; but that only when alarmed by an enemy. Besides insects, it will also eat lizards, small snakes, frogs, young rats, and sometimes even small birds. The snakes they swallow head foremost, letting the tail hang out of the mouth till the fore-parts are digested. This bird, it is most likely, might be easily tamed, as it is so gentle as to suffer the negro children to catch it with their hands. Its gait is that of leaping, like a magpie; being frequently seen on the ground; and its flight but short, chiefly from bush to bush. At the time when other birds breed, they likewise retire into the woods, but their nests have never yet been found; from which one should be inclined to think, that they were indebted to other birds for the rearing their young in the manner of the common cuckow. It has the name of *rain-bird*, as it is said to make the greatest noise before rain. Common all the year at Jamaica. In another species or variety, common in Jamaica, the feathers on the throat appear like a downy beard, whence probably the name of *old-man rain-bird*, given it there and by Ray, Sloane, &c.

8. The *nævius*, spotted cuckow, or rail-bird, is about the size of a fieldfare: the bill three quarters of an inch; the upper mandible black on the top, and rufous on the sides; the under wholly rufous: the general colour of the plumage is rufous in two shades; the under parts rufous white: the feathers on the crown are of a deep brown, and pretty long, with rufous tips, and some of them margined with rufous: the hind part of the neck is a rufous grey; down the shafts deep brown: back and rump the same; each feather tipped with a rufous spot: on each feather of the throat and neck is a transverse brownish line near the end: the under tail coverts are rufous: the quills are grey brown, edged with rufous, and a spot of the same at the tips: the tail is near six inches long, much cuneated; the outer feathers only half the length of the middle ones; colour of it the same as the quills; some of the upper coverts reach to near two-thirds of the length of the tail: the legs are ash-colour; the claws greyish brown. It inhabits Cayenne.—Buffon mentions a variety of this by the name of *rail-bird*. It is much the same in size, but has less rufous, being grey in the place of that colour: the side tail-feathers have white tips: the throat is pale grey; under the body white; the tail a trifle longer than in the other. Whether a variety or different sex, is not known. This is common at Cayenne and Guiana; and is seen often perched upon gates and rails, whence its name; and when in this situation continually moves its tail. These

Cuculus

Fig. 1. CUCULUS, Indicator,
or
Honey Guide.



Fig. 3.
CYPREA.

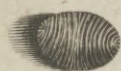
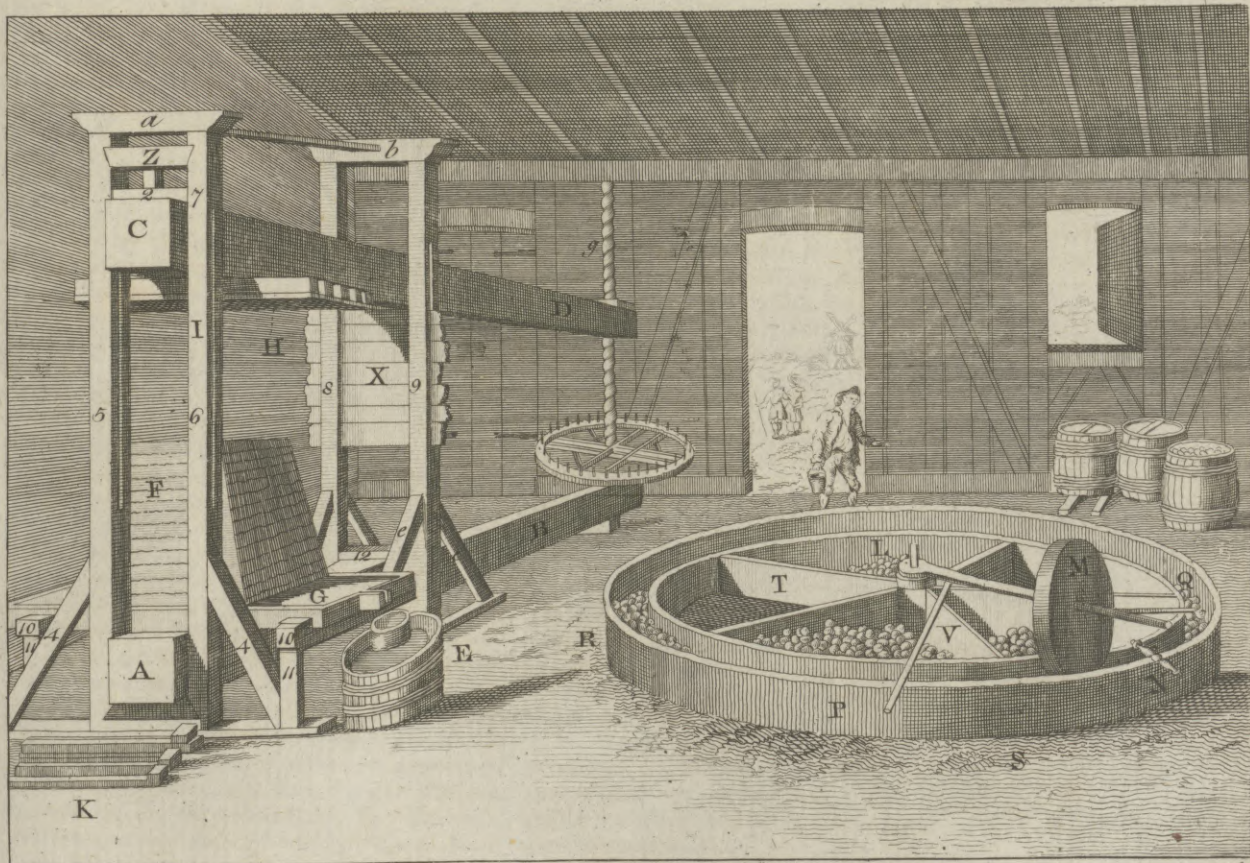
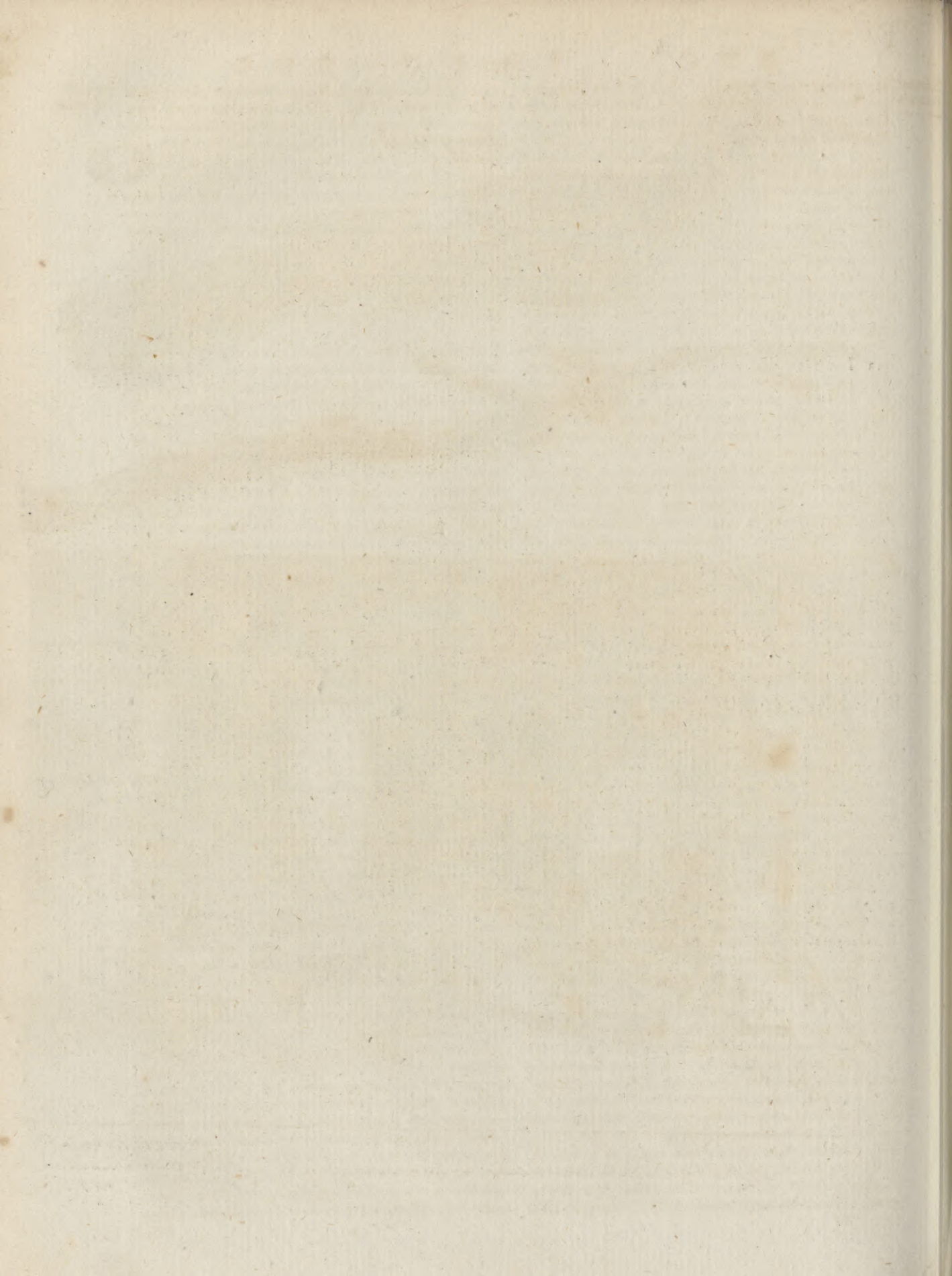


Fig. 2.
CYDER PRESS.



A. Bell Sculp.



Cucumis, are not very wild birds, yet do not form themselves into troops, although numbers are often found in the same district: nor do they frequent the thick woods like many of the genus.

9. The *cayanus*, or Cayenne cuckow, is the size of a blackbird: the bill is grey brown, above an inch long, and a little bent at the tip: the plumage on the upper parts of the body is purplish chestnut; beneath, the same, but paler: the quills are the same as the upper parts, tipped with brown: the tail is the same; near the end black, and tipped with white; it is much cuneated, and above ten inches long: the legs and claws are grey brown. This inhabits Cayenne, where it goes by the name of *piaye*, or *devil*. The natives give it that name as a bird of ill omen. The flesh they will not touch; and indeed not without reason, as it is very bad and lean. It is a very tame species, suffering itself to be almost touched by the hand before it offers to escape. Its flight is almost like that of a king'sfisher; frequents the borders of rivers, on the low branches; feeds on insects; often wags its tail on changing place.

There are 37 other species, which inhabit different parts of the globe, and are principally distinguished by the shape of the tail and variations in colour.

CUCUMBER, in botany. See CUCUMIS.

CUCUMIS, the CUCUMBER: A genus of the syn-genesia order, belonging to the monœcia class of plants; and in the natural method ranking under the 34th order, *Cucurbitaceæ*. The male calyx is quinque-dentated, the corolla quinquepartite; the filaments three. The female calyx is quinque-dentated, the corolla quinquepartite, the pistil trifid; the sides of the apple sharp-pointed. In this genus Linnæus includes also the MELON; (see that article). There are 11 species, of which the following are the most remarkable.

1. The *fativa*, or common cucumber, hath roots composed of numerous, long, slender, white fibres; long slender stalks, very branchy at their joints, trailing on the ground, or climbing by their clasps, adorned at every joint by large angular leaves on long erect footstalks, with numerous and monopetalous bell-shaped flowers of a yellow colour, succeeded by oblong rough fruit. The varieties of this kind are, (1.) The common rough green prickly cucumber; a middle-sized fruit, about six or seven inches long, having a dark-green rough rind, closely set with very small prickles; the plant is of the hardiest sort, but does not show its fruit early. (2.) The short green prickly cucumber is about three or four inches long; the rind rather smooth, and set with small black prickles. It is valuable chiefly for being one of the earliest and hardiest sorts. (3.) The long green prickly cucumber, grows from six to nine inches in length, and is rather thinly set with prickles. And as there is an early and late cucumber, it is considerably the best variety for the main crops, both in the frames and hand-glasses, as well as in the open ground for pricklers. Of this there is another variety with white fruit. (4.) The early green cluster cucumber is a shortish fruit, remarkable for growing in clusters, and appearing early. (5.) The long smooth green Turkey cucumber, is a smooth green-rinded fruit, growing from 10 to 15 inches in length, without prickles. The plants are strong growers, with very large leaves. (6.) The long smooth

white Turkey cucumber, is a smooth-rinded fruit, from 10 to 15 inches long, without prickles. (7.) The large smooth green Roman cucumber is a very large and long smooth green fruit produced from a strong growing plant. (8.) The long white prickly Dutch cucumber, is a white fruit 8 or 10 inches long, set with small black prickles; the plants are but bad bearers in this country.

2. The *chata*, or round-leaved Egyptian cucumber. According to Mr Hasselquist, this grows in the fertile earth near Cairo after the inundation of the Nile, and not in any other place in Egypt, nor does it grow in any other soil. It ripens with the water-melons. The fruit is a little watery; the flesh almost of the same substance with the melons; it tastes somewhat sweet and cool; but is far from being as cool as the water-melons. This the grandees and Europeans in Egypt eat as the most pleasant fruit they find, and that from which they have the least to apprehend. It is the most excellent fruit of this tribe of any yet known.

The four first varieties of the *cucumis fativa* are those chiefly cultivated in this country. They are raised at three different seasons of the year: 1. on hot-beds, for early fruit; 2. under bell, or hand-glasses, for the middle crop; 3. on the common ground, which is for a late crop, or to pickle. The cucumbers which are ripe before April are unwholesome; being raised wholly by the heat of the dung without the assistance of the sun. Those raised in April are good, and are raised in the following manner.

Towards the latter end of January, a quantity of fresh horse-dung must be procured with the litter among it; and a small proportion of sea-coal ashes should be added to it. In four or five days the dung will begin to heat; at which time a little of it may be drawn flat on the outside, and covered with two inches thickness of good earth: this must be covered with a bell-glass; and after two days, when the earth is warm, the seeds must be sown on it, covered with a quarter of an inch of fresh earth, and the glass then set on again. The glass must be covered with a mat at night, and in four days the young plants will appear. When these are seen, the rest of the dung must be made up into a bed for one or more lights. This must be three feet thick, beat close together, and covered three inches deep with fine fresh earth; the frame must then be put on, and covered at night, or in bad weather, with mats. When the earth is hot enough, the young plants from under the bell must be removed into it, and set two inches distance. The glasses must be now and then a little raised, to give air to the plants, and turned often, to prevent the wet from the steam of the dung from dropping down upon them. The plants must be watered at proper times; and the water used for this purpose must be set on the dung till it becomes as warm as the air in the frame: and as the young plants increase in bulk, they must be earthed up, which will give them great additional strength. If the bed is not hot enough, some fresh litter should be laid round its sides: and if too hot, some holes should be bored into several parts of it with a stake, which will let out the heat; and when the bed is thus brought to a proper coolness, the holes are to be stopped up again with fresh dung. When these plants begin to shoot their third or rough leaf,

Cucumis.

leaf, another bed must be prepared for them like the first; and when it is properly warm through the earth, the plants of the other bed must be taken up, and planted in this, in which there must be a hole in the middle of each light, about a foot deep, and nine inches over, filled with light and fine fresh earth laid hollow in form of a basin: in each of these holes there must be set four plants: these must be, for two or three days, shaded from the sun, that they may take firm root; after which they must have all the sun they can, and now and then a little fresh air, as the weather will permit. When the plants are four or five inches high, they must be gently pegged down towards the earth, in directions as different from one another as may be; and the branches afterwards produced should be treated in the same manner. In a month after this the flowers will appear, and soon after the rudiments of the fruit. The glasses should now be carefully covered at night; and in the daytime the whole plants should be gently sprinkled with water. These will produce fruit till about midsummer; at which time the second crop will come in to supply their place: these are to be raised in the same manner as the early crop, only they do not require so much care and trouble. This second crop should be sown in the end of March or beginning of April. The season for sowing the cucumbers of the last crop, and for pickling, is towards the latter end of May, when the weather is settled: these are sown in holes dug to a little depth, and filled up with fine earth, so as to be left in the form of a basin; eight or nine seeds being put into one hole. These will come up in five or six days; and till they are a week old, are in great danger from the sparrows. After this they require only to be kept clear of weeds, and watered now and then. There should be only five plants left at first in each hole; and when they are grown a little farther up, the worst of these is to be pulled up, that there may finally remain only four. The plants of this crop will begin to produce fruit in July.

The cucumber is taken in great cities by the lower people as nourishment; but by the better sort is chiefly used as a refrigerant, or condiment, to accompany animal food. They have a bland insipid juice, without acidity or sweetness, approaching, as appears by their ripening, to a farinaceous matter. When used green they have no nourishment, so they are only to be used in the summer season and by the sedentary. Although cucumbers are neither sweet nor acid, yet they are considerably acefcent, and so produce flatulency, cholera, diarrhoea, &c. Their coldness and flatulency may be likewise in part attributed to the firmness of their texture. They have been discharged with little change from the stomach, after being detained there for 48 hours. By this means, therefore, their acidity is greatly increased. Hence oil and pepper, the condiments commonly employed, are very useful to check their fermentation. We have lately used another condiment, *viz.* the skin, which is bitter, and may therefore supply the place of aromatics; but should only be used when young.

Besides the above mentioned species which are proper for the table, this genus affords also two articles for the materia medica.

1. The elaterium of the shops, is the inspissated fæcula of the juice of a kind of wild cucumber, called also the ass's cucumber. It comes to this country from Spain and the southern parts of France, where the plant is very common. It is brought to us in small flat whitish lumps or cakes that are dry, and break easily between the fingers. It is of an acrid, bitter, and nauseous taste, and has a strong offensive smell when newly made: but these, as well as its other qualities, it loses after being kept some time. Elaterium is a very violent purge and vomit, and is now very seldom used. The plant is commonly called spiriting cucumber, from its casting out its seeds with great violence, together with the viscid juice in which they are lodged, if touched when ripe; from this circumstance it has obtained the appellation of *noli me tangere*, or "touch me not."

2. The colocynthis, the colocynth, coloquintida, or bitter apple of the shops, is brought to us from Aleppo and the island of Crete. The leaves of the plant are large, placed alternate, almost round, and stand upon footstalks four inches long. The flowers are white; and are succeeded by a fruit of the gourd kind, of the size of a large apple, and which is yellow when ripe. The shelly or husky outside incloses a bitter pulp interspersed with flattish seeds. If a hole is made in one of these ripe gourds, and a glass of rum poured in, and suffered to remain 24 hours, it proves a powerful purgative. The pulp itself dried and powdered is commonly used as a purgative in this country, but is one of the most drastic and disagreeable we know. If taken in a large dose, it not only often brings away blood, but produces colics, convulsions, ulcers in the bowels, and fatal super-purgations. The most effectual corrector of these virulent qualities is to triturate it finely with sugar or sweet almonds.

CUCURBIT, the name of a chemical vessel employed in distillation, when covered with its head. Its name comes from its lengthened shape, by which it resembles a gourd: some cucurbits, however, are shallow, and wide-mouthed. They are made of copper, tin, glass, and stone-ware, according to the nature of the substances to be distilled. A cucurbit, provided with its capital, constitutes the vessel for distillation called an *alembic*.

CUCURBITA, the GOURD, and POMPION: A genus of the Syngenesia order, belonging to the monœcia class of plants; and in the natural method ranking under the 34th order, *Cucurbitaceæ*. The calyx of the male is quinque-dentated; the corolla quinquefid; the filaments three. The calyx of the female is quinque-dentated; the corolla quinquefid; the pistil quinquefid; the seeds of the apple with a tumid margin. There are five species.

1. The lagenaria, or bottle gourd, rises with thick trailing downy stalks, branching into many spreading runners. These extend along the ground sometimes 15 or 20 feet in length. The leaves are large, roundish, heart-shaped, indented, and woolly. The flowers are large and white, succeeded by long incurved whitish yellow fruit, obtaining from about two to five or six feet in length, and from about nine to 24 inches in circumference, having a ligneous and durable shell.

2. The papo or pompion, commonly called pump-kin,

Cucumis
||
Cucurbita

Cucurbita. kin, hath strong, trailing, rough stalks, branching into numerous runners. These are much larger than the former, extending from 10 to 40 or 50 feet each way. These are garnished with large, roundish, lobated, rough leaves, and yellow flowers. The flowers are succeeded by large, round, smooth fruit, of different forms and sizes; some as big as a peck, others as big as half a bushel measure; some considerably less, and others not exceeding the bulk of an orange; ripening to a yellow, and sometimes to a whitish colour. This species is the most hardy of any, as well as the most extensive in their growth. A single plant, if properly encouraged, will overspread 10 or 15 roods of ground, and produce a great number of fruit, which, when young, are generally a mixture between a deep blue and pale white, but change as they increase in bulk.

3. The verrucosa, or warted gourd, hath trailing stalks very branchy, and running upon the ground 10 or 15 feet each way; large lobated leaves, and yellow flowers, succeeded by roundish, knobby, warted white fruit, of moderate size.

4. The melopepo, erect gourd, or squash. This rises with an erect strong stalk several feet high, rarely sending forth side-runners, but becoming bushy upward. It is adorned with large lobated leaves; and the flowers are succeeded by depressed knotty fruit, both white and yellow, commonly of a moderate size.

5. The lignosa, ligneous shelled gourd, often called calabash. This hath trailing stalks, branching into runners, which extend far every way; the leaves are large, lobated, and rough; the flowers yellow, and are succeeded by roundish smooth fruit of a moderate size, with hard woody shells. Of all these species there are a great many varieties, and the fruit of every species is observed to be surprisngly apt to change its form.

Culture. All the species of gourds and pompions, with their respective varieties, are raised from seed sown annually in April or the beginning of May, either with or without the help of artificial heat. But the plants forwarded in a hot-bed till about a month old, produce fruit a month or six weeks earlier on that account, and ripen proportionably sooner. The first species particularly will scarce ever produce tolerably sized fruit in this country without the treatment above mentioned.

Uses. In this country these plants are cultivated only for curiosity; but in the places where they are natives, they answer many important purposes. In both the Indies, bottle-gourds are very commonly cultivated and sold in the markets. They make the principal food of the common people, particularly in the warm months of June, July, and August. The Arabians call this kind of gourd *charrab*. It grows commonly on the mountains in these desarts. The natives boil and season it with vinegar; and sometimes, filling the shell with rice and meat, make a kind of pudding of it. The hard shell is used for holding water, and some of them are capacious enough to contain 22 gallons; these, however, are very uncommon. The fruit of the pompion likewise constitutes a great part of the food of the common people during the hot months, in those places where they grow. If gathered when not much bigger than a hen or goose egg, and properly seasoned with butter, vinegar, &c.

they make a tolerable good sauce for butcher's meat, and are also used in soups. In England they are seldom used till grown to maturity. A hole is then made in one side, through which the pulp is scooped out; after being divested of the seeds, it is mixed with sliced apples, milk, sugar, and grated nutmeg, and thus a kind of pudding is made. The whole is then baked in the oven, and goes by the name of a *pumkin pye*. For this purpose the plants are cultivated in many places of England by the country people, who raise them upon old dung hills. The third species is also used in North America for culinary purposes. The fruit is gathered when about half grown, boiled, and eaten as sauce to butcher's meat. The squashes are also treated in the same manner, and by some people esteemed delicate eating.

CUCURBITACEÆ, the name of the 34th order in Linnæus's fragments of a natural method, consisting of plants which resemble the gourd in external figure, habit, virtues, and sensible qualities. This order contains the following genera, viz. *gronovia*, *melothria*, *passiflora*, *anguria*, *bryonia*, *cucumis*, *cucurbita*, *fevillea*, *momordica*, *sicyos*, *trichosanthes*.

CUCURUCU, in zoology, the name of a serpent found in America, growing 10 or 12 feet long. It is also very thick in proportion to its length, and is of a yellowish colour, strongly variegated with black spots, which are irregularly mixed among the yellow, and often have spots of yellow within them. It is a very poisonous species, and greatly dreaded by the natives; but its flesh is a very rich food, and much esteemed among them, when properly prepared.

CUD, sometimes means the inside of the throat in beasts; but generally the food that they keep there, and chew over again. See *COMPARATIVE Anatomy*, n^o 92—94.

CUDDALORE, a town on the coast of Coromandel in India, belonging to the English, very near the place where Fort St David once stood. N. Lat. 11. 30. E. Long. 79. 53. 30. This place was reduced by the French in the year 1781; and in 1783 underwent a severe siege by the British forces commanded by General Stuart. At this time it was become the principal place of arms held by the enemy on that coast: they had exerted themselves to the utmost in fortifying it; and it was garrisoned by a numerous body of the best forces of France, well provided with artillery, and every thing necessary for making a vigorous defence.

Previous to the commencement of the siege, they had constructed strong lines of defence all along the fort, excepting one place where the town was covered by a wood, supposed to be inaccessible. Through this wood, however, General Stua began to cut his way; on which the besieged began to draw a line of fortification within that also. The British commander then determined to attack these fortifications before they were quite completed; and for this purpose a vigorous attack was made by the troops under General Bruce. The grenadiers assailed a redoubt which greatly annoyed them, but were obliged to retire; on which the whole army advanced to the attack of the lines. The French defended themselves with resolution; and as both parties charged each other with fixed bayonets, a dreadful slaughter ensued. At last the British were obliged

Cucurbita-
ceæ
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Cuddalore.

Cuddalore obliged to retreat; but the French having imprudently come out of their lines to pursue them, were in their turn defeated, and obliged to give up the lines they had constructed with so much pains and so gallantly defended. The loss on the part of the British amounted to near 1000 killed and wounded, one half of whom were Europeans; and that of the French was not less than 600.

Though the British proved victorious in this contest, yet the victory cost so dear that there was not now a sufficient number to carry on the siege with any effect. The troops also became sickly; and their strength diminished so much, that the besieged formed a design of not only obliging them to raise the siege, but of totally destroying them. For this purpose 4000 men was landed from the squadron commanded by M. Suffrein; and the conduct of the enterprise committed to the Chevalier de Damas, an experienced and valiant officer. On the 25th of June 1783, he sallied out at the head of the regiment of Aquitaine, supposed to be one of the best in the French service, and of which he was colonel; with other troops selected from the bravest of the garrison. The attack was made by day-break; but though the British were at first put into some disorder, they quickly recovered themselves, and not only repulsed the enemy, but pursued them so warmly, that the Chevalier de Damas himself was killed with about 200 of his countrymen, and as many taken prisoners.

This engagement was attended with one of the most remarkable circumstances that happened during the whole war, *viz.* A corps of Sepoy grenadiers encountering the French troops opposed to them with fixed bayonets, and overcoming them. This extraordinary bravery was not only noticed with due applause, but procured for that corps a provision for themselves and families from the presidencies to which they belonged. No other operation of any consequence took place during the siege, which was now soon ended by the news of peace having taken place between the belligerent powers of Europe.

CUDDY, in a first-rate man of war, is a place lying between the captain lieutenant's cabin and the quarter-deck; and divided into partitions for the master and other officers. It denotes also a kind of cabin near the stern of a lighter or barge of burden.

CUDWEED, in botany. See GNAPHALIUM.

CUDWORTH (Ralph), a very learned divine of the church of England in the 17th century. In January 1657 he was one of the persons nominated by a committee of the parliament to be consulted about the English translation of the Bible. In 1678 he published his *True Intellectual System of the Universe*; a work which met with great opposition. He likewise published a treatise, intitled, *Deus justificatus*: or, "The divine goodness of God vindicated, against the assertions of absolute and unconditionate reprobation." He embraced the mechanical or corpuscular philosophy: but with regard to the Deity, spirits, genii, and ideas, he followed the Platonists. He died at Cambridge in 1688. The editor of the new edition of the *Biographia Britannica* observes, that it is not easy to meet with a greater store-house of ancient literature than the "Intellectual System;" and various writers, we believe, have been indebted to it for an appearance of

learning which they might not otherwise have been able to maintain. That Dr Cudworth was fanciful in some of his opinions, and that he was too devoted a follower of Plato and the Platonists, will scarcely be denied even by those who are most sensible of his general merit. The reflections that have been cast upon such a man as the author, by bigotted writers, are altogether contemptible. It is the lot of distinguished merit to be thus treated. Lord Shaftesbury, speaking on this subject, has given an honourable testimony to the memory of Dr Cudworth. "You know (says his lordship) the common fate of those who dare to appear fair authors. What was that pious and learned man's case, who wrote the *Intellectual System of the Universe*? I confess it was pleasant enough to consider, that though the whole world were no less satisfied with his capacity and learning, than with his sincerity in the cause of Deity; yet he was accused of giving the upper hand to the Atheist, for having only stated their reasons, and those of their adversaries, fairly together."

It is observed by Dr Birch, that Dr Cudworth's *Intellectual System of the Universe* has raised him a reputation, to which nothing can add but the publication of his other writings still extant in manuscript. That these writings are very valuable cannot be doubted. We may be assured that they display a great compass of sentiment and a great extent of learning. Nevertheless, from their voluminous quantity, from the abstruseness of the subjects they treat upon, and from the revolutions of literary taste and opinion, it is morally certain that the publication of them would not be successful in the present age. Mr Cudworth's daughter Damaris, who married Sir Francis Masham of Oates in Essex, was a lady of genius and learning; she had a great friendship for Mr Locke, who resided several years at her house at Oates, where he died in 1704.

CUE, an *item* or *innuendo*, given to the actors on the stage what or when to speak. See PROMPTER.

CUENZA, a town of Spain, in New Castile, and in the territory of the Sierra, with a bishop's see. It was taken by Lord Peterborough in 1706, but retaken by the Duke of Berwick. It is seated on the river Xucar, in W. Long. 1. 45. N. Lat. 40. 10.

CUERENHERT (Theodore Van), a very extraordinary person, was a native of Amsterdam, where he was born in 1522. It appears, that early in life he travelled into Spain and Portugal; but the motives of his journey are not ascertained. He was a man of science, and, according to report, a good poet. The sister arts at first he considered as an amusement only; but in the end he was, it seems, obliged to have recourse to engraving alone for his support. And though the different studies in which he employed his time prevented his attachment to this profession being so close as it ought to have been, yet at last the marks of genius are discoverable in his works. They are slight, and hastily executed with the graver alone; but in an open careless style, so as greatly to resemble designs made with a pen. He was established at Haerlem; and there pursuing his favourite studies in literature, he learned Latin, and was made secretary to that town, from whence he was sent several times as ambassador to the Prince of Orange, to whom he addressed a famous manifesto, which that prince published in

erpo,
uff.

in 1566. Had he stopped here, it had been well; but directing his thoughts into a different channel, he undertook an argument as dangerous as it was absurd. He maintained, that all religious communications were corrupted; and that, without a supernatural mission, accompanied with miracles, no person had a right to administer in any religious office: he therefore pronounced that man to be unworthy the name of a Christian who would enter any place of public worship. This he not only advanced in words, but strove to show the sincerity of his belief by practice; and for that reason would not communicate with either Protestant or Papist. His works were published in three volumes folio in 1630; and though he was several times imprisoned, and at last sentenced to banishment, yet he does not appear to have altered his sentiments. He died at Dergoude in 1590, aged 68 years. It is no small addition to the honour of this singular man, that he was the instructor of that justly celebrated artist Henry Goltzius. Cuerehert worked conjointly with the Galles and other artists, from the designs of Martin Hemskerck. The subjects are from the Old and New Testament, and consist chiefly of middling-sized plates lengthwise. He also engraved several subjects from Franc. Floris.

CUERPO. To *walk in cuerpo*, is a Spanish phrase for going without a cloak; or without all the formalities of a full dress.

CUFF (Henry), the unfortunate secretary of the unfortunate earl of Essex, was born at Hinton St George in Somersetshire, about the year 1560, of a genteel family, who were possessed of considerable estates in that county. In 1576, he was entered of Trinity college Oxford; where he soon acquired considerable reputation as a Grecian and disputant. He obtained a fellowship in the above-mentioned college; but was afterwards expelled for speaking disrespectfully of the founder (A). He was, however, soon after admitted of Meiton college; of which, in 1586, he was elected probationer, and in 1588 fellow. In this year he took the degree of master of arts. Some time after he was elected Greek professor, and in 1594 proctor of the university. When he left Oxford is uncertain; nor are we better informed as to the means of his introduction to the earl of Essex. When that nobleman was made lord lieutenant of Ireland, Mr Cuff was appointed his secretary, and continued intimately connected with his lordship until his confinement in the tower; and he is generally supposed to have advised those violent measures which ended in their mutual destruction. The earl indeed confessed as much before his execution, and charged him to his face with being the author of all his misfortunes. Mr Cuff was tried for high-treason, convicted, and executed at Tyburn on the 30th of March 1601. Lord Bacon, Sir Henry Wotton, and Camden, speak of him in very harsh terms. He was certainly a man of learning and

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abilities. He wrote two books; the one intitled, *The Differences of the Ages of Man's Life*; the other, *De Rebus Gestis in Sancto Concilio Niceno*. The first was published after his death; the second is still in manuscript.

CUJAS (James), in Latin *Cujacius*, the best civilian of his time, was born at Toulouze, of obscure parents, in 1520. He learned polite literature and history; and acquired great knowledge in the ancient laws, which he taught with extraordinary reputation at Toulouze, Cahors, Bourges, and Valence, in Dauphiné. Emanuel Philibert, duke of Savoy, invited him to Turin, and gave him singular marks of his esteem. Cujas afterwards refused very advantageous offers from Pope Gregory XIII. who was desirous of having him teach at Bologna: but he chose rather to fix at Bourges, where he had a prodigious number of scholars; whom he not only took great pleasure in instructing, but assisted with his substance, which occasioned his being called the *Father of his Scholars*. He died at Bourges in 1590, aged 70. His works are in high esteem among civilians.

CUJAVA, a territory of Great Poland, having on the north the duchy of Prussia, on the west the palatinate of Kalisk, on the south those of Licici and Rawa, and on the west that of Ploczko. It contains two palatinates, the chief towns of which are Inowloez and Brest; as also Uladislaw, the capital of the district.

CUIRASSE, a piece of defensive armour, made of iron plate, well hammered, serving to cover the body, from the neck to the girdle, both before and behind. Some derive the word, by corruption, from the Italian *cuore*, "heart;" because it covers that part: others from the French *cuir*, or the Latin *corium*, "leather;" whence *coriaceous*: because defensive arms were originally made of leather. The cuirasse was not brought into use till about the year 1300, though they were known both to the ancient Greeks and Romans in different forms.

CUIRASSIERS, cavalry armed with cuirasses, as most of the Germans are: The French have a regiment of cuirassiers; but we have had none in the British army since the revolution.

CULDEES, in church-history, a sort of monkish priests, formerly inhabiting Scotland and Ireland. Being remarkable for the religious exercises of preaching and praying, they were called, by way of eminence, *cultores Dei*; from whence is derived the word *culdees*. They made choice of one of their own fraternity to be their spiritual head, who was afterwards called the *Scots bishop*.

CULEMBACH, a district or marquisate of the circle of Franconia, in Germany. It is bounded on the west by the bishopric of Bamberg; on the south by the territory of Nuremberg; on the east by the palatinate of Bavaria and Bohemia; and on the north by Voightland

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land

(A) The founder of Trinity college was Sir Thomas Pope, who, it seems, would often take a piece of plate from a friend's house, and carry it home concealed under his gown; out of fun, no doubt. Cuff, being merry with some of his acquaintance at another college, happened to say, alluding to Sir Thomas Pope's usual joke above mentioned, "A pox on this beggarly house! why, our founder stole as much plate as would build such another." This piece of wit was the cause of his expulsion. The heads of colleges in those days did not understand humour. Anthony Wood was told this story by Dr Bathurst.

Cujas
||
Culembach.

Culembach,
Culex.

land and part of the circle of Upper Saxony. It is about 50 miles in length from north to south, and 30 in breadth from east to west. It is full of forests and high mountains; the most considerable of the latter are those of Frichtelberg, all of them covered with pine-trees. Here are the sources of four large rivers, the Maine, the Sala, the Eger, and the Nab. This marquisate is the upper part of the burgraviate of Nuremberg.

CULEMBACH, a town of Germany, in Franconia, the capital of the marquisate of the same name. It has good fortifications, and is seated at the confluence of two branches of the river Maine. It was pillaged and burnt by the Hussites in 1430, and by the inhabitants of Nuremberg in 1573. E. Long. 11. 28. N. Lat. 50. 12.

CULEUS, in Roman antiquity, the largest measure of capacity for things liquid, containing 20 amphoræ, or 40 urnæ. It contained 143 gallons 3 pints, English wine-measure; and was 11.095 solid inches.

CULEX, the GNAT; a genus of insects belonging to the order of diptera. The mouth is formed by a flexible sheath, inclosing bristles pointed like stings. The antennæ of the males are filiform; those of the females feathered. There are seven species. These insects, too well known by the severe punctures they inflict, and the itchings thence arising, afford a most interesting history. Before they turn to flying insects, they have been in some manner fishes, under two different forms. You may observe in stagnating waters,

Plate CLI.

Barbut's Gen.
nera of In-
sects.

from the beginning of May till winter, small grubs with their heads downwards, their hinder-parts on the surface of the water; from which part arises sideways a kind of vent-hole, or small hollow tube like a funnel, and this is the organ of respiration. The head is armed with hooks, that serve to seize on insects and bits of grass on which it feeds. On the sides are placed four small fins, by the help of which the insect swims about, and dives to the bottom. These larvæ retain their form during a fortnight or three weeks, after which period they turn to chrysalids. All the parts of the winged insect are distinguishable through the outward robe that shrouds them. The chrysalids are rolled up into spirals. The situation and shape of the windpipe is then altered; it consists of two tubes near the head, which occupy the place of the stigmata, through which the winged insect is one day to breathe. These chrysalids, constantly on the surface of the water in order to draw breath, abstain now from eating; but upon the least motion are seen to unroll themselves, and plunge to the bottom, by means of little paddles situated at their hinder-part. After three or four days strict fasting, they pass to the state of gnats. A moment before, water was its element; but now, become an aerial insect, he can no longer exist in it. He swells his head, and bursts his inclosure. The robe he lately wore turns to a ship, of which the insect is the mast and sail. If at the instant the gnat displays his wings there arises a breeze, it proves to him a dreadful hurricane; the water gets into the ship, and the insect, who is not yet loosened from it, sinks and is lost. But in calm weather, the gnat forsakes his slough, dries himself, flies into the air, seeks to pump the alimentary juice of leaves, or the blood of man and beasts. The sting which our naked eye discovers, is but a tube,

containing five or six spicula of exquisite minuteness; some dentated at their extremity like the head of an arrow, others sharp-edged like razors. These spicula introduced into the veins, act as pump-suckers, into which the blood ascends by reason of the smallness of the capillary tubes. The insect injects a small quantity of liquor into the wound, by which the blood becomes more fluid, and is seen through the microscope passing through those spicula. The animal swells, grows red, and does not quit its hold till it has forged itself. The liquor it has injected causes by its fermenting that disagreeable itching which we experience; and which may be removed by volatile alkali, or by scratching the part newly stung, and washing it with cold water; for later, the venom ferments, and you would only increase the tumor and the itching. Rubbing one's self at night with fuller's-earth and water, lessens the pain and inflammation. Gnats perform their copulation in the air. The female deposits her eggs on the water; by the help of her moveable hinder part and her legs, placing them one by the side of another in the form of a little boat. This vessel, composed of two or three hundred eggs, swims on the water for two or three days, after which they are hatched. If a storm arises, the boats are sunk. Every month there is a fresh progeny of these insects. Were they not devoured by swallows, other birds, and by several carnivorous insects, the air would be darkened by them.

Gnats in this country, however troublesome they may be, do not make us feel them so severely as the musketo-flies (*Culex pipiens*) do in foreign parts. In the day-time or at night these come into the houses; and when the people are gone to bed they begin their disagreeable humming, approach always nearer to the bed, and at last suck up so much blood that they can hardly fly away. Their bite causes blisters in people of a delicate complexion. When the weather has been cool for some days, the musketo-flies disappear; but when it changes again, and especially after a rain, they gather frequently in such quantities about the houses, that their numbers are astonishing. In sultry evenings they accompany the cattle in great swarms, from the woods to the houses or to town; and when they are driven before the houses, the gnats fly in wherever they can. In the greatest heat of summer, they are so numerous in some places, that the air seems to be quite full of them, especially near swamps and stagnant waters, such as the river Morris in New Jersey. The inhabitants therefore make a fire before their houses to expel these disagreeable guests by the smoke.

CULIACAN, a province of North America, in the audience of Guadalajara. It is bounded on the north by New Mexico, on the east by New Biscay and the Zacatecas, on the south by Chiamatlan, and on the west by the sea. It is a fruitful country, and has rich mines.

CULLIAGE, a barbarous and immoral practice, whereby the lords of manors anciently assumed a right to the first night of their vassals' brides.

CULLEN, a parliament-town in Scotland, situated on the sea-coast of Banff-shire. W. Long. 2. 12. and N. Lat. 57. 38.

CULLODEN, a place in Scotland within two miles of Inverness, chiefly remarkable for a complete victory

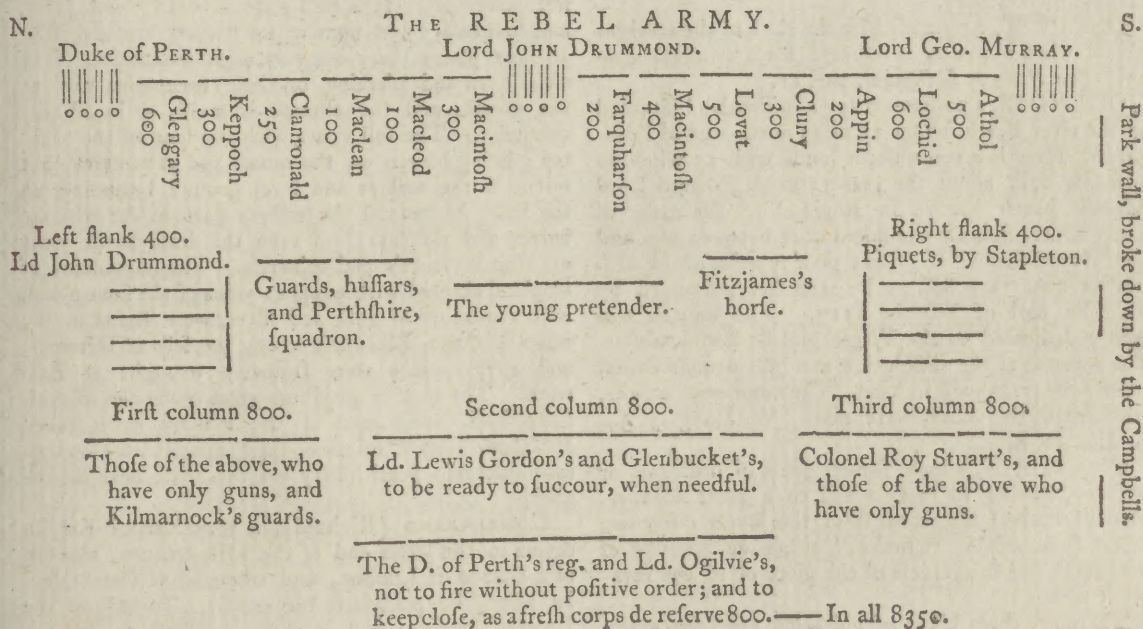
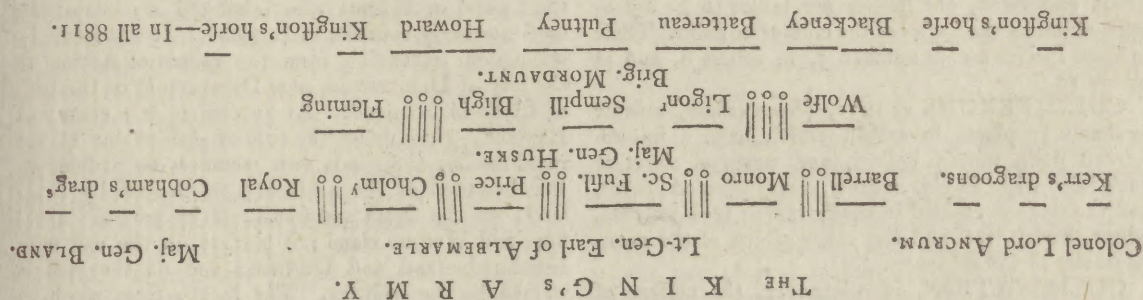
Culex
Culloden

Coloden. victory gained over the rebels on the 16th of April 1746. That day the royal army, commanded by the late Duke of Cumberland, began their march from Nairn, formed into five lines of three battalions each; headed by Major-general Huske on the left, Lord Sempill on the right, and Brigadier Mordaunt in the centre; flanked by the horse under the Generals Hawley and Bland, who at the same time covered the cannon on the right and left. In this order they marched about eight miles, when a detachment of Kington's horse, and of the Highlanders, having advanced before the rest of the army, discovered the van of the rebels commanded by the young pretender. Both armies immediately formed in the order and numbers shown in the annexed scheme.

About two in the afternoon the rebels began to cannonade the king's army: but their artillery being ill served, did little execution; while the fire from their enemies was severely felt, and occasioned great disorder. The rebels then made a push at the right of the royal army, in order to draw the troops forward; but finding themselves disappointed, they turned their whole force on the left; falling chiefly on Barrell's and Monro's regiments, where they attempted to flank the king's front-line. But this design also was defeated by the advancing of Wolfe's regiment, which

in the mean time the cannon kept playing upon them with cartridge-shot. General Hawley, with some Highlanders, had opened a passage through some stone-walls to the right for the horse which advanced on that side; while the horse on the king's right wheeled off upon their left, dispersed their body of reserve, and met in the centre of their front-line in their rear; when being repulsed in the front, and great numbers of them cut off, the rebels fell into very great confusion. A dreadful carnage was made by the cavalry on their backs; however, some part of the foot still preserved their order: but the Kington's horse, from the reserve, galloped up briskly, and falling on the fugitives, did terrible execution. A total defeat instantly took place, with the loss of 2500 killed, wounded, and prisoners, on the part of the rebels; while the royalists lost not above 200. The young pretender had his horse shot under him during the engagement; and after the battle retired to the house of a factor of Lord Lovat, about ten miles from Inverness, where he staid that night. Next day he set out for Fort-Augustus, from whence he pursued his journey through wild deserts with great difficulty and distress, till at last he safely reached France, as related under the article BATAINE, n° 423.

Coloden.



Culm
||
Culverin.

CULM, or **CULMUS**, among botanists, a straw or haulm; defined by Linnæus to be the proper trunk of the grasses, which elevates the leaves, flower, and fruit.

This sort of trunk is tubular or hollow, and has frequently knots or joints distributed at proper distances through its whole length. The leaves are long, sleek, and placed either near the roots in great numbers, or proceed singly from the different joints of the stalk, which they embrace at the base, like a sheath or glove.

The haulm is commonly garnished with leaves: sometimes, however, it is naked; that is, devoid of leaves, as in a few species of cypress-grass. Most grasses have a round cylindrical stalk; in some species of *schœnus*, *scirpus*, cypress-grass, and others, it is triangular.

The stalk is sometimes entire, that is, has no branches; sometimes branching, as in *schœnus aculeatus* & *capensis*; and not seldom consists of a number of scales, which lie over each other like tiles.

Lastly, in a few grasses, the stalk is not interrupted with joints, as in the greater part. The space contained betwixt every two knots or joints, is termed by botanists *internodium*, and *articulus culmi*.

This species of trunk often affords certain marks of distinction, in discriminating the species. Thus in the genus *ericaulon*, the species are scarce to be distinguished but by the angles of the culmus or stalks. These in some species are in number 5, in others 6, and in others 10.

CULMIFEROUS PLANTS, (from *culmus*, a straw or haulm): plants so called, which have a smooth jointed stalk, usually hollow, and wrapped about at each joint with single, narrow, sharp-pointed leaves, and the seeds contained in chaffy husks; such are oats, wheat, barley, rye, and the other plants of the natural family of the **GRASSES**.

CULMINATION, in astronomy, the passage of any heavenly body over the meridian, or its greatest altitude for that day.

CULPRIT, a term used by the clerk of the arraignments, when a person is indicted for a criminal matter. See *PLEA to Indictment*, par. 11.

CULROSS, a parliament town in Scotland, situated on the river Forth, about 23 miles north-west of Edinburgh. Here is a magnificent house with 13 windows in front, built about the year 1590 by Edward Lord Kinlofs, better known in England by the name of Lord Bruce, slain in the noted duel between him and Sir Edward Sackville. Some poor remains of the Cistercian abbey are still to be seen here, founded by Malcolm earl of Fife in 1217. The church was jointly dedicated to the Virgin and St Serf confessor. The revenue at the dissolution was 768 pounds Scots, besides the rents paid in kind. The number of monks, exclusive of the abbot, were nine. W. Long. 3. 34. N. Lat. 56. 8.

CULVERIN, a long slender piece of ordnance or artillery, serving to carry a ball to a great distance. Manège derives the word from the Latin *colubrina*; others from *coluber*, "snake;" either on account of the length and slenderness of the piece or of the ravages it makes.

There are three kinds of culverins, *viz.* the extra-

ordinary, the ordinary, and the least sized. 1. The culverin extraordinary has $5\frac{1}{2}$ inches bore; its length 32 calibers, or 13 feet; weighs 4800 pounds: its load above 12 pounds; carries a shot $5\frac{1}{2}$ inches diameter, weighing 20 pounds weight. 2. The ordinary culverin is 12 feet long; carries a ball of 17 pounds 5 ounces; caliber $5\frac{1}{2}$ inches; its weight 4500 pounds. 3. The culverin of the least size, has its diameter 5 inches; is 12 feet long; weighing about 4000 pounds; carries a shot $3\frac{3}{4}$ inches diameter, weighing 14 pounds 9 ounces.

CULVERTAILED, among shipwrights, signifies the fastening or letting of one timber into another, so that they cannot slip out, as the corlings into the beams of a ship.

CUMA, or **CUMÆ** (anc. geog.), a town of Æolia in Asia Minor. The inhabitants have been accused of stupidity for not laying a tax upon all the goods which entered their harbour during 300 years. They were called *Cumani*.

CUMÆ, or **CUMA** (anc. geog.), a city of Campania near Puteoli founded by a colony from Chalcis and Cumæ of Æolia before the Trojan war. The inhabitants were called *Cumæi*. One of the Sibyls fixed her residence in a cave in the neighbourhood, and was called the *Cumean Sibyl*.

CUMBERLAND, **CUMBRIA**, so denominated from the *Cumbri* or Britons who inhabited it; one of the most northerly counties in England. It was formerly a kingdom extending from the vallum of Adrian to the city of Dumbritton, now Dumbarton, on the frith of Clyde in Scotland. At present it is a county of England, which gives the title of *duke* to one of the royal family, and sends two members to parliament. It is bounded on the north and north-west by Scotland; on the south and south-east by part of Lancashire and Westmoreland; it borders on the east with Northumberland and Durham; and on the west is washed by the Irish sea. The length from north to south may amount to 55 miles, but the breadth does not exceed 40. It is well watered with rivers, lakes, and fountains; but none of its streams are navigable. In some places there are very high mountains. The air is keen and piercing on these mountains towards the north; and the climate is moist, as in all hilly countries. The soil varies with the face of the country; being barren on the moors and mountains, but fertile in the valleys and level ground bordering on the sea. In general the eastern parts of the shire are barren and desolate; yet even the least fertile parts are rich in metals and minerals. The mountains of Copland abound with copper: veins of the same metal, with a mixture of gold and silver, were found in the reign of queen Elizabeth among the fells of Derwent; and royal mines were formerly wrought at Kewick. The county produces great quantities of coal, some lead, abundance of the mineral earth called *black-lead*, several mines of lapis calaminaris; and an inconsiderable pearl-fishery on the coast near Ravensgals.

CUMBERLAND (Richard), a very learned English divine in the latter end of the 17th century, was son of a citizen of London, and educated at Cambridge. In 1672, he published his excellent Treatise of the Laws of Nature; and in 1686, An Essay toward the

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Cumber
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niculus. Jewish Weights and Measures. After the revolution he was nominated by king William to the bishopric of Peterborough, without the least solicitation on his part. He pursued his studies to the last; and the world is obliged to him for clearing up several difficulties in history, chronology, and philology. After the age of 83, he applied himself to the study of the Coptic language, of which he made himself master. He was as remarkable for humility of mind, benevolence of temper, and innocence of life, as for his extensive learning. He died in 1718.

CUMINUM, CUMIN: A genus of the digynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 45th order, *Umbellate*. The fruit is ovate and striated; there are four partial umbels, and the involucre are quadrifid. There is but one species, *viz.* the cuminum. It is an annual plant, perishing soon after the seed is ripe. It rises 9 or 10 inches high in the warm countries where it is cultivated; but seldom rises above four in this country. It has sometimes flowered very well here, but never brings its seeds to perfection. The leaves are divided into long narrow segments, like those of fennel, but much smaller: they are of a deep green, and generally turned backward at their extremity: the flowers grow in small umbels at the top of the stalks: they are composed of five unequal petals, of a pale bluish colour, which are succeeded by long, channelled, aromatic seeds. The plant is propagated for sale in the island of Malta. In this country the seeds must be sown in small pots, and plunged in a very moderate hot-bed to bring up the plants. These, after having been gradually inured to the open air, turned out of the pots, and planted in a warm border of good earth, preserving the balls of earth to their roots, will flower pretty well, and may perhaps even perfect a few seeds in warm seasons. These seeds have a bitterish warm taste, accompanied with an aromatic flavour, not of the most agreeable kind. They are accounted good carminatives; but not very often made use of. An essential oil of them is kept in the shops.

CUNÆUS (Peter), born in Zealand, in 1586, was distinguished by his knowledge in the learned languages, and his skill in the Jewish antiquities. He also studied law, which he taught at Leyden, in 1615; and read politics there till his death, in 1638. His principal work is a treatise, in Latin, on the republic of the Hebrews.

CUNEIFORM, in general, an appellation given to whatever resembles a wedge.

CUNEIFORM-BONE, in anatomy, the seventh bone of the cranium, called also *os basillare*, and *os sphenoides*. See ANATOMY, n° 16.

CUNEUS, in antiquity, a company of infantry drawn up in form of a wedge, the better to break through the enemy's ranks.

CUNICULUS, in zoology. See LEPUS.

CUNICULUS, in mining, a term used by authors in distinction from *puteus*, to express the several sorts of passages and cuts in these subterranean works. The *cuniculi* are those direct passages in mines where they walk on horizontally; but the *putei* are the perpendicular cuts or descents. The miners in Germany call these by the name *Stollen*, and *Schachts*; the first word

expressing the horizontal, and the second the perpendicular cuts.

CUNILA, in botany: A genus of the monogynia order, belonging to the monandria class of plants; and in the natural method ranking under the the 42d order, *Verticillate*. The corolla is ringent, with its upper lip erect and plane; there are two filaments, castrated, or wanting antheræ; the seeds are four. There are three species, none of which has any remarkable property.

CUNINA, in mythology, a goddess who had the care of little children.

CUNITZ (Mary), one of the greatest geniuses in the 16th century, was born in Silesia. She learned languages with amazing facility; and understood Polish, German, French, Italian, Latin, Greek, and Hebrew. She attained a knowledge of the sciences with equal ease: she was skilled in history, physic, poetry, painting, music, and playing upon instruments; and yet these were only an amusement. She more particularly applied herself to the mathematics, and especially to astronomy, which she made her principal study, and was ranked in the number of the most able astronomers of her time. Her Astronomical Tables acquired her a prodigious reputation: she printed them in Latin and German, and dedicated them to the emperor Ferdinand III. She married Elias de Lewin, M. D.; and died at Pistehen, in 1664.

CUNNINGHAM, one of the four bailiwicks in Scotland; and one of the three into which the shire of Air is subdivided. It lies north-east of Kyle. Its chief town is Irvin.

CUNNINGHAM (Alexander), author of a History of Great Britain from the revolution to the accession of George I. was born in the south of Scotland about the year 1654, in the regency of Oliver Cromwell. His father was minister at Ettrick, in the presbytery and shire of Selkirk. He was educated, as was the custom among the Scottish presbyterian gentlemen of those times, in Holland; where he imbibed his principles of government, and lived much with the English and Scots refugees at the Hague before the revolution, particularly with the earls of Argyle and Sunderland. He came over to England with the prince of Orange, and enjoyed the confidence and intimacy of many leading men among the whig party, that is, the friends and abettors of king William and the revolution. He was employed, at different times, in the character of a travelling companion or tutor; first, to the earl of Hyndford, and his brother Mr William Carmichael, solicitor general, in the reign of queen Anne, for Scotland; secondly, with the lord Lorne, afterwards so well known under the name of *John duke of Argyle*; and thirdly, with the lord viscount Lonsdale. In his travels, we find him, at the German courts, in company with the celebrated Mr Joseph Addison, whose virtues he celebrates, and whose fortune, like that of our author, compelled him to

“ ——— become for hire,
“ A travelling tutor to a squire.”

Lord Lorne, at the time he was under the tuition of Mr Cunningham, though not seventeen years of age, was colonel of a regiment, which his father, the earl

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Cunningham.

Cunning-
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of Argyle, had raised for his majesty's service in Flanders. Mr Cunningham's connection with the duke of Argyle, with whom he had the honour of maintaining an intimacy as long as he lived, together with the opportunities he enjoyed of learning, in his travels, what may be called *military geography*, naturally tended to qualify him for writing intelligibly on military affairs.

Mr Cunningham, both when he travelled with the nobleman above mentioned, and on other occasions, was employed by the English ministry in transmitting secret intelligence to them on the most important subjects. He was also, on sundry occasions, employed by the generals of the confederate armies, to carry intelligence, and to make representations to the court of Britain. In Cartiers's State-papers, published by Dr Macormick principal of the united college of St Andrew's in 1774, there are two letters from our author, dated Paris the 22d and 26th of August 1701, giving an account of his conferences with the marquis de Torcy, the French minister, relative to the Scots trade with France. This commercial negociation, from the tenor of Cunningham's letters compared with his history, appears to have been the only offensive object of his attention; for he sent an exact account to king William, with whom he was personally acquainted, of the military preparations throughout all France.

Mr Cunningham's political friends, Argyle, Sunderland, Sir Robert Walpole, &c. on the accession of George I. sent him as British envoy to the republic of Venice. He arrived in that city in 1715; and continued there, in the character of resident, till the year 1720, when he returned again to London. He lived many years after, which he seems chiefly to have passed in a studious retirement. In 1735, he was visited in London by lord Hyndford, by the direction of his lordship's father, to whom he had been tutor, when he appeared to be very old. He seems to have lived about two years after; for the body of an Alexander Cunningham lies interred in the vicar chancel of St Martin's church, who died in the 83d year of his age, on the 15th day of May 1737; and who was probably the same person.

His "History of Great Britain, from the revolution in 1688 to the accession of George I." was published in two volumes 4to, in 1787. It was written by Mr Cunningham in Latin, but was translated into English by the reverend William Thomson, L. L. D. The original manuscript came into the possession of the reverend Dr Hollingberry, archdeacon of Chichester, some of whose relations had been connected with the author. He communicated it to the earl of Hardwicke, and to the reverend Dr Douglas now bishop of Carlisle, both of whom recommended the publication. In a short preface to the work, the archdeacon says, "My first design was to have produced it in the original; but knowing how few are sufficiently learned to understand, and how many are indisposed to read two quarto volumes in Latin, however interesting and entertaining the subject may be, I altered my purpose, and intended to have sent it into the world in a translation. A nervous fever depriving me of the power, defeated the scheme." But he afterwards transferred the undertaking to Dr Thomson; and Dr Holling-

berry observes, that Dr Thomson "has expressed the sense of the author with fidelity." The work was undoubtedly well deserving of publication. It contains the history of a very interesting period, written by a man who had a considerable degree of authentic information, and his book contains many curious particulars not to be found in other histories. His characters are often drawn with judgment and impartiality: at other times they are somewhat tinged with prejudice. This is particularly the case with respect to bishop Burnet, against whom he appears to have conceived a strong personal dislike. But he was manifestly a very attentive observer of the transactions of his own time; his work contains many just political remarks; and the facts which he relates are exhibited with great perspicuity, and often with much animation. Throughout his book he frequently intersperses some account of the literature, and of the most eminent persons of the age concerning which he writes; and he has also adorned his work with many allusions to the classics and to ancient history.

Alexander Cunningham, the author of the history of Great Britain, has been supposed to be the same person with Alexander Cunningham who published an edition of Horace at the Hague, in two volumes 8vo, in 1721, which is highly esteemed. But from the best information we have been able to collect, they were certainly different persons; though they were both of the same name, lived at the same time, had both been travelling tutors, were both said to have been eminent for their skill at the game of chess, and both lived to a very advanced age. The editor of Horace is generally said to have died in Holland, where he taught both the civil and canon laws, and where he had collected a very large library, which was sold in that country.

CUNNUS, in anatomy, the *pudendum muliebrem*, or the anterior parts of the genitals of a woman, including the *labia pudendi* and *mons veneris*.

CUNOCEPHALI, in mythology, (from *κυνος*, "dog," and *κεφαλη*, "head,"), a kind of baboons, or animals with heads like those of dogs, which were wonderfully endowed, and were preserved with great veneration by the Egyptians in many of their temples. It is related, that by their assistance the Egyptians found out the particular periods of the sun and moon; and that one half of the animal was often buried, while the other half survived; and that they could read and write. This strange history, Dr Bryant imagines, relates to the priests of Egypt, styled *caben*, to the novices in their temples, and to the examinations they were obliged to undergo, before they could be admitted to the priesthood. The Egyptian colleges were situated upon rocks or hills, called *caph*, and from their consecration to the sun, *caph-el*; whence the Greeks deduced *κεφαλη*, and from *caben-caph-el* they formed *κυνοκεφαλος*. So that *caben-caph-el* was some royal seminary in Upper Egypt, whence they drafted novices to supply their colleges and temples. By this etymology he explains the above history. The death of one part, while the other survived, denoted the regular succession of the Egyptian priesthood. The *cunoccephali* are also found in India and other parts of the world. These and the *acephali* were thus denominated from their place of residence and from their worship.

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Cunoc-
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CUNODONTES; a people mentioned by Solinus and Isidorus, and by them supposed to have the teeth of dogs. They were probably denominated, says Dr Bryant, from the object of their worship, the deity Chan-Adon, which the Greeks expressed *Κυνόδων*, and thence called his votaries *Cunodontes*.

CUNONIA, in botany: A genus of the digynia order, belonging to the decandria class of plants; and in the natural method ranking with those of which the order is doubtful. The corolla is pentapetalous; the calyx pentaphyllous; the capsule bilocular, acuminate, polyspermous; the styles longer than the flower.

CUOGOLO, in natural history, the name of a stone much used by the Venetians in glass-making, and found in the river Fesino. It is a small stone of an impure white, of a shattery texture, and is of the shape of a pebble.

CUP, a vessel of capacity of various forms and materials, chiefly to drink out of. In the Ephem. German. we have a description of a cup made of a common pepper-corn by Oswald Nerlinger, which holds 1200 other ivory cups, having each its several handle, all gilt on the edges; with room for 400 more.

CUP, in botany. See **CALYX**.

Cup-Galls, in natural history, a name given by authors to a very singular kind of galls found on the leaves of the oak and some other trees. They are of the figure of a cup, or drinking-glass without its foot, being regular cones adhering by their point or apex to the leaf; and the top or broad part is hollowed a little way, so that it appears like a drinking-glass with a cover, which was made so small as not to close it at the mouth, but fall a little way into it. This cover is flat, and has in the centre a very small protuberance, resembling the nipple of a woman's breast. This is of a pale green, as is also the whole of the gall, excepting only its rim that runs round the top: this is of a scarlet colour, and that very beautiful. Besides this species of gall, the oak leaves furnish us with several others, some of which are oblong, some round, and others flattened; these are of various sizes, and appear on the leaves at various seasons of the year. They all contain the worm of some small fly; and this creature passes all its changes in this its habitation, being sometimes found in the worm, sometimes in the nymph, and sometimes in the fly-state, in the cavity of it.

CUPANIA, in botany: A genus of the adelphia order, belonging to the monœcia class of plants; and in the natural method ranking under the 38th order, *Tricocca*. The calyx of the male is triphyllous; the corolla pentapetalous; the stamina five. The calyx of the female triphyllous; the corolla tripetalous; the style trifid; and a pair of seeds. There is but one species, a native of America, and which possesses no remarkable property.

CUPEL, in metallurgy, a small vessel which absorbs metallic bodies when changed by fire into a fluid scoria; but retains them as long as they continue in their metallic state. One of the most proper materials for making a vessel of this kind is the ashes of animal bones; there is scarcely any other substance which so strongly resists vehement fire, which so readily imbibes metallic scoriæ, and which is so little disposed to

be vitrified by them. In want of these, some make use of vegetable ashes, freed by boiling in water from their saline matter, which would cause them melt in the fire.

The bones, burnt to perfect whiteness, so as that no particle of coaly or inflammable matter may remain in them, and well washed from filth, are ground into moderately fine powder; which, in order to its being formed into cupels, is moistened with just as much water as is sufficient to make it hold together when strongly pressed between the fingers; some direct glutinous liquids, as whites of eggs or gum-water, in order to give the powder a greater tenacity: but the inflammable matter, however small in quantity, which accompanies these fluids, and cannot be easily burnt out from the internal part of the mass, is apt to revive a part of the metallic scoria that has been absorbed, and to occasion the vessel to burst or crack. The cupel is formed in a brass ring, from three quarters of an inch to two inches diameter, and not quite so deep, placed upon some smooth support: the ring being filled with moistened powder, which is pressed close with the fingers; a round-faced pestle, called a *monk*, is struck down into it with a few blows of a mallet, by which the mass is made to cohere, and rendered sufficiently compact, and a shallow cavity formed in the middle: the figure of the cavity is nearly that of a sphere, that a small quantity of metal melted in it may run together into one bead. To make the cavity the smoother, a little of the same kind of ashes levigated into an impalpable powder, and not moistened, is commonly sprinkled on the surface, through a small fine sieve made for this purpose, and the monk again struck down upon it. The ring or mould is a little narrower at bottom than at top; so that by pressing it down on some of the dry powder spread upon a table, the cupel is loosened, and forced upwards a little; after which it is easily pushed out with the finger, and is then set to dry in a warm place free from dust.

CUPELLATION, the act of refining gold or silver by means of a cupel. For this purpose another vessel, called a *muffle*, is made use of, within which one or more cupels are placed. The muffle is placed upon a grate in a proper furnace, with its mouth facing the door, and as close to it as may be. The furnace being filled up with fuel, some lighted charcoal is thrown on the top, and what fuel is afterwards necessary is supplied through a door above. The cupels are set in the muffle; and being gradually heated by the successive kindling of the fuel, they are kept red-hot for some time, that the moisture which they strongly retain may be completely dissipated: for if any vapours should issue from them after the metal is put in, they would occasion it to sputter, and a part of it to be thrown off in little drops. In the sides of the muffle are some perpendicular slits, with a knob over the top of each, to prevent any small pieces of coals or ashes from falling in. The door, or some apertures made in it being kept open, for the inspection of the cupels, fresh air enters into the muffle, and passes off through these slits: by laying some burning charcoal on an iron plate before the door, the air is heated before its admission; and by removing the charcoal or supplying

Cupel.
Cupellation.

Cupella-
tion.

ing more, the heat in the cavity of the muffle may be somewhat diminished or increased more speedily than can be effected by suppressing or exciting the fire in the furnace on the outside of the muffle. The renewal of the air also is necessary for promoting the scorification of the lead.

The cupel being of a full red heat, the lead cast into a smooth bullet, that it may not scratch or injure the surface, is laid lightly in the cavity: it immediately melts; and then the gold or silver to be cupelled are cautiously introduced either by means of a small iron ladle or by wrapping them in paper, and dropping them on the lead with a pair of tongs. The quantity of lead should be at least three or four times that of the fine metal: but when gold is very impure, it requires 10 or 12 times its quantity of lead for cupellation. It is reckoned that copper requires for its scorification about 10 times its weight of lead; that when copper and gold are mixed in equal quantities, the copper is so much defended by the gold as not to be separable with less than 20 times its weight of lead; and that when copper is in very small proportion, as a 20th or 30th part of the gold or silver, upwards of 60 parts of lead are necessary for one of the copper. The cupel must always weigh at least half as much as the lead and copper; for otherwise it will not be sufficient for receiving half the scoria: there is little danger, however, of cupels being made too small for the quantity of a gold assay.

The mixture being brought into thin fusion, the heat is to be regulated according to the appearances; and in this consists the principal nicety in the operation. If a various coloured skin rises to the top, which, liquefying, runs off to the sides, and is there absorbed by the cupel, visibly staining the parts it enters; if a fresh scoria continually succeeds, and is absorbed nearly as fast as it is formed, only a fine circle of it remaining round the edge of the metal; if the lead appears in gentle motion, and throws up a fume a little way from its surface; the fire is of the proper degree, and the process goes on successfully.

Such a fiery brightness of the cupel as prevents its colour from being distinguished, and the fumes of the lead rising up almost to the arch of the muffle, are marks of too strong a heat: though it must be observed, that the elevation of the fumes is not always in proportion to the degree of heat; for if the heat greatly exceeds the due limits, both the fumes and ebullition will entirely cease. In these circumstances the fire must necessarily be diminished: for while the lead boils and smokes vehemently, its fumes are apt to carry off some part of the gold; the cupel is liable to crack from the hasty absorption of the scoria, and part of the gold and silver is divided into globules, which lying discontinued on the cupel after the process is finished, cannot easily be collected: if there is no ebullition or fumes, the scorification does not appear to go on. Too weak a heat is known by the dull redness of the cupel; by the fume not rising from the surface of the lead; and the scoria like bright drops in languid motion, or accumulated, or growing consistent all over the metal. The form of the surface affords also an useful mark of the degree of heat; the stronger the fire, the more convex is the surface; and the weaker, the more flat: in this point, however, regard must be

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had to the quantity of metal; a large quantity being always flatter than a small one in an equal fire.

Towards the end of the process, the fire must be increased; for greatest part of the fusible metal lead being now worked off, the gold and silver will not continue melted in the heat that was sufficient before. As the last remains of the lead are separating, the rainbow colours on the surface become more vivid, and variously intersect one another with quick motions. Soon after, disappearing all at once, a sudden luminous brightness of the button of gold and silver shows the process to be finished. The cupel is then drawn forwards towards the mouth of the muffle; and the button, as soon as grown fully solid, taken out.

CUPPELLING FURNACE. See *Cupelling FURNACE*.

CUPID, in pagan mythology, the god of love. There seem to have been two Cupids; one the son of Jupiter and Venus, whose delight it was to raise sentiments of love and virtue; and the other the son of Mars and the same goddess, who inspired base and impure desires. The first of these, called Eros, or true love, bore golden arrows, which caused real joy, and a virtuous affection; the other, called Anteros, had leaden arrows that raised a passion founded only on desire, which ended in satiety and disgust. Cupid was always drawn with wings, to represent his inconstancy; and naked, to show that he has nothing of his own. He was painted blind, to denote that love sees no fault in the object beloved; and with a bow and quiver of arrows, to show his power over the mind. Sometimes he is placed between Hercules and Mercury, to show the prevalence of eloquence and valour in love; and at others is placed near Fortune, to signify that the success of lovers depends on that inconstant goddess. Sometimes he is represented with an helmet on his head and a spear on his shoulder, to signify that love disarms the fiercest men; he rides upon the backs of panthers and lions, and uses their manes for a bridle, to denote that love tames the most savage beasts. He is likewise pictured riding upon a dolphin, to signify that his empire extends over the sea no less than the land.

CUPOLA, in architecture, a spherical vault, or the round top of the dome of a church, in the form of a cup inverted.

CUPPING, in surgery, the operation of applying cupping-glasses for the discharge of blood and other humours by the skin. See *SURGERY*.

CUPRESSUS, the CYPRESS-TREE: A genus of the monadelphia order, belonging to the monœcia class of plants; and in the natural method ranking under the 51st order, *Coniferae*. The male calyx is a scale of the catkin; there is no corolla; the antheræ are four, sessile, and without filaments. The calyx of the female is a scale of the strobilus, and unislorus; instead of styles there are hollow dots; the fruit is an angulated nut. There are six species; the most remarkable are the following: 1. The sempervirens, with an upright straight stem, closely branching all around, almost from the bottom upwards, into numerous quadrangular branches; rising in the different varieties from 15 to 45 or 50 feet in height, and very closely garnished with small, narrow, erect evergreen leaves, placed imbricatum; and flowers and fruit from the sides of the branches. 2. The thuyoides,

Cupelli

Cupress

thyoides, or evergreen American cypress, commonly called white cedar, hath an upright stem, branching out into numerous two-edged branches, rising 20 or 30 feet high, ornamented with flat ever-green leaves imbricated like arbor vitæ, and small blue cones the size of juniper-berries. 3. The disticha, or deciduous American cypress, hath an erect trunk, retaining a large bulk, branching wide and regular; grows 50 or 60 feet high, fully garnished with small, spreading deciduous leaves, arranged ditichous, or along two sides of the branches. All these species are raised from seeds, and will sometimes also grow from cuttings; but these raised from seeds prove the handsomest plants. The seeds are procured in their cones from the seedsmen, and by exposing them to a moderate heat, they readily open, and discharge the seeds freely. The season for sowing them is any time in March; and they grow freely on a bed or border of common light earth: especially the first and third species. The ground must then be dug, well broken, and raked smooth, then drawing an inch of earth evenly from off the surface into the alley, sow the seeds moderately thick, and directly lift the earth over them, half an inch deep. If in April and May the weather proves warm and dry, a very moderate watering will now and then be necessary, and the plants will rise in six or eight weeks. During the summer they must be kept clear from weeds, and in dry weather they must be gently watered twice a-week. In winter they must be occasionally sheltered with mats in the time of hard frost. In two years they will be fit for transplanting from the seed-bed, when they may be set in nursery-rows two feet asunder; and in three or four years they will be fit for the shrubbery.

The wood of the first species is said to resist worms, moths, and putrefaction, and to last many centuries. The coffins in which the Athenians were wont to bury their heroes were made, says Thucydides, of this wood; as were likewise the chests containing the Egyptian mummies. The doors of St Peter's church at Rome were originally of the same materials. These, after lasting upwards of 600 years, at the end of which they did not discover the smallest tendency to corruption, were removed by order of pope Eugenius IV. and gates of brass substituted in their place. The same tree is by many eminent authors recommended as improving and meliorating the air by its balsamic and aromatic exhalations; upon which account many ancient physicians of the eastern countries used to send their patients who were troubled with weak lungs to the island of Candia, where these trees grew in great abundance; and where, from the salubrious air alone, very few failed of a perfect cure. In the same island, says Miller, the cypress trees were so lucrative a commodity, that the plantations were called *dos filia*; the felling of one of them being reckoned a daughter's portion. Cypress, says Mr Pococke, is the only tree that grows towards the top of mount Lebanon, and being nipped by the cold, grows like a small oak. Noah's ark is commonly supposed to have been made of this kind of wood.

CUPRUM AMMONIACALE. See CHEMISTRY, N^o 1034. This preparation is recommended in some kinds of spasmodic diseases, given in the dose of one or two grains.

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CUPRUM, or COPPER. See COPPER.

CURACOA, or CURASSOW, one of the larger Antilles islands, subject to the Dutch; situated in W. Long. 68. 30. N. Lat. 12. 30. This island is little else than a bare rock, about ten leagues long and five broad; lying three leagues off the coast of Venezuela. It has an excellent harbour, but the entrance is difficult. The basin is extremely large, and convenient in every respect; and is defended by a fort skilfully constructed, and always kept in repair. The reason of forming a settlement upon this barren spot was to carry on a contraband trade with the Spanish colonies on the continent; but after some time the method of managing this trade was changed. Curassow itself became an immense magazine, to which the Spaniards resorted in their boats to exchange gold, silver, vanilla, cocoa, cochineal, bark, skins, and mules, for negroes, linen, silks, India stuffs, spices, laces, ribbans, quick-silver, steel, and iron-ware. These voyages, though continual, did not prevent a number of Dutch sloops from passing from Curassow to the continent. But the modern substitution of register-ships instead of galleons, has made this communication less frequent; but it will be revived whenever, by the intervention of war, the communication with the Spanish main shall be cut off. The disputes between the courts of London and Versailles also prove favourable to the trade of Curassow. At these times it furnishes provisions to the southern parts of St Domingo, and takes off all its produce. Even the French privateers, from the windward islands, repair in great numbers to Curassow, notwithstanding the distance. The reason is, that they find there all kinds of necessary stores for their vessels; and frequently Spanish, but always European goods, which are universally used. English privateers seldom cruize in these parts. Every commodity without exception, that is landed at Curassow, pays one *per cent.* port-duty. Dutch goods are never taxed higher: but those that are shipped from other European ports pay nine *per cent.* more. Foreign coffee is subject to the same tax, in order to promote the sale of that of Surinam. Every other production of America is subject only to a payment of three *per cent.*; but with an express stipulation that they are to be conveyed directly to some port belonging to the republic.

CURATE, the lowest degree in the church of England; he who represents the incumbent of a church, parson or vicar, and officiates divine service in his stead: and in case of pluralities of livings, or where a clergyman is old and infirm, it is requisite there should be a curate to perform the cure of the church. He is to be licensed and admitted by the bishop of the diocese, or by an ordinary having episcopal jurisdiction: and when a curate hath the approbation of the bishop, he usually appoints the salary too; and in such case, if he be not paid, the curate hath a proper remedy in the ecclesiastical court, by a sequestration of the profits of the benefice; but if the curate is not licensed by the bishop, he is put to his remedy at common law, where he must prove the agreement, &c. A curate having no fixed estate in his curacy, not being instituted and inducted, may be removed at pleasure by the bishop or incumbent. But there are perpetual curates as well as temporary, who are appointed where tithes are inappropriate, and no vicarage endowed: these are not

Cuprum
||
Curate.

Curatella removeable, and the impropiators are obliged to find them; some whereof have certain portions of the tithes settled on them. Every clergyman that officiates in a church (whether incumbent or substitute) in the liturgy is called a *curate*. Curates must subscribe the declaration according to the act of uniformity, or are liable to imprisonment, &c.

Curculio.

CURATELLA, in botany: A genus of the digynia order, belonging to the polyandria class of plants; and in the natural method ranking with those of which the order is doubtful. The calyx is pentaphyllous; the petals four; the styles two; the capsule bipartite, with the cells dispermous.

CURATOR, among the Romans, an officer under the emperors, who regulated the price of all kinds of merchandize and vendible commodities in the cities of the empire. They had likewise the superintendance of the customs and tributes; whence also they were called *logiste*.

CURATOR, among civilians, a trustee or person nominated to take care of the affairs and interests of a person emancipated or interdicted. In countries where the Roman law prevails, between the age of 14 and 24 years, minors have curators assigned them; till 14, they have tutors.

CURATOR of an University, in the United Provinces, is an elective office, to which belongs the direction of the affairs of the university; as, the administration of the revenues, the inspection of the professors, &c. The curators are chosen by the states of each province: the university of Leyden has three; the burghermasters of the city have a fourth.

CURB, in the manege, a chain of iron made fast to the upper part of the branches of the bridle in a hole called the *eye*, and running over the horse's beard. It consists of these three parts; the hook, fixed to the eye of the branch; the chain of SS's or links; and the two rings, or mailes. Large curbs, provided they be round, are always most gentle: but care is to be taken, that it rest in its proper place; a little above the beard, otherwise the bit-mouth will not have the effect that may be expected from it.

English watering bits have no curbs; the Turkish bits, called *genettes*, have a ring that serves instead of a curb. See **GENETTES**.

CURB, in farriery, is a hard and callous swelling on the hind part of the hock, attended with stiffness, and sometimes with pain and lameness. See **SPAVIN**.

CURCAS, a name given in Egypt to an esculent root, approaching to the taste and virtues of the colocasia. It is also a name used in Malabar for a small fruit of the shape and size of an hazel nut. Both these things have the credit of being strong provocatives; and it is very propable that the curcas of the East Indies may be the fruit called *bel* by Avicenna, and said to possess the same virtues. Garcias has been led into a very great error by this similarity of names and virtues; and supposes the curcas of Egypt the same with that of the East Indies.

Plate CLl.

CURCULIO, in zoology, a genus of insects belonging to the order of coleoptera. The feelers are subclavated, and rest upon the snout, which is prominent and horny. These insects are divided into the following families. 1. Those which have the rostrum longer than the thorax, and whose thighs are simple.

2. Those which have the rostrum longer than the thorax, and the thighs thicker and made for leaping. 3. Those which have the rostrum longer than the thorax, and the thighs dentated. 4. Those which have dentated thighs, and a rostrum shorter than the thorax. 5. Those whose thighs are without teeth or spines, and the rostrum shorter than the thorax. There are no less than 95 species, principally distinguished by their colour.

The larvæ of the curculiones differ not from those of most coleopterous insects. They bear a resemblance to oblong soft worms. They are provided anteriorly with six scaly legs, and their head is likewise scaly. But the places where those larvæ dwell, and their transformations, afford some singularities. Some species of them, that are dreaded for the mischief they do in granaries, find means to introduce themselves, while yet small, into grains of corn, and there make their abode. It is very difficult to discover them, as they lie concealed within the grain. There they grow at leisure, enlarging their dwelling-place as they grow, at the expence of the interior meal of the grain on which they feed. Corn-lofts are often laid waste by these insects, whose numbers are sometimes so great as to devour and destroy all the corn. When the insect, after having eat up the meal, is come to its full size,

it remains within the grain, hidden under the empty husk, which subsists alone; and there transformed, it becomes a chrysalis, nor does it leave it till a perfect insect, making its way through the husk of the grain. It is no easy matter to discover by the eye the grains of corn thus attacked and hollowed out by these insects, as they outwardly appear large and full: but the condition the curculio has reduced them to, renders them much lighter; and if you throw corn infested by these insects into water, all the tainted grains will swim, and the rest sink to the bottom. Other larvæ of curculiones are not so fond of corn, but fix in the same manner on several other feeds. Beans, pease, and lentils, that are preserved dry, are liable to be spoiled by these little animals, which prey upon the inward part of the grain, where they have taken up their habitation, and do not come forth till they have completed their transformation, by breaking through the outward husk of the grain: this is discoverable by casting those grains into water; those that swim are generally perforated by the curculiones. Other species are lodged in the inside of plants. The heads of artichokes and thistles are often bored through and eaten away by the larvæ of large curculiones. Another species smaller, but singular, pierces and inwardly consumes the leaves of elms. It frequently happens that almost all the leaves of an elm appear yellow, and as it were dead towards one of their edges, while the whole remainder of the leaf is green. Upon inspecting those leaves, the dead part appears to form a kind of bag or small bladder. The two laminae or outward pellicles of the leaf, as well above as below, are entire, but distant and separated from each other, whilst the parenchyma that lies between them has been consumed by several small larvæ of the curculio, that have made themselves that dwelling, in which they may be met with. After their transformation they come forth, by piercing the kind of bladder, and give being to a curculio that is brown, small, and hard to catch, by

Curculio

Burbot on Insects.

reason

cuma
||
cocos.

reason of the nimbleness with which it leaps. The property of leaping, allotted to this single species, depends on the shape and length of its hinder legs.

CURCUMA, TURMERIC: A genus of the monogynia order, belonging to the monandria class of plants; and in the natural method ranking under the eighth order, *Scitamineæ*. It has four barren stamina, with a fifth fertile. The species are,

1. The rotunda, with a round root, hath a fleshy-jointed root like that of ginger, but round; which sends up several spear-shaped oval leaves, which rise upwards of a foot high, and of a sea-green colour. From between these arises the flower-stalk, supporting a loose spike of flowers of a pale-yellowish colour, inclosed in several different spathæ, or sheaths, which drop off. The flowers are never succeeded by seeds in this country. 2. The longa, hath long fleshy roots of a deep yellow colour, which spread under the surface of the ground like those of ginger; they are about the thickness of a man's finger, having many round knotty circles, from which arise four or five large spear-shaped leaves, standing upon long foot-stalks. The flowers grow in loose scaly spikes on the top of the foot-stalks, which arise from the larger knobs of the roots, and grow about a foot high; they are of a yellowish-red colour, and shaped somewhat like those of the Indian reed.

These plants grow naturally in India, from whence the roots are brought to Europe for use. They are very tender; so will not live in this country unless kept constantly in a stove. They are propagated by parting the roots. The root communicates a beautiful but perishable yellow dye, with alum, to woollen, cotton, or linen. In medicine it is esteemed aperient, and emmenagogic; and of singular efficacy in the jaundice.

CURDISTAN, a country of Asia, seated between the Turkish empire and Persia, lying along the eastern coast of the river Tigris, and comprehends great part of the ancient Assyria. Some of the inhabitants live in towns and villages, and others rove from place to place, having tents like the wild Arabs, and are also robbers like them. Their religion is partly Christian, and partly Mahometanism; but they are very loose in regard to either.

CURDLING, the coagulating or fixing of any fluid body; particularly milk. See the article **CHEESE**.

Pausanias says, that Aristæus son of Apollo, and Cyrene daughter of the river Peneus, were the first who found the secret of curdling milk.

At Florence they curdle their milk for the making of cheese with artichoke flowers; in lieu of the rennet used for the same purpose among us.

The Bisaltæ, a people of Macedonia, Rochfort observes, live wholly upon curdled milk, *i. e.* on curds. He adds, that curds are the whole food of the people of Upper Auvergne in France, and whey their only drink.

CURETES, in antiquity, a sort of priests or people of the isle of Crete, called also *Corybantes*. See **CORYBANTES** and **CRETE**. The Curetes are said to have been originally of mount Ida in Phrygia; for which reason they were also called *Idæi Dactyli*. See **DACTYLI**.

Lucian and Diodorus Siculus represent them as very expert in casting of darts; though other authors give them no weapons but bucklers and pikes: but all agree in furnishing them with tabors and castanettas; and relate, that they used to dance much to the noise and clashing thereof. By this noise, it is said, they prevented Saturn from hearing the cries of young Jupiter, whereby he was saved from being destroyed.

Some authors, however, give a different account of the Curetes. According to Pezron and others, the Curetes were, in the times of Saturn, &c. and in the countries of Crete and Phrygia, what the druids were afterwards among the Gauls, &c. *i. e.* they were priests who had the care of what related to religion and the worship of the gods. Hence, as in those days it was supposed there was no communication with the gods but by divinations, auguries, and the operations of magic; the Curetes passed for magicians and enchanters: to these they added the study of the stars, of nature, and poetry; and so were philosophers, astronomers, &c.

Vossius, *de Idolat.* distinguishes three kinds of Curetes; those of Ætolia, those of Phrygia, and those of Crete who were originally derived from the Phrygians. The first, he says, took their name from *κῦρις, tonsure*; in regard, from the time of a combat wherein the enemy seized their long hair, they always kept it cut. Those of Phrygia and Crete, he supposes, were so called from *κῦρῶν, young man*; in regard they were young, or because they nursed Jupiter when he was young.

CURFEW, or **COURFEW**, a signal given in cities taken in war, &c. to the inhabitants to go to bed. Pasquin says, it was so called, as being intended to advertise the people to secure themselves from the robberies and debaucheries of the night.

The most eminent curfew in England was that established by William the Conqueror, who appointed, under severe penalties, that, at the ringing of a bell at eight o'clock in the evening, every one should put out their lights and fires and go to bed: whence, to this day, a bell rung about that time is called a *curfew-bell*.

CURIA, in Roman antiquity, was used for the senate-house. There were several curiæ in Rome; as the *curia calabra*, said to be built by Romulus; as the *curia hostilia*, by Tullus Hostilius; and the *curia pompeia*, by Pompey the Great.

CURIA also denoted the places where the curiæ used to assemble. Each of the 30 curiæ of old Rome had a temple or chapel assigned to them for the common performance of their sacrifices, and other offices of their religion; so that they were not unlike our parishes. Some remains of these little temples seem to have subsisted many ages after on the Palatine-hill, where Romulus first built the city, and always resided.

CURIA, among the Romans, also denoted a portion or division of a tribe. In the time of Romulus, a tribe consisted of ten curiæ, or a thousand men; each curia being one hundred. That legislator made the first division of his people into thirty curiæ. Afterwards, *curia*, or *domus curialis*, became used for the place where each curia held its assemblies. Hence also curia passed to the senate-house; and it is from hence

Curetes
||
Curia.

Curia
||
Curiosus

the moderns come to use the word *curia*, "court," for a place of justice, and for the judges, &c. there assembled.

Varro derives the word from *cura*, "care;" *q. d.* an assembly of people charged with the care of public affairs. Others deduce it from the Greeks; maintaining, that at Athens they called *κυρία* the place where the magistrate held his assizes, and the people used to assemble: *κυρία*, again, may come from *κυρος*, *authority*, *power*; because it was here the laws were made.

CURIA, in our ancient customs.—It was usual for the kings of England to summon the bishops, peers, and great men of the kingdom, to some particular place, at the chief festivals in the year: and this assembly is called by our historians *curia*; because there they consulted about the weighty affairs of the nation: whence it was sometimes also called *solemnis curia*, *generalis curia*, *augustalis curia*, and *curia publica*, &c. See *WITENA-MOT.*

CURIA Baronum. See *COURT-Baron.*

CURIA Claudenda, is a writ that lies against him who should fence and inclose the ground, but refuses or defers to do it.

CURIATII, three brothers of Alba, maintained the interest of their country against the Romans who had declared war against those of Alba. The two armies being equal, three brothers on each side were chosen to decide the contest: the Curiatii by those of Alba, and the Horatii by the Romans. The three first were wounded, and two of the latter killed: but the third, joining policy to valour, ran away; and having thus tired the Curiatii, he took them one after another and killed them all three.

CURING, a term used for the preserving fish, flesh, and other animal substances, by means of certain additions of things, to prevent putrefaction. One great method of doing this, is by smoking the bodies with the smoke of wood, or rubbing them with salt, nitre, &c.

CURIO, the chief and priest of a curia.—Romulus, upon dividing the people into curiæ, gave each division a chief, who was to be priest of that curia, under the title of *curio* and *flamen curialis*. His business was to provide and officiate at the sacrifices of the curia, which were called *curionia*; the curia furnishing him with a sum of money on that consideration, which pension or appointment was called *curionium*. Each division had the election of its curia; but all these particular curios were under the direction of a superior or general, called *curio maximus*; who was the head of the body, and elected by all the curios assembled in the comitia curialis.

All these institutions were introduced by Romulus, and confirmed by Numa, as Halicarnassensis relates it.

CURIOSUS, an officer of the Roman empire during the middle age, appointed to take care that no frauds and irregularities were committed; particularly no abuses in what related to the posts, the roads, &c. and to give intelligence to the court of what passed in the provinces. This made the curiosi people of importance, and put them in a condition of doing more harm than they prevented; on which account, Honorius cashiered them, at least in some parts of the empire, anno 415.

The curiosi came pretty near to what we call con-

trollers. They had their name from *cura*, "care;" *quod curis agendis & evectioibus cursus publici inspiciendis operam darent.*

CURLEW, in ornithology. See **SCOLOPAX**.

CURMI, a name given by the ancients to a sort of malt liquor or ale. It was made of barley, and was drunk by the people of many nations instead of wine, according to Dioscorides's account. He accuses it of causing pains in the head, generating bad juices, and disordering the nervous system. He also says, that in the western part of Iberia, and in Britain, such a sort of liquor was in his time prepared from wheat instead of barley. See **ALE**.

CURNOCK, a measure of corn containing four bushels, or half a quarter.

CURRANS, or **CURRANTS**, the fruit of a species of grossularia. See **GROSSULARIA**.

The white and red sort are mostly used; for the black, and chiefly the leaves, upon first coming out, are in use to flavour English spirits, and counterfeit French brandy. Currants greatly assuage drought, cool and fortify the stomach, and help digestion; and the jelly of black currants is said to be very efficacious in curing inflammations of the throat.

CURRANTS also signify a smaller kind of grapes, brought principally from Zant and Cephalonia. They are gathered off the bushes, and laid to dry in the sun, and so put up in large butts. They are opening and pectoral; but are more used in the kitchen than in medicine.

CURRENT, or **COURANT**, a term used to express the present time. Thus the year 1790 is the current year, the 20th current is the 20th day of the month now running.—With regard to commerce, the price current of any merchandise is the known and ordinary price accustomed to be given for it. The term is also used for any thing that has course or is received in commerce; in which sense we say, *current coin*, &c.

CURRENT, in navigation, a certain progressive movement of the water of the sea, by which all bodies floating therein are compelled to alter their course or velocity, or both, and submit to the laws imposed on them by the current.

In the sea, currents are either natural and general, as arising from the diurnal rotation of the earth about its axis; or accidental and particular, caused by the waters being driven against promontories, or into gulphs and straits, where, wanting room to spread, they are driven back, and thus disturb the ordinary flux of the sea. Currents are various, and directed towards different parts of the ocean, of which some are constant, others periodical. The most extraordinary current of the sea, is that by which part of the Atlantic or African Ocean moves about Guinea from Cape Verd towards the curvature or bay of Africa, which they call *Fernando Poo*; *viz.* from west to east, contrary to the general motion. And such is the force of the current, that when ships approach too near the shore, it carries them violently towards that bay, and deceives the mariners in their reckoning. There is a great variety of shifting currents which do not last, but return at certain periods; and these do, most of them, depend upon and follow the anniversary winds or monsoons, which by blowing in one place may cause a current in another. Varenus informs us, that at
Java,

Curlew
||
Current

rent. Java, in the straits of Sunda, when the monsoons blow from the west, *viz.* in the month of May, the currents set to the eastward, contrary to the general motion. Between the island of Celebes and Madura, when the western monsoons set in, *viz.* in December, January, and February, or when the winds blow from the north-west, or between the north and west, the currents set to the south-east, or between the south and east. At Ceylon, from the middle of March to October, the currents set to the southward, and in the other parts of the year to the northward; because at this time the southern monsoons blow, and at the other the northern. Between Cochinchina and Malacca, when the western monsoons blow, *viz.* from April to August, the currents set eastward against the general motion; but the rest of the year they set westward, the monsoon conspiring with the general motion. They run so strongly in these seas, that unexperienced sailors mistake them for waves that beat upon the rocks, known usually by the name of *breakers*. So for some months after the 15th of February, the currents set from the Maldives towards India on the east, against the general motion of the sea. On the shore of China and Cambodia, in the months of October, November, and December, the currents set to the north-west, and from January to the south-west, when they run with such rapidity about the shoals of Parcel, that they seem swifter than an arrow. At Pulo Condore, upon the coast of Cambodia, though the monsoons are shifting, yet the currents set strongly towards the east, even when they blow to a contrary point. Along the coasts of the Bay of Bengal, as far as the Cape Romania, at the extreme point of Malacca, the current runs southward in November and December. When the monsoons blow from China to Malacca, the sea runs swiftly from Pulo Cambi to Pulo Condore on the coast of Cambodia. In the Bay of Sans Bras, not far from the Cape of Good Hope, there is a current particularly remarkable, where the sea runs from east to west to the landward; and this more vehemently as it is opposed by winds from a contrary direction. The cause is undoubtedly owing to some adjacent shore which is higher than this. In the straits of Gibraltar, the currents almost constantly drive to the eastward, and carry ships into the Mediterranean: they are also found to drive the same way into St George's channel.

The setting or progressive motion of the current may be either quite down to the bottom, or to a certain determinate depth. As the knowledge of the direction and velocity of currents is a very material article in navigation, it is highly necessary to discover both, in order to ascertain the ship's situation and course with as much accuracy as possible. The most successful method which has been hitherto practised by mariners for this purpose is as follows. A common iron pot, which may contain four or five gallons, is suspended by a small rope fastened to its ears or handles, so as to hang directly upright, as when placed upon the fire. This rope, which may be from 70 to 100 fathoms in length, being prepared for the experiment, is coiled in the boat, which is hoisted out of the ship at a proper opportunity, when there is little or no wind to ruffle the surface of the sea. The pot being then thrown overboard into the water, and

immediately sinking, the line is slackened till about 70 or 80 fathoms of the line run out; after which the line is fastened to the boat's stern, by which she is accordingly retrained, and rides as at an anchor. The velocity of the current is then easily tried by the log and half-minute glass, the usual method of discovering the rate of a ship's sailing at sea. The course of the stream is next obtained by the compass provided for this operation. Having thus found the setting and drift of the current, it next remains to apply this experiment to the purposes of NAVIGATION; for which see that article.

Under-CURRENTS are distinct from the upper or apparent, and in different places set or drive a contrary way. Dr Smith makes it highly probable, that in the Downs, in the straits of Gibraltar, &c. there is an under-current, whereby as much water is carried out as is brought in by the upper-currents. This he argues from the offing between the north and south Foreland, where it runs tide and half-tide, *i. e.* it is either ebb or flood in that part of the Downs three hours before it is so off at sea: a certain sign, that though the tide of flood runs aloft, yet the tide of ebb runs under-foot, *i. e.* close by the ground; and so at the tide of ebb it will flow under-foot. This he confirms by an experiment in the Baltic Sound, communicated to him by an able seaman present at the making it. Being there then with one of the king's frigates, they went with their pinnace into the mid-stream, and were carried violently by the current. Soon after that, they sunk a basket with a large cannon bullet to a certain depth of water, which gave check to the boat's motion; and sinking it still lower and lower, the boat was driven a-head to the windward against the upper current, the current aloft not being above four or five fathom deep. He added, that the lower the basket was let down, the stronger the under current was found.

From this principle, it is easy to account for that continual in-draught of water out of the Atlantic into the Mediterranean through the straits of Gibraltar, a passage about 20 miles broad; yet without any sensible rising of the water along the coasts of Barbary, &c. or any overflowing of the lands, which there lie very low.—Dr Halley, however, solves the currents setting in at the straits without overflowing the banks by the great evaporation, without supposing any under-current.

CURRICULUS, in our ancient writers, denotes the year or course of a year. *Actum est hoc annorum Dominica incarnationis quater quinquagenis & quinquies, quinis lustris, & tribus curriculis; i. e.* In the year 1028: for four times fifty makes two hundred, and five times two hundred makes one thousand; five lustris are twenty-five years, and three curriculi are three years.

CURRIERS, those who dress and colour leather after it comes from the tan-yard. See TANNING.

CURRODREPANUS (formed of *currus*, "chariot," and *δρεπανον*, "scythe" or "sickle"), in antiquity, a kind of chariot armed with scythes. The driver of these chariots was obliged to ride on one of the horses, as there was no other seat for him; the usual place for him being all armed with knives, as was likewise the hinder part of the chariot. There were no scythes pointing down to the earth either

Current
||
Currodrepanus.

Currying,
Curling

from the beam or axle-tree; but these were fixed at the head of the axle-tree in such a manner as to be moveable by means of a rope, and thereby could be raised or let down, and drawn forward or let fall backward, by relaxing the rope.

CURRYING, the method of preparing leather with oil, tallow, &c.

The chief business is to soften and supple cow and calve-skins, which make the upper-leathers and quarters of shoes, covering of saddles, coaches, and other things which must keep out water. 1. These skins, after coming from the tanner's yard, having many fleshy fibres on them, the currier soaks them some time in common water. 2. He takes them out and stretches them on a very even wooden horse; then with a paring-knife he scrapes off all the superfluous flesh, and puts them in to soak again. 3. He puts them wet on a hurdle, and tramples them with his heels till they begin to grow soft and pliant. 4. He soaks them in train-oil, which by its unctuous quality is the best liquor for this purpose. 5. He spreads them on large tables, and fastens them at the ends. There, with the help of an instrument called a *pummel*, which is a thick piece of wood, the under side of which is full of furrows crossing each other, he folds, squares, and moves them forwards and backwards several times, under the teeth of this instrument, which breaks their too great stiffness. This is what is properly called *currying*. The order and number of these operations is varied by different carriers, but the material part is always the same. 6. After the skins are curried, there may be occasion to colour them. The colours are black, white, red, yellow, green, &c. the other colours are given by the skinners, who differ from carriers in this, that they apply their colours on the flesh side; the carriers on the hair side. In order to whiten skins, they are rubbed with lumps of chalk or white-lead, and afterwards with pumice-stone. 7. When a skin is to be made black, after having oiled and dried it, he passes over it a puff dipt in water impregnated with iron; and after his first wetting, he gives it another in a water prepared with foot, vinegar, and gum-arabic. These different dyes gradually turn the skin black, and the operations are repeated till it be of a shining black. The grain and wrinkles, which contribute to the suppleness of calves and cows leather, are made by the reiterated folds given to the skin in every direction, and by the care taken to scrape off all hard parts on the colour side.

CURSING AND SWEARING, an offence against God and religion, and a sin of all others the most extravagant and unaccountable, as having no benefit or advantage attending it. By the last statute against this crime, 19 Geo. II. which repeals all former ones, every labourer, sailor, or soldier, profanely cursing or swearing, shall forfeit 1 s.; every other person under the rank of a gentleman, 2 s.; and every gentleman or person of superior rank, 5 s. to the poor of the parish; and, on a second conviction, double; and, for every subsequent offence, treble the sum first forfeited, with all charges of conviction: and, in default of payment, shall be sent to the house of correction for 10 days. Any justice of the peace may convict upon his own hearing, or the testimony of one witness; and any

constable or peace officer, upon his own hearing, may secure any offender and carry him before a justice, and there convict him. If the justice omits his duty, he forfeits 5 l. and the constable 40 s. And the act is to be read in all parish churches and public chapels the Sunday after every quarter-day, on pain of 5 l. to be levied by warrant from any justice. Besides this punishment for taking God's name in vain in common discourse, it is enacted, by stat. 3. Jac. I. c. 21. that if in any stage-play, interlude, or show, the name of the Holy Trinity, or any of the persons therein, be jestingly or profanely used, the offender shall forfeit 10 l.; one moiety to the king, and the other to the informer.

CURSITOR, a clerk belonging to the court of chancery, whose business it is to make out original writs. In the statute 18 Edw. III. they are called *clerks of course*, and are 24 in number, making a corporation of themselves. To each of them is allowed a division of certain counties, into which they issue out the original writs required by the subject.

CURTATE DISTANCE, in astronomy, the distance of a planet from the sun to that point, where a perpendicular let fall from the planet meets with the ecliptic.

CURTATION, in astronomy, is the interval between a planet's distance from the sun and the curtate distance.

CURTEYN, CURTANA, was the name of Edward the Confessor's sword, which is the first sword carried before the kings of England at their coronation; and it is said the point of it is broken as an emblem of mercy.

CURTIN, CURTAIN, or Courtin, in fortification, is that part of the rampart of a place which is betwixt the flanks of two bastions, bordered with a parapet five feet high, behind which the soldiers stand to fire upon the covered way and into the moat.

CURTIUS (Marcus), a Roman youth, who devoted himself to the gods manes for the safety of his country, about 360 years before the Augustan age. A wide gap had suddenly opened in the forum, and the oracle had said that it never would close before Rome threw into it whatever it had most precious. Curtius immediately perceived that no less than an human sacrifice was required. He armed himself, mounted his horse, and solemnly threw himself into the gulf, which instantly closed over his head.

CURTIUS (Quintus), a Latin historian who wrote the life of Alexander the Great in 10 books, of which the two first are not indeed extant, but are so well supplied by Freinshemius, that the loss is scarcely regretted. Where this writer was born, or even when he lived, are points no one pretends to know. By his style he is supposed to have lived in or near the Augustan age; while some are not wanting, who imagine the work to have been composed in Italy about 300 years ago, and the name of *Quintus Curtius* to be fictitiously added to it. Cardinal du Perron was so great an admirer of this work, as to declare one page of it to be worth 30 of Tacitus; yet M. le Clerc, at the end of his Art of Criticism, has charged the writer with great ignorance and many contradictions. He has nevertheless many qualities as a writer, which will always make him admired and applauded.

CURVATURE OF A LINE, is the peculiar manner of its bending or flexure, by which it becomes a curve of such and such peculiar properties.

CURVE, in geometry, a line which running on continually in all directions, may be cut by one right line in more points than one. See CONIC SECTIONS and FLUCTIONS.

CURVET, or **CORVET**, in the manege, an air in which the horse's legs are raised higher than in the demi volt; being a kind of leap up, and a little forwards, wherein the horse raises both his fore-legs at once, equally advanced, (when he is going straight forward, and not in a circle), and as his fore-legs are falling, he immediately raises his hind-legs, equally advanced, and not one before the other: so that all his four legs are in the air at once; and as he sets them down, he marks but twice with them.

CURVILINEAR, or **CURVILINEAL**, is said of figures bounded by curves or crooked lines.

CURVIROSTRA, in ornithology. See LOXIA.

CURULE CHAIR, in Roman antiquity, a chair adorned with ivory, wherein the great magistrates of Rome had a right to sit and be carried.

The curule magistrates were the ædiles, the prætors, censors, and consuls. This chair was fitted in a kind of chariot, whence it had its name. The senators who had borne the offices of ædiles, prætors, &c. were carried to the senate-house in this chair, as were also those who triumphed, and such as went to administer justice, &c. See ÆDILE, &c.

CURZOLA, an island in the gulf of Venice, lying on the coast of Dalmatia. It is about 20 miles long, and has a small town of the same name, with a bishop's see. It belongs to the Venetians. E. Long. 17. 15. N. Lat. 43. 6.

CUSA (Nicholas de), a learned cardinal, born of mean parentage, and named from Cusa, the place of his birth. He was made a cardinal in 1448; and being appointed governor of Rome by Pope Pius II. during his absence at Mantua, he was the chief concert and manager of the war against the Turks. He founded a church, and a noble library of Greek and Latin authors, at Cusa; and left many excellent works behind him, which were collected and published in three volumes at Basil in 1565. In these he has made no scruple to detect the lying traditions and sophistries of the Roman church.

CUSCO, a large and handsome town of South America in Peru, formerly the residence of the Incas. It is seated at the foot of a mountain, and is built in a square form, in the middle of which there is the best market in all America. Four large streets terminate in this square, which are all as straight as a line, and regard the four quarters of the world. The Spaniards tell us wonderful things of the richness of the Inca's palace, and of the temple of the sun; but more sober travellers, judging from what remains, think most of them to be fabulous. At present it contains eight large parishes, and five religious houses, the best of which belongs to the Jesuits; and the number of the inhabitants may be about 50,000, of which three-fourths are the original natives, Americans. From this town there is a very long road, which runs along the Cordaleim; and, at certain distances, there are small houses for resting-places, some parts of which are so artificially

wrought, that it is surprising how a people who had no iron tools could perform such workmanship. There are streams of water run through the town, which are a great convenience in so hot a country where it never rains. It is 375 miles east of Lima. W. Long. 74. 37. S. Lat. 13. 0.

CUSCUTA, **DODDER**: a genus of the digynia order, belonging to the tetrandria class of plants; and in the natural method ranking under those of which the order is doubtful. The calyx is quadrifid; the corolla monopetalous; the capsule bilocular. There are two species; one of which is a native of Britain, viz. the Europæa, dodder, hell-weed, or devil's guts. This is a very singular plant, almost destitute of leaves, parasitical, creeping, fixing itself to whatever is next to it. It decays at the root, and afterwards is nourished by the plant which supports it. Hops, flax, and nettles, are its common support; but principally the common nettle. Its blossoms are white. As soon as the shoots have twined about an adjacent plant, they send out from their inner surface a number of little vesicles or papillæ, which attach themselves to the bark or rind of the plant. By degrees the longitudinal vessels of the stalk, which appear to have accompanied the vesicles, shoot from their extremities, and make their way into the softer plant, by dividing the vessels and insinuating themselves into the tenderest part of the stalk; and so intimately are they united with it, that it is easier to break than to disengage them from it. The whole plant is bitter. It affords a pale reddish colour. Cows, sheep, and swine, eat it; horses refuse it; goats are not fond of it.

CUSH, the eldest son of Ham, and father of Nimrod; the other sons of Cush were Seba, Havilah, Sabtah, Raamah, and Sabtecha. Gen. x. 6—8. Though we know of no other person of scripture that is called by this name, yet there are several countries that are called by it; whether the same man may have dwelt in them all at different times, or that there were some other men of this name, we are ignorant.

The Vulgate, Septuagint, and other interpreters, both ancient and modern, generally translate Cush, *Ethiopia*: but there are many passages wherein this translation cannot take place.

Cush is the name of the country watered by the Araxes. They who in translating the situation of Eden, have made *Cush* Ethiopia, gave rise to that unwarrantable opinion which Josephus and several others have entertained of the river Gihon's being the Nile. In this place (Gen. ii. 13.) the LXX translation renders the word *Cush* by the name of Ethiopia; and in this mistake is not only here followed by our English version, but in the same particular in several other places.

Cush is the same as Cush. The Chaldees generally put the *tau* where the Hebrews use the *shin*: they say *cuth*, instead of *cush*. See CUTH.

But Ethiopia is frequently in the Hebrew called *Cush*; and Josephus says, that they called themselves by this name, and that the same name was given them by all Asia. St Jerom tells us, that the Hebrews call the Ethiopians by the same name, and the Septuagint give them no other. Jeremiah (xiii. 23.) says, "Can the Cushæan, or Ethiopian, change his colour." In Ezekiel (xxix. 10.) the Lord threatens to reduce

"Egypt

Cuscuta,
Cush.

Cushion
||
Custom
and Habit.

“Egypt to a desert, from the tower of Syene even unto the border of Cush, or Ethiopia;” and in Isaiah, (xi. 11.) he says, “he will recover the remnant of his people, which shall be left from Assyria, and from Egypt, and Pathros, and from Cush.” All these marks agree with Ethiopia properly so called, which lies to the south of Egypt.

Bochart has shown very clearly that there was a country called “the land of *Cush*” in Arabia Petraea, bordering upon Egypt; that this country extended itself principally upon the eastern shore of the Red-Sea, and, at its extremity, to the point of this sea, inclining towards Egypt and Palestine.

Thus there are three countries of the name of Cush, described in scripture, and all confounded by interpreters under the general name of Ethiopia.

CUSHION, in engraving, is a bag of leather filled with sand, commonly about nine inches square, and three or four thick, used for supporting the plate to be engraved.

CUSHION, in gilding, is made of leather, fastened to a square board, from 14 inches square to 10, with a handle. The vacuity between the leather and board is stuffed with fine tow or wool, so that the outer surface may be flat and even. It is used for receiving the leaves of gold from the paper, in order to its being cut into proper sizes and figures.

CUSI, in natural history, a name given by the people of the Philippine islands to a very small and very beautiful species of parrot.

CUSP, *cuspis*, properly denotes the point of a spear or sword; but is used in astronomy to express the points or horns of the moon, or any other luminary.

Cusp, in astrology, is used for the first point of each of the 12 houses, in a figure or scheme of the heavens. See HOUSE.

CUSPIDATED, in botany, are such plants whose leaves are pointed like a spear.

CUSPINIAN (John), a German, was born at Sweinfurt in 1473; and died at Vienna in 1529. He was first physician to the emperor Maximilian I. and employed by that prince in several delicate negotiations. We have of his in Latin, 1. A history of the Roman emperors from Julius Cæsar to the death of Maximilian I. Degory Wheare, in his *Methodus Legendæ Historiæ*, calls this “*luculentum sane opus, & omnium lectione dignissimum.*” 2. An history of Austria; being a kind of continuation of the preceding. 3. An history of the origin of the Turks, and of their cruelties towards Christians. Gerard Vossius calls Cuspinian *magnum suo ævo historiæ lumen.*

CUSTOM, a very comprehensive term, denoting the manners, ceremonies, and fashions, of a people, which having turned into a habit, and passed into use, obtain the force of laws; in which sense it implies such usages, as, though voluntary at first, are yet by practice become necessary.

Custom is hence, both by lawyers and civilians, defined *lex non scripta*, “a law or right not written,” established by long usage, and the consent of our ancestors: in which sense it stands opposed to the *lex scripta*, or “the written law.” See LAW, Part II. n° 38—41.

Custom and Habit, in the human economy. The former is often confounded with the latter. By *cu-*
N° 96.

stom we mean a frequent reiteration of the same act; and by *habit*, the effect that custom has on the mind or body. This curious subject falls to be considered first in a moral, and secondly in a physical, light.

I. *Influence of Custom and Habit on the Mind, &c.* Custom hath such influence upon many of our feelings, by warping and varying them, that its operations demand the attention of all who would be acquainted with human nature. The subject, however, is intricate. Some pleasures are fortified by custom: and yet custom begets familiarity, and consequently indifference:

If all the year were playing holidays,
To sport would be as tedious as to work:
But when they seldom come, they wish'd for come,
And nothing pleaseth but rare accidents. *Shakspeare.*

In many instances, satiety and disgust are the consequences of reiteration: again, though custom blunts the edge of distress and of pain; yet the want of any thing to which we have been long accustomed is a sort of torture. A clue to guide us through all the intricacies of this labyrinth, would be an acceptable present.

Whatever be the cause, it is certain that we are much influenced by custom: it hath an effect upon our pleasures, upon our actions, and even upon our thoughts and sentiments. Habit makes no figure during the vivacity of youth: in middle age it gains ground; and in old age governs without control. In that period of life, generally speaking, we eat at a certain hour, take exercise at a certain hour, go to rest at a certain hour, all by the direction of habit: nay, a particular seat, table, bed, comes to be essential; and a habit in any of these cannot be controlled without uneasiness.

Any slight or moderate pleasure, frequently reiterated for a long time, forms a peculiar connection between us and the thing that causes the pleasure. This connection, termed *habit*, has the effect to awaken our desire or appetite for that thing when it returns not as usual. During the course of enjoyment, the pleasure rises insensibly higher and higher till a habit be established; at which time the pleasure is at its height. It continues not, however, stationary: the same customary reiteration which carried it to its height, brings it down again by insensible degrees, even lower than it was at first; but of that circumstance afterwards. What at present we have in view, is to prove by experiments, that those things which at first are but moderately agreeable, are the aptest to become habitual. Spirituous liquors, at first scarce agreeable, readily produce an habitual appetite: and custom prevails so far, as even to make us fond of things originally disagreeable, such as coffee, assafœtida, and tobacco.

A walk upon the quarter-deck, though intolerably confined, becomes however so agreeable by custom, that a sailor in his walk on shore confines himself commonly within the same bounds. The author knew a man who had relinquished the sea for a country-life: in the corner of his garden he reared an artificial mount with a level summit, resembling most accurately a quarter-deck, not only in shape but in size; and here he generally walked. In Minorca governor Kane made an excellent road the whole length of the island;

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and Habit.

*Kaim's
Elements of
Criticism.*

from island; and yet the inhabitants adhere to the old road, though not only longer, but extremely bad. Play or gaming, at first barely amusing by the occupation it affords, becomes in time extremely agreeable; and is frequently prosecuted with avidity, as if it were the chief business of life. The same observation is applicable to the pleasures of the internal senses, those of knowledge and virtue in particular: children have scarce any sense of these pleasures; and men very little who are in the state of nature without culture: our taste for virtue and knowledge improves slowly; but is capable of growing stronger than any other appetite in human nature.

To introduce an active habit, frequency of acts is not sufficient without length of time: the quickest succession of acts in a short time is not sufficient; nor a slow succession in the longest time. The effect must be produced by a moderate soft action, and a long series of easy touches, removed from each other by short intervals. Nor are these sufficient without regularity in the time, place, and other circumstances of the action: the more uniform any operation is, the sooner it becomes habitual. And this holds equally in a passive habit; variety in any remarkable degree, prevents the effect: thus any particular food will scarce ever become habitual where the manner of dressing is varied. The circumstances then requisite to augment a moderate pleasure, and at the long-run to form a habit, are weak uniform acts, reiterated during a long course of time, without any considerable interruption: every agreeable cause that operates in this manner will grow habitual.

Affection and aversion, as distinguished from passion on the one hand, and on the other from original disposition, are in reality habits respecting particular objects, acquired in the manner above set forth. The pleasure of social intercourse with any person, must originally be faint, and frequently reiterated, in order to establish the habit of affection. Affection thus generated, whether it be friendship or love, seldom swells into any tumultuous or vigorous passion; but is however the strongest cement that can bind together two individuals of the human species. In like manner, a slight degree of disgust often reiterated with regula-

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tion, grows into the habit of aversion, which commonly subsists for life.

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Objects of taste that are delicious, far from tending to become habitual, are apt by indulgence to produce satiety and disgust: no man contracts a habit of sugar, honey, or sweet-meats, as he doth of tobacco.

These violent delights have violent ends,
And in their triumphs die. The sweetest honey
Is loathsome in its own deliciousness,
And in the taste confounds the appetite;
Therefore love moderately, long love doth so;
Too swift arrives as tardy as too slow.

Romeo and Juliet, act 2. sc. 6.

The same observation holds with respect to all objects that being extremely agreeable raise violent passions: such passions are incompatible with a habit of any sort; and in particular they never produce affection nor aversion: a man who at first sight falls violently in love, has a strong desire of enjoyment, but no affection for the woman (A): a man who is surprised with an unexpected favour, burns for an opportunity to exert his gratitude, without having any affection for his benefactor: neither does desire of vengeance for an atrocious injury involve aversion.

It is perhaps not easy to say why moderate pleasures gather strength by custom: but two causes concur to prevent that effect in the more intense pleasures. These, by an original law in our nature, increase quickly to their full growth, and decay with no less precipitation: and custom is too slow in its operation to overcome that law. The other cause is not less powerful: exquisite pleasure is extremely fatiguing; occasioning, as a naturalist would say, great expence of animal spirits; and of such the mind cannot bear so frequent gratification, as to superinduce a habit: if the thing that raises the pleasure return before the mind have recovered its tone and relish, disgust ensues instead of pleasure.

A habit never fails to admonish us of the wanted time of gratification, by raising a pain for want of the object, and a desire to have it. The pain of want is always first felt: the desire naturally follows; and upon presenting the object, both vanish instantaneously. Thus a man accustomed to tobacco, feels, at the end

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(A) Violent love, without affection, is finely exemplified in the following story. When Constantinople was taken by the Turks, Irene, a young Greek of an illustrious family, fell into the hands of Mahomet II. who was at that time in the prime of youth and glory. His savage heart being subdued by her charms, he shut himself up with her, denying access even to his ministers. Love obtained such ascendant as to make him frequently abandon the army, and fly to his Irene. War relaxed, for victory was no longer the monarch's favourite passion. The soldiers, accustomed to booty, began to murmur, and the infection spread even among the commanders. The Basha Mustapha, consulting the fidelity he owed his master, was the first who durst acquaint him of the discourses held publicly to the prejudice of his glory. The sultan, after a gloomy silence, formed his resolution. He ordered Mustapha to assemble the troops next morning; and then with precipitation retired to Irene's apartment. Never before did that princess appear so charming; never before did the prince bestow so many warm caresses. To give a new lustre to her beauty, he exhorted her women next morning to bestow their utmost art and care on her dress. He took her by the hand, led her into the middle of the army, and pulling off her veil, demanded of the bashas with a fierce look, whether they had ever beheld such a beauty? After an awful pause, Mahomet with one hand laying hold of the young Greek by her beautiful locks, and with the other pulling out his scimitar, severed the head from the body at one stroke. Then turning to his grandees, with eyes wild and furious, "This sword (says he), when it is my will, knows to cut the bands of love." However strange it may appear, we learn from experience, that desire of enjoyment may consist with the most brutal aversion, directed both to the same woman. Of this we have a noted example in the first book of Sully's Memoirs; to which we choose to refer the reader, for it is too gross to be transcribed.

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of the usual interval, a confused pain of want; which at first points at nothing in particular, though it soon settles upon its accustomed object: and the same may be observed in persons addicted to drinking, who are often in an uneasy restless state before they think of the bottle. In pleasures indulged regularly, and at equal intervals, the appetite, remarkably obsequious to custom, returns regularly with the usual time of gratification; not sooner, even though the object be presented. This pain of want arising from habit, seems directly opposite to that of satiety; and it must appear singular, that frequency of gratification should produce effects so opposite, as are the pains of excess and of want.

The appetites that respect the preservation and propagation of our species, are attended with a pain of want similar to that occasioned by habit: hunger and thirst are uneasy sensations of want, which always precede the desire of eating or drinking; and a pain for want of carnal enjoyment, precedes the desire of an object. The pain being thus felt independent of an object, cannot be cured but by gratification. Very different is an ordinary passion, in which desire precedes the pain of want; such a passion cannot exist but while the object is in view; and therefore, by removing the object out of thought, it vanisheth with its desire and pain of want.

The natural appetites above mentioned, differ from habit in the following particular: they have an undetermined direction toward all objects of gratification in general; whereas an habitual appetite is directed to a particular object: the attachment we have by habit to a particular woman, differs widely from the natural passion which comprehends the whole sex; and the habitual relish for a particular dish, is far from being the same with a vague appetite for food. That difference notwithstanding, it is still remarkable, that nature hath enforced the gratification of certain natural appetites essential to the species, by a pain of the same sort with that which habit produceth.

The pain of habit is less under our power than any other pain that arises from want of gratification: hunger and thirst are more easily endured, especially at first, than an unusual intermission of any habitual pleasure: persons are often heard declaring, they would forego sleep or food, rather than tobacco. We must not however conclude, that the gratification of an habitual appetite affords the same delight with the gratification of one that is natural: far from it; the pain of want only is greater.

The slow and reiterated acts that produce a habit, strengthen the mind to enjoy the habitual pleasure in greater quantity and more frequency than originally; and by that means a habit of intemperate gratification is often formed: after unbounded acts of intemperance, the habitual relish is soon restored, and the pain for want of enjoyment returns with fresh vigour.

The causes of the present emotions hitherto in view, are either an individual, such as a companion, a certain dwelling-place, a certain amusement; or a particular species, such as coffee, mutton, or any other food. But habit is not confined to such. A constant train of trifling diversions may form such a habit in the mind, that it cannot be easy a moment without amusement: a variety in the objects prevents a habit

as to any one in particular; but as the train is uniform with respect to amusement, the habit is formed accordingly; and that sort of habit may be denominated a *generic habit*, in opposition to the former, which is a *specific habit*. A habit of a town-life, of country-sports, of solitude, of reading, or of business, where sufficiently varied, are instances of generic habits. Every specific habit hath a mixture of the generic; for the habit of any one sort of food makes the taste agreeable, and we are fond of that taste wherever found. Thus a man deprived of an habitual object, takes up with what most resembles it; deprived of tobacco, any bitter herb will do rather than want: a habit of punch makes wine a good resource: accustomed to the sweet society and comforts of matrimony, the man unhappily deprived of his beloved object, inclines the sooner to a second. In general, when we are deprived of a habitual object, we are fond of its qualities in any other object.

The reasons are assigned above, why the causes of intense pleasure become not readily habitual: but now we discover, that these reasons conclude only against specific habits. In the case of a weak pleasure, a habit is formed by frequency and uniformity of reiteration, which, in the case of an intense pleasure, produceth satiety and disgust. But it is remarkable, that satiety and disgust have no effect, except as to that thing singly which occasions them: a surfeit of honey produceth not a loathing of sugar; and intemperance with one woman produceth no disrelish of the same pleasure with others. Hence it is easy to account for a generic habit in any intense pleasure: the delight we had in the gratification of the appetite, inflames the imagination, and makes us, with avidity, search for the same gratification in whatever other object it can be found. And thus uniform frequency in gratifying the same passion upon different objects, produceth at length a generic habit. In this manner one acquires an habitual delight in high and poignant sauces, rich dress, fine equipages, crowds of company, and in whatever is commonly termed *pleasure*. There concurs at the same time, to introduce this habit, a peculiarity observed above, that reiteration of acts enlarges the capacity of the mind, to admit a more plentiful gratification than originally, with regard to frequency as well as quantity.

Hence it appears, that though a specific habit cannot be formed but upon a moderate pleasure, a generic habit may be formed upon any sort of pleasure, moderate or immoderate, that hath variety of objects. The only difference is, that a weak pleasure runs naturally into a specific habit; whereas an intense pleasure is altogether averse to such a habit. In a word, it is only in singular cases that a moderate pleasure produces a generic habit; but an intense pleasure cannot produce any other habit.

The appetites that respect the preservation and propagation of the species, are formed into habit in a peculiar manner; the time as well as measure of their gratification are much under the power of custom; which, introducing a change upon the body, occasions a proportional change in the appetites. Thus, if the body be gradually formed to a certain quantity of food at stated times, the appetite is regulated accordingly; and the appetite is again changed, when a different

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When rich food is brought down by ingredients of a plainer taste, the composition is susceptible of a specific habit. Thus the sweet taste of sugar, rendered less poignant in a mixture, may, in course of time, produce a specific habit for such mixture. As moderate pleasures, by becoming more intense, tend to generic habits; so intense pleasures, by becoming more moderate, tend to specific habits.

The beauty of the human figure, by a special recommendation of nature, appears to us supreme, amid the great variety of beautiful forms bestowed upon animals. The various degrees in which individuals enjoy that property, render it an object sometimes of a moderate, sometimes of an intense, passion. The moderate passion, admitting frequent reiteration without diminution, and occupying the mind without exhausting it, turns gradually stronger till it becomes a habit. Nay, instances are not wanting, of a face at first disagreeable, afterward rendered indifferent by familiarity, and at length agreeable by custom. On the other hand, consummate beauty, at the very first glance, fills the mind so as to admit no increase. Enjoyment lessens the pleasure; and if often repeated, ends commonly in satiety and disgust. The impressions made by consummate beauty, in a gradual succession from lively to faint, constitute a series opposite to that of faint impressions waxing gradually more lively, till they produce a specific habit. But the mind when accustomed to beauty contracts a relish for it in general, though often repelled from particular objects by the pain of satiety; and thus a generic habit is formed, of which inconstancy in love is the necessary consequence; for a generic habit, comprehending every beautiful object, is an invincible obstruction to a specific habit, which is confined to one.

But a matter which is of great importance to the youth of both sexes, deserves more than a cursory view. Though the pleasant emotion of beauty differs widely from the corporeal appetite, yet when both are directed to the same object, they produce a very strong complex passion: enjoyment in that case must be exquisite; and therefore more apt to produce satiety than in any other case whatever. This is a never-failing effect, where consummate beauty in the one party, meets with a warm imagination and great sensibility in the other. What we are here explaining, is true without exaggeration; and they must be insensible upon whom it makes no impression: it deserves well to be pondered by the young and the amorous, who, in forming the matrimonial society, are too often blindly impelled by the animal pleasure merely, inflamed by beauty. It may indeed happen after the pleasure is gone, and go it must with a swift pace, that a new connection is formed upon more dignified and more lasting principles: but this is a dangerous experiment; for even supposing good sense, good temper, and internal merit of every sort, yet a new connection upon such qualifications is rarely formed: it commonly, or rather always happens, that such qualifications, the only solid foundation of an indissoluble

connection, are rendered altogether invisible by satiety of enjoyment creating disgust.

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One effect of custom, different from any that have been explained, must not be omitted, because it makes a great figure in human nature: though custom augments moderate pleasures, and lessens those that are intense, it has a different effect with respect to pain; for it blunts the edge of every sort of pain and distress, faint or acute. Uninterrupted misery, therefore, is attended with one good effect: if its torments be incessant, custom hardens us to bear them.

The changes made in forming habits are curious. Moderate pleasures are augmented gradually by reiteration, till they become habitual; and then are at their height: but they are not long stationary; for from that point they gradually decay, till they vanish altogether. The pain occasioned by want of gratification, runs a different course: it increases uniformly; and at last becomes extreme, when the pleasure of gratification is reduced to nothing.

—————It so falls out,
That what we have we prize not to the worth,
While we enjoy it; but being lack'd and lost,
Why then we rack the value; then we find
The virtue that possession would not show us
Whilst it was ours.

Much ado about Nothing, act 4. sc. 2.

The effect of custom with relation to a specific habit, is displayed through all its varieties in the use of tobacco. The taste of that plant is at first extremely unpleasent: our disgust lessens gradually, till it vanish altogether; at which period the taste is neither agreeable nor disagreeable: continuing the use of the plant, we begin to relish it; and our relish improves by use, till it arrive at perfection: from that period it gradually decays, while the habit is in a state of increment, and consequently the pain of want. The result is, that when the habit has acquired its greatest vigour, the relish is gone; and accordingly we often smoke and take snuff habitually, without so much as being conscious of the operation. We must except gratification after the pain of want; the pleasure of which gratification is the greatest when the habit is the most vigorous: it is of the same kind with the pleasure one feels upon being delivered from the rack. This pleasure however is but occasionally the effect of habit; and however exquisite, is avoided as much as possible because of the pain that precedes it.

With regard to the pain of want, we can discover no difference between a generic and a specific habit; but these habits differ widely with respect to the positive pleasure. We have had occasion to observe, that the pleasure of a specific habit decays gradually till it turn imperceptible: the pleasure of a generic habit, on the contrary, being supported by variety of gratification, suffers little or no decay after it comes to its height. However it may be with other generic habits, the observation certainly holds with respect to the pleasures of virtue and of knowledge: the pleasure of doing good has an unbounded scope, and may be so variously gratified that it can never decay; science is equally unbounded; our appetite for knowledge having an ample range of gratification, where discoveries are recommended by novelty, by variety, by utility, or by all of them.

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In this intricate inquiry, we have endeavoured, but without success, to discover by what particular means it is that custom hath influence upon us: and now nothing seems left, but to hold our nature to be so framed as to be susceptible of such influence. And supposing it purposely so framed, it will not be difficult to find out several important final causes. That the power of custom is a happy contrivance for our good, cannot have escaped any one who reflects, that business is our province, and pleasure our relaxation only. Now satiety is necessary to check exquisite pleasures, which otherwise would engross the mind and unqualify us for business. On the other hand, as business is sometimes painful, and is never pleasant beyond moderation, the habitual increase of moderate pleasure, and the conversion of pain into pleasure, are admirably contrived for disappointing the malice of fortune, and for reconciling us to whatever course of life may be our lot:

How use doth breed a habit in a man!
This shadowy desert, unfrequented woods,
I better brook than flourishing peopled towns.
Here I can sit alone, unseen of any,
And to the nightingale's complaining notes
Tune my distresses, and record my woes.

Two Gentlemen of Verona, act 5. sc. 4.

As the foregoing distinction between intense and moderate, hold in pleasure only, every degree of pain being softened by time, custom is a catholicon for pain and distress of every sort; and of that regulation the final cause requires no illustration.

Another final cause of custom will be highly relished by every person of humanity, and yet has in a great measure been overlooked; which is, that custom hath a greater influence than any other known cause, to put the rich and the poor upon a level: weak pleasures, the share of the latter, become fortunately stronger by custom; while voluptuous pleasures, the share of the former, are continually losing ground by satiety. Men of fortune, who possess palaces, sumptuous gardens, rich fields, enjoy them less than passengers do. The goods of Fortune are not unequally distributed; the opulent possess what others enjoy.

And indeed, if it be the effect of habit, to produce the pain of want in a high degree while there is little pleasure in enjoyment, a voluptuous life is of all the least to be envied. Those who are habituated to high feeding, easy vehicles, rich furniture, a crowd of valets, much deference and flattery, enjoy but a small share of happiness, while they are exposed to manifold distresses. To such a man, enslaved by ease and luxury, even the petty inconveniences in travelling, of a rough road, bad weather, or homely fare, are serious evils: he loses his tone of mind, turns peevish, and would wreak his resentment even upon the common accidents of life. Better far to use the goods of Fortune with moderation: a man who by temperance and activity hath acquired a hardy constitution, is, on the one hand, guarded against external accidents; and, on the other, is provided with great variety of enjoyment ever at command.

We shall close this branch of the subject with an article more delicate than abstruse, viz. what authority custom ought to have over our taste in the fine arts. One particular is certain, that we cheerfully abandon

to the authority of custom things that nature hath left indifferent. It is custom, not nature, that hath established a difference between the right hand and the left, so as to make it awkward and disagreeable to use the left where the right is commonly used. The various colours, though they affect us differently, are all of them agreeable in their purity: but custom has regulated that matter in another manner; a black skin upon a human being, is to us disagreeable; and a white skin probably not less so to a negro. Thus things, originally indifferent, become agreeable or disagreeable by the force of custom. Nor will this be surprising after the discovery made above, that the original agreeableness or disagreeableness of an object, is, by the influence of custom, often converted into the opposite quality.

Proceeding to matters of taste, where there is naturally a preference of one thing before another; it is certain, in the first place, that our faint and more delicate feelings are readily susceptible of a bias from custom; and therefore that it is no proof of a defective taste, to find these in some measure influenced by custom: dress and the modes of external behaviour, are regulated by custom in every country: the deep red or vermilion with which the ladies in France cover their cheeks, appears to them beautiful in spite of nature; and strangers cannot altogether be justified in condemning that practice, considering the lawful authority of custom, or of the *fashion* as it is called: it is told of the people who inhabit the skirts of the Alps facing the north, that the swelling they universally have in the neck is to them agreeable. So far has custom power to change the nature of things, and to make an object originally disagreeable take on an opposite appearance.

But as to every particular that can be denominated proper or improper, right or wrong, custom has little authority, and ought to have none. The principle of duty takes naturally place of every other; and it argues a shameful weakness or degeneracy of mind, to find it in any case so far subdued as to submit to custom.

II. *Effects of Custom and Habit in the Animal Economy.* These may be reduced to five heads. 1. On the simple solids. 2. On the organs of sense. 3. On the moving power. 4. On the whole nervous power. 5. On the system of blood-vessels.

1. *Effects on the Simple Solids.* Custom determines the degree of flexibility of which they are capable. By frequently repeated flexion, the several particles of which these solids consist are rendered more supple and moveable on each other. A piece of catgut, e. g. when on the stretch, and having a weight appended to its middle, will be bended thereby perhaps half an inch; afterwards, by frequent repetitions of the same weight, or by increasing the weight, the flexibility will be rendered double. The degree of flexibility has a great effect in determining the degree of oscillation, provided that elasticity is not affected; if it go beyond this, it produces flaccidity. Again, custom determines the degree of tension; for the same elastic chord that now oscillates in a certain degree of tension, will, by frequent repetition of these oscillations, be so far relaxed, that the extension must be renewed in order to produce the same tension, and consequently the same vibra-

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Cullen's Lectures on the Mat. Med. 1st edit.

from vibrations, as at first. This appears in many instances in the animal economy, as when different muscles concur to give a fixed point or tension to each other: and thus a weakly child totters as it walks; but by giving it a weight to carry, and by thus increasing the tension of the system, it walks more steadily. In like manner the fulness of the system gives strength, by distending the vessels every where, and so giving tension: hence a man, by good nourishment, from being weak, acquires a great increase of strength in a few days: and, on the other hand, evacuations weaken by taking off the tension.

2. *Effects on the Organs of Sense.* Repetition gives a greater degree of sensibility, in so far only as it renders perception more accurate. Repetition alone gives lasting impression, and thus lays the foundation of memory; for single impressions are but retained for a short time, and are soon forgot. Thus a person, who at present has little knowledge of cloths, will, by frequently handling them, acquire a skill of discerning them, which to others seems almost impossible. Many are apt to mistake this for a nicer sensibility, but they are much mistaken; for it is an universal law, that the repetition of impression renders us less acute. This is well illustrated by the operation of medicines; for all medicines which act on the organs of sense must, after some time, be increased in their dose to produce the same effects as at first. This affords a rule in practice with regard to these medicines; it becoming necessary, after a certain time, to change one medicine even for a weaker of the same nature. Thus medicines, which even have no great apparent force, are found, by long use, to destroy the sensibility of the system to other impressions. But to this general rule, that, by repetition, the force of impressions is more and more diminished, there are some exceptions. Thus persons, by a strong emetic, have had their stomachs rendered so irritable, that 1-20th of the first dose was sufficient to produce the same effect. This, however, oftener takes place when the vomit is repeated every day; for if the same vomit be given at pretty considerable intervals, the general rule is observed to hold good. Thus two contrary effects of habit are to be noted; and it is proper to observe, that the greater irritability is more readily produced when the first impression is great, as in the case first given of the strong emetic. This may be farther illustrated by the effect of fear, which is commonly observed to be diminished on repetition; which can only be attributed to custom: while, on the other hand, there are instances of persons, who, having once got a great fright, have for ever after continued slaves to fears excited by impressions of the like kind, however slight; which must be imputed entirely to excess of the first impression, as has been already observed. To this head also belongs the association of ideas, which is the foundation of memory and all our intellectual faculties, and is entirely the effect of custom; with regard to the body also, these associations often take place. And sometimes, in producing effects on the body, associations seemingly opposite are formed, which, through custom, become absolutely necessary; e. g. a person long accustomed to sleep in the neighbourhood of a great noise, is so far from being incommoded on that account, that afterwards such noise becomes necessary to produce sleep.

It will be of use to attend to this in medical practice; for we ought to allow for, however opposite it may seem at the time, whatever usually attended the purpose we design to effect. Thus, in the instance of sleep, we must not exclude noise when we want to procure rest, or any causes which may seem opposite to such an effect, provided custom has rendered them necessary.

3. *Effects on the Moving Fibres.* A certain degree of tension is necessary to motion, which is to be determined by custom; e. g. a fencer, accustomed to one foil, cannot have the same steadiness or activity with one heavier or lighter. It is necessary also that every motion should be performed in the same situation, or posture of the body, as the person has been accustomed to employ in that motion. Thus, in any surgical operation, a certain posture is recommended; but if the operator has been accustomed to another, such a one, however awkward, becomes necessary afterwards to his right performance of that operation.

Custom also determines the degree of oscillation of which the moving fibres are capable. A person accustomed to strong muscular exertions is quite incapable of the more delicate. Thus writing is performed by small muscular contractions; but if a person has been accustomed to stronger motions with these muscles, he will write with much less steadiness.

This subject of tension, formerly attributed to the *simple fibres*, is probably more strictly applicable to the moving: for, besides a tension from flexion, there is also a tension from irritation and sympathy; e. g. the tension of the stomach from food, gives tension to the whole body. Wine and spirituous liquors give tension; e. g. a person that is so affected with tremor as scarcely to hold a glass of any of these liquors to his head, has no sooner swallowed it, than his whole body becomes steady; and after the system has been accustomed to such stimuli, if they are not applied at the usual time, the whole body becomes flaccid, and of consequence unsteady in its motions.

Again, custom gives facility of motion. This seems to proceed from the distension which the nervous power gives to the moving fibres themselves. But in whatever manner it is occasioned, the effect is obvious; for any new or unusual motion is performed with great difficulty.

It is supposed that sensation depends on a communication with the sensorium commune, by means of organs sufficiently distended with nervous influence. We have found, that sensibility is diminished by repetition. And we have now to observe, that in some cases it may be increased by repetition, owing to the nervous power itself flowing more easily into the part on account of custom. Attention to a particular object may also determine a greater influx into any particular part, and thus the sensibility and irritability of that particular part may be increased.

But with regard to facility of motion, the nervous power, no doubt, flows most easily into those parts to which it has been accustomed: yet facility of motion does not entirely depend on this, but in part also on the concurrence of the action of a great many muscles; e. g. Winslow has observed, that in performing any motion, a number of muscles concur to give a fixed point to those intended chiefly to act, as well as to others.

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others that are to vary and modify their action. This, however, is assisted by repetition and the freer influx; as by experience we know the proper attitude for giving a fixed point in order to perform any action with facility and steadiness.

Custom gives a spontaneous motion also, which seems to recur at stated periods, even when the exciting causes are removed. Thus, if the stomach has been accustomed to vomit from a particular medicine, it will require a much smaller dose than at first, nay, even the very sight or remembrance of it will be sufficient to produce the effect; and there are not wanting instances of habitual vomiting, from the injudicious administration of emetics. It is on this account that all spasmodic affections so easily become habitual, and are so difficult of cure; as we must not only avoid all the exciting causes, even in the smallest degree, but also their associations.

Custom also gives strength of motion; strength depends on strong oscillations, a free and copious influx of the nervous power, and on dense solids. But in what manner all these circumstances have been brought about by repetition, has been already explained. The effect of custom, in producing strength, may be thus illustrated: a man that begins with lifting a calf, by continuing the same practice every day, will be able to lift it when grown to the full size of a bull.

All this is of considerable importance in the practice of physic, though but too little regarded; for the recovery of weak people, in great measure, depends on the use of exercise, suited to their strength, or rather within it, frequently repeated and gradually increased. Farther, it is necessary to observe, that custom regulates the particular celerity with which each motion is to be performed: for a person accustomed, for a considerable time, to one degree of celerity, becomes incapable of a greater; *e. g.* a man accustomed to slow walking will be out of breath before he can run 20 paces. The train, or order, in which our motions are to be performed, is also established by custom; for if a man hath repeated motions, for a certain time, in any particular order, he cannot afterwards perform them in any other. Custom also very frequently associates motions and sensations: thus, if a person has been in use of associating certain ideas with the ordinary stimulus which in health excites urine, without these ideas the usual inclination will scarce excite that excretion; and, when these occur, will require it even in the absence of the primary exciting cause: *e. g.* it is very ordinary for a person to make urine when going to bed; and if he has been, for any length of time, accustomed to do so, he will ever afterwards make urine at that time, though otherwise he would often have no such inclination: by this means some secretions become, in a manner, subject to the will. The same may be said of going to stool: and this affords us a good rule in the case of costiveness; for by endeavouring to fix a stated time for this evacuation, it will afterwards, at such time, more readily return. It is farther remarkable, that motions are inseparably associated with other motions: this, perhaps, very often proceeds from the necessary degree of tension; but it also often depends merely on custom, an instance of which we have in the uniform motions of our eyes.

4. *Effects on the whole Nervous Power.* We have

found, that, by custom, the nervous influence may be determined more easily into one part than another; and therefore, as all the parts of the system are strongly connected, the sensibility, irritability, and strength of any particular part, may be thus increased. Custom also has the power of altering the natural temperament, and of inducing a new one. It is also in the power of custom to render motions periodical, and periodically spontaneous. An instance of this we have in sleep, which is commonly said to be owing to the nervous power being exhausted, the necessary consequence of which is sleep, *e. g.* a rest of the voluntary motions to favour the recruit of that power: but if this were the case, the return of sleep should be at different times, according as the causes which diminish the nervous influence operate more or less powerfully; whereas the case is quite otherwise, these returns of sleep being quite regular. This is no less remarkable in the appetites, that return at particular periods, independent of every cause but custom. Hunger, *e. g.* is an extremely uneasy sensation; but goes off of itself, if the person did not take food at the usual time. The excretions are farther proofs of this, *e. g.* going to stool, which, if it depended on any particular irritation, should be at longer or shorter intervals according to the nature of the aliment. There are many other instances of this disposition of the nervous influence to periodical motions, as the story of the idiot of Stafford, recorded by Dr Plot (*Spectator*, n^o 447.), who, being accustomed to tell the hours of the church-clock as it struck, told them as exactly when it did not strike by its being out of order. Montaigne tells us of some oxen that were employed in a machine for drawing water, who, after making 300 turns, which was the usual number, could be stimulated by no whip or goad to proceed farther. Infants, also, cry for and expect the breast at those times in which the nurse has been accustomed to give it.

Hence it would appear, that the human economy is subject to periodical revolutions, and that these happen not oftener may be imputed to variety: and this seems to be the reason why they happen oftener in the body than mind, because that is subject to greater variety. We see frequent instances of this in diseases, and in their crises; intermitting fevers, epilepsies, asthmas, &c. are examples of periodical affections: and that critical days are not so strongly marked in this country as in Greece, and some others, may be imputed to the variety and instability of our climate; but perhaps still more to the less sensibility and irritability of our system; for the exhibition of medicine has little effect in disturbing the crises, though it be commonly assigned as a cause.

We are likewise subject to many habits independent of ourselves, as from the revolutions of the celestial bodies, particularly the sun, which determines the body, perhaps, to other daily revolutions besides sleeping and waking. There are also certain habits depending on the seasons. Our connections, likewise, with respect to mankind, are means of inducing habits. Thus regularity from associating in business, induces regular habits both of mind and body.

There are many diseases which, though they arose at first from particular causes, at last continue merely through custom or habit. These are chiefly of the nervous

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nervous system. We should therefore study to counteract such habits; and accordingly Hippocrates, among other things for the cure of epilepsy, orders an entire change of the manner of life. We likewise imitate this in the clinicoch; which often resists all remedies till the air, diet, and ordinary train of life, are changed.

5. *Effects on the Blood-vessels.* From what has been said on the nervous power, the distribution of the fluids must necessarily be variously affected by custom, and with that the distribution of the different excretions; for though we make an estimate of the proportion of the excretions to one another, according to the climate and seasons, they must certainly be very much varied by custom.

On this head we may observe, that blood-letting has a manifest tendency to increase the quantity of the blood; and if this evacuation be repeated at stated times, such symptoms of repletion, and such motions are excited at the returning periods, as render the operation necessary. The same has been observed in some spontaneous hemorrhagies. These, indeed, at first, may have some exciting causes, but afterwards they seem to depend chiefly on custom. The best proof of this is with regard to the menstrual evacuation. There is certainly something originally in females, that determines that evacuation to the monthly periods. Constant repetition of this comes to fix it, independent of strong causes, either favouring or preventing repletion; e. g. blood-letting will not impede it, nor filling the body induce it: and indeed, so much is this evacuation connected with periodical motions, that it is little in our power to produce any effect by medicines but at those particular times. Thus if we would relax the uterine system, and bring back this evacuation when suppressed, our attempts would be vain and fruitless, unless given at that time when the menses should have naturally returned.

CUSTOMS, in political economy, or the duties, toll, tribute, or tariff, payable to the king upon merchandize exported and imported, form a branch of the perpetual taxes. See TAX.

The considerations upon which this revenue (or the more ancient part of it, which arose only from exports) was invested in the king, were said to be two: 1. Because he gave the subject leave to depart the kingdom, and to carry his goods along with him. 2. Because the king was bound of common right to maintain and keep up the ports and havens, and to protect the merchant from pirates. Some have imagined they are called with us *customs*, because they were the inheritance of the king by immemorial usage and the common law, and not granted him by any statute: but Sir Edward Coke hath clearly shown, that the king's first claim to them was by grant of parliament 3 Edw. I. though the record thereof is not now extant. And indeed this is in express words confessed by statute 25 Edw. I. c. 7. wherein the king promises to take no customs from merchants, without the common assent of the realm, "saving to us and our heirs the customs on wool, skins, and leather, formerly granted to us by the commonalty aforesaid." These were formerly called *hereditary customs* of the crown; and were due on the exportation only of the said three commodities, and of none other: which were styled the *staple* commodi-

ties of the kingdom, because they were obliged to be brought to those ports where the king's staple was established, in order to be there first rated, and then exported. They were denominated in the barbarous Latin of our ancient records, *custuma*, (an appellation which seems to be derived from the French word *coustum*, or *costum*, which signifies toll or tribute, and owes its own etymology to the word *coist*, which signifies price, charge, or, as we have adopted it in English, *cost*); not *consuetudines*, which is the language of our law whenever it means merely usages. The duties on wool, sheep-skins or woollens, and leather, exported, were called *custuma antiqua sive magna*: and were payable by every merchant, as well native as stranger; with this difference, that merchant-strangers paid an additional toll, viz. half as much again as was paid by natives. The *custuma parva et nova* were an impost of 3 d. in the pound, due from merchant-strangers only, for all commodities as well imported as exported; which was usually called the *alien's duty*, and was first granted in 31 Edw. I. But these ancient hereditary customs, especially those on wool and woollens, came to be of little account, when the nation became sensible of the advantages of a home manufacture, and prohibited the exportation of wool by statute 11 Edw. III. c. 1.

Other customs payable upon exports and imports were distinguished into subsidies, tonnage, poundage, and other imposts. Subsidies were such as were imposed by parliament upon any of the staple commodities before mentioned, over and above the *custuma antiqua et magna*: tonnage was a duty upon all wines imported, over and above the prisage and butlerage aforesaid: poundage was a duty imposed *ad valorem*, at the rate of 12 d. in the pound, on all other merchandize whatsoever: and the other imposts were such as were occasionally laid on by parliament, as circumstances and times required. These distinctions are now in a manner forgotten, except by the officers immediately concerned in this department; their produce being in effect all blended together, under the one denomination of the *customs*.

By these we understand, at present, a duty or *Blackst. Customs.* subsidy paid by the merchant at the quay upon all imported as well as exported commodities, by authority of parliament; unless where, for particular national reasons, certain rewards, bounties, or drawbacks, are allowed for particular exports or imports. The customs thus imposed by parliament are chiefly contained in two books of rates, set forth by parliamentary authority; one signed by Sir Harbottle Grimston, speaker of the house of commons in Charles II.'s time; and the other an additional one signed by Sir Spenser Compton, speaker in the reign of George I. to which also subsequent additions have been made. Aliens pay a larger proportion than natural subjects, which is what is now generally understood by the *aliens duty*; to be exempted from which is one principal cause of the frequent applications to parliament for acts of naturalization.

These customs are then, we see, a tax immediately paid by the merchant, although ultimately by the consumer. And yet these are the duties felt least by the people; and, if prudently managed, the people hardly consider that they pay them at all. For the merchant

Customs.

Customs
||
Custos Bre-
vium.

merchant is easy, being sensible he does not pay them for himself; and the consumer, who really pays them, confounds them with the price of the commodity: in the same manner as Tacitus observes, that the emperor Nero gained the reputation of abolishing the tax of the sale of slaves, though he only transferred it from the buyer to the seller; so that it was, as he expresses it, *remissum magis specie, quam vi: quia, cum venditor pendere juberetur, in partem pretii emptoribus accrescebat*. But this inconvenience attends it on the other hand, that these imposts, if too heavy, are a check and cramp upon trade; and especially when the value of the commodity bears little or no proportion to the quantity of the duty imposed. This in consequence gives rise also to smuggling, which then becomes a very lucrative employment: and its natural and most reasonable punishment, viz. confiscation of the commodity, is in such cases quite ineffectual; the intrinsic value of the goods, which is all that the smuggler has paid, and therefore all that he can lose, being very inconsiderable when compared with his prospect of advantage in evading the duty. Recourse must therefore be had to extraordinary punishments to prevent it; perhaps even to capital ones: which destroys all proportion of punishment, and puts murderers upon an equal footing with such as are really guilty of no natural, but merely a positive, offence.

There is also another ill consequence attending high imposts on merchandize, not frequently considered, but indisputably certain; that the earlier any tax is laid on a commodity, the heavier it falls upon the consumer in the end; for every trader through whose hands it passes must have a profit, not only upon the raw material and his own labour and time in preparing it, but also upon the very tax itself, which he advances to the government; otherwise he loses the use and interest of the money which he so advances. To instance in the article of foreign paper. The merchant pays a duty upon importation, which he does not receive again till he sells the commodity, perhaps at the end of three months. - He is therefore equally intitled to a profit upon that duty which he pays at the custom-house, as to a profit upon the original price which he pays to the manufacturer abroad; and considers it accordingly in the price he demands of the stationer. When the stationer sells it again, he requires a profit of the printer or bookseller upon the whole sum advanced by him to the merchants: and the bookseller does not forget to charge the full proportion to the student or ultimate consumer; who therefore does not only pay the original duty, but the profits of these three intermediate traders, who have successively advanced it for him. This might be carried much farther in any mechanical, or more complicated, branch of trade.

CUSTOM-HOUSE, an office established by the king's authority in the maritime cities, or port-towns, for the receipt and management of the customs and duties of importation and exportation, imposed on merchandises, and regulated by books of rates.

CUSTOS BREVIUM, the principal clerk belonging to the court of common pleas, whose business it is to receive and keep all the writs made returnable in that court, filing every return by itself; and, at the end of each term, to receive of the prothonotaries all the records of the nisi prius, called the *postears*.

Custos Rotulorum, an officer who has the custody of the rolls and records of the sessions of peace, and also of the commission of the peace itself.

He usually is some person of quality, and always a justice of the peace, of the quorum, in the county where he is appointed.

Custos Spiritualium, he that exercises the spiritual jurisdiction of a diocese, during the vacancy of any see, which, by the canon-law, belongs to the dean and chapter; but at present, in England, to the archbishop of the province, by prescription.

Custos Temporalium, was the person to whom a vacant see or abbey was given by the king, as supreme lord. His office was, as steward of the goods and profits, to give an account to the escheator, who did the like to the exchequer.

CUT-A-FEATHER, in the sea-language. If a ship has too broad a bow, it is common to say, *she will not cut a feather*; that is, she will not pass through the water so swift as to make it foam or froth.

CUT Purse, in law; if any person *clam & secreta*, and without the knowledge of another, cut his purse or pick his pocket, and steal from thence above the value of twelve pence, it is felony excluded clergy.

Cut-purses or *saccularii*, were more severely punished than common thieves by the Roman and Athenian laws.

CUT Water, the sharp part of the head of a ship below the beak. It is so called because it cuts or divides the water before it comes to the bow, that it may not come too suddenly to the breadth of the ship, which would retard her.

CUTANEOUS, in general, an appellation given to whatever belongs to the cutis or skin. Thus, we say *cutaneous* eruptions; the itch is a *cutaneous* disease.

CUTH, or *CUTHAH* (anc. geog.), a province of Assyria, which, as some say, lies upon the Araxes, and is the same with Cush: but others take it to be the same with the country which the Greeks call *Susiana*, and which to this very day, says Dr Wells, is by the inhabitants called *Chusestan*. F. Calmet is of opinion that Cuthah and Scythia are the same place, and that the Cuthites who were removed into Samaria by Salmaneser (2 Kings xvii. 24.) came from Cush or Cuth, mentioned in Gen. ii. 13. See the article *CUSH*.—The Cuthites worshipped the idol Nergal. id. ibid. 30. These people were transplanted into Samaria in the room of the Israelites, who before inhabited it. Calmet is of opinion, that they came from the land of Cush, or Cuthah upon the Araxes; and that their first settlement was in the cities of the Medes, subdued by Salmaneser and the kings of Syria his predecessors. The scripture observes, that the Cuthites, upon their arrival in this new country, continued to worship the gods formerly adored by them beyond the Euphrates. Esarhaddon king of Assyria, who succeeded Sennacherib, appointed an Israelitish priest to go thither, and instruct them in the religion of the Hebrews. But these people thought they might reconcile their old superstition with the worship of the true God. They therefore framed particular gods for themselves, which they placed in the several cities where they dwelt. The Cuthites then worshipped both the Lord and their false gods together, and chose the lowest of the people to make

icle priests of them in the high places; and they continued this practice for a long time. But afterwards they forsook the worship of idols, and adhered only to the law of Moses, as the Samaritans who are descended from the Cuthites do at this day.

CUTICLE, the scarf-skin. See ANATOMY, n^o 74.

CUTICULAR, the same with CUTANEOUS.

CUTIS, the skin. See ANATOMY, n^o 76.

CUTTER, a small vessel, commonly navigated in the channel of England. It is furnished with one mast, and rigged as a sloop. Many of these vessels are used in an illicit trade, and others are employed by government to take them; the latter of which are either under the direction of the admiralty or custom-house. See a representation of a cutter of this sort in the plate referred to from the article VESSEL.

CUTTER, is also a small boat used by ships of war.

CUTTER of the Tallies, an officer of the exchequer, whose business is to provide wood for the tallies, to cut or notch the sum paid upon them; and then to cast them into court, to be written upon. See TALLY.

CUTTING, a term used in various senses and various arts; in the general, it implies a division or separation.

CUTTING is particularly used in heraldry, where the shield is divided into two equal parts, from right to left, parallel to the horizon, or in the fesse-way.

The word also is applied to the honourable ordinaries, and even to animals and moveables, when they are divided equally the same way; so, however, as that one moiety is colour, the other metal. The ordinaries are said to be cut, couped, when they do not come full to the extremities of the shield.

CUTTING, in chirurgery, denotes the operation of extracting the stone out of the bladder by section. See LITHOTOMY.

CUTTING in coinage. When the laminæ or plates of the metal, be it gold, silver, or copper, are brought to the thickness of the species to be coined, pieces are cut out, of thickness, and nearly of the weight, of the intended coin; which are now called *planchets*, till the king's image hath been stamped on them. The instrument wherewith they cut, consists of two pieces of steel, very sharp, and placed over one another; the lower a little hollow, representing a mortar, the other a pestle. The metal put between the two, is cut out in the manner described under COINAGE.

Note. Medallions, where the relievo is to be great, are not cut, but cast or moulded.

CUTTING, in the manege, is when the horse's feet interfere; or when with the shoe of one foot he beats off the skin from the pastern joint of another foot. This is more frequent in the hind feet than the fore: the causes are either weariness, weakness in the reins, not knowing how to go, or ill shoeing.

CUTTING, in painting, the laying one strong lively colour over another, without any shade or softening. The cutting of colours has always a disagreeable effect.

CUTTING in wood, a particular kind of sculpture or engraving; denominated from the matter wherein it is employed.

It is used for various purposes; as for figured letters, head and tail-pieces of books; and even for schemes and other figures, to save the expences of en-

graving on copper: and for prints and stamps for paper, callicoës, linens, &c. Cutting.

The invention of cutting in wood, as well as that in copper, is ascribed to a goldsmith of Florence; but it is to Albert Durer and Lucas they are both indebted for their perfection. See ENGRAVING, and PRINTING.

One Hugo de Carpi invented a manner of cutting in wood, by means whereof the prints appeared as if painted in clair-obscur. In order to this, he made three kinds of stamps for the same design; which were drawn, after one another, through the pres for the same print: they were so conducted, as that one served for the grand lights, a second for the demi-teints, and a third for the outlines and the deep shadows.

The art of cutting in wood was certainly carried to a very great pitch above two hundred years ago; and might even vie, for beauty and justness, with that of engraving in copper. At present it is in a low condition, as having been long neglected, and the application of artists wholly employed on copper, as the more easy and promising province: not but that wooden cuts have the advantage of those in copper on many accounts; chiefly for figures and devices in books; as being printed at the same time and in the same pres as the letters: whereas for the other, there is required a particular impression. In the representation of plants and flowers, and in designs for paper-hangings, where the outline only is wanted to be printed, in a bold full manner, this method will be found cheaper and more effectual than the use of copper-plates.

The cutters in wood begin with preparing a plank or block of the size and thickness required, and very even and smooth on the side to be cut: for this, they usually take beech, pear-tree, or box; though the latter is the best, as being the closest, and least liable to be worm-eat. The wood being cut into a proper form and size, should be planed as even and truly as possible: it is then fit to receive the drawing or chalking of the design to be engraved. But the effect may be made more apparent, and the ink, if any be used in drawing, be prevented from running, by spreading thinly on the surface of the wood white lead tempered with water, by grinding with a brush pencil, and afterwards rubbing it well with a fine-linen rag whilst it is wet; and when it is dry, brushing off any loose or powdery part with a soft pencil.

On this block they draw their design with a pen or pencil, just as they would have it printed. Those who cannot draw their own design, as there are many who cannot, make use of a design furnished them by another; fastening it upon the block with paste made of flour and water, with a little vinegar or gum tragacanth; the strokes or lines turned towards the wood.

When the paper is dry, they wash it gently over with a sponge dipped in water; which done, they take off the paper by little and little, still rubbing it a little first with the tip of the finger; till at length there be nothing left on the block but the strokes of ink that form the design, which mark out so much of the block as is to be spared or left standing. Figures are sometimes cut out of prints, by taking away all the white part or blank paper, and cemented with gum-water to the surface of the wood. The rest they

Cuttings
||
Cutts.

cut off, and take away very curiously with the points of very sharp knives, or little chissels or gravers, according to the bigness or delicacy of the work; for they need no other instruments.

It differs from engraving in copper, because in the former, the impression comes from the prominent parts or strokes left uncut; whereas in the latter, it comes from the channels cut in the metal.

The manner of printing with wooden prints is much more expeditious and easy than that of copper-plate: because they require only to be dipt in the printing-ink, and impressed on the object in the same manner and with the same apparatus as the letter-printing is managed; and for purposes that do not require great correctness, the impression is made by the hand only, a proper handle being fixed to the middle of the print, by which it is first dipped in the ink, spread by means of a brush on a block of proportionable size covered with leather; and then lifted up instantly, and dropped with some little force on the paper which is to receive the impression.

CUTTINGS, or slips, in gardening, the branches or sprigs of trees or plants, cut or slipped off to set again; which is done in any moist fine earth.

The best season is from August to April; but care is to be taken when it is done, the sap be not too much in the top, lest the cut die before that part in the earth have root enough to support it: nor yet must it be too dry or scanty; the sap in the branches assisting it to take root.

In providing the cuttings, such branches as have joints, knots, or burrs, are to be cut off two or three inches beneath them, and the leaves to be stripped off so far as they are set in the earth. Small top-branches, of two or three years growth, are fittest for this operation.

CUTTLE-FISH. See *SEPIA*. The bone of the cuttle-fish is hard on one side, but soft and yielding on the other; so as readily to receive pretty neat impressions from medals, &c. and afterwards to serve as a mould for casting metals, which thus take the figure of the original: the bone is likewise frequently employed for cleaning or polishing silver. This fish contains in a certain distinct vessel a fluid as black as ink: which it is said to shed when pursued, and thus to conceal itself by discolouring the water. The particular qualities of this liquor are not yet determined. Dr Leigh says, he saw a letter which had been written with it ten years before, and which still continued. Some report that the ancients made their ink from it; and others, that it is the basis of China, or Indian-ink: but both these accounts appear to have little foundation. Pliny, speaking of the inks made use of in his time, after observing that the cuttle-fish is in this respect of a wonderful nature, adds expressly, that ink was not made from it.

CUTTS (John lord), a soldier of most hardy bravery in king William's wars, was son of Richard Cutts, Esq; of Matching in Essex; where the family were settled about the time of Henry VI. and had a great estate. He entered early into the service of the duke of Monmouth, was aid-de-camp to the duke of Lorraine in Hungary, and signalized himself in a very extraordinary manner at the taking of Buda by the Imperialists in 1686; which important place had

been for near a century and a half in the hands of the Turks. Mr Addison, in a Latin poem worthy of the Augustan age, plainly hints at Mr Cutts's distinguished bravery at that siege. Returning to England at the revolution, he had a regiment of foot; was created baron of Gowran in Ireland, Dec. 6. 1690; appointed governor of the isle of Wight, April 14. 1693; was made a major-general; and, when the assassination project was discovered, 1695-6, was captain of the king's guard. In 1698 he was complimented by Mr John Hopkins, as one to whom "a double crown was due," as a hero and a poet. He was colonel of the Coldstream, or second regiment of guards, in 1701; when Mr Steele, who was indebted to his interest for a military commission, inscribed to him his first work, "The Christian Hero." On the accession of queen Anne, he was made a lieutenant-general of the forces in Holland; commander in chief of the forces in Ireland, under the duke of Ormond, March 23. 1704-5; and afterwards one of the lords justices of that kingdom, to keep him out of the way of action; a circumstance which broke his heart. He died at Dublin, Jan. 26. 1706-7, and is buried there in the cathedral of Christ church. He wrote a poem on the death of queen Mary; and published, in 1687, "Poetical exercises, written upon several occasions, and dedicated to her royal Highness Mary princess of Orange." It contains, besides the dedication signed J. Cutts, verses to that princess; a poem on Wisdom; another to Mr Waller on his commending it; seven more copies of verses (one of them called *La Muse Cavalier*, which had been ascribed to lord Peterborough, and as such mentioned by Mr Walpole in the list of that nobleman's writings), and 11 songs; the whole composing but a very thin volume; which is by no means so scarce as Mr Walpole supposes it to be. A specimen of his poetry (of which the five first lines are quoted by Steele in his fifth Tatler) is here added:

Only tell her that I love,
Leave the rest to her and fate;
Some kind planet from above
May perhaps her pity move;
Lovers on their star must wait
Only tell her that I love.
Why, oh, why should I despair?
Mercy's pictur'd in her eye:
If she once vouchsafe to hear,
Welcome hope, and welcome fear.
She's too good to let me die;
Why, oh, why should I despair?

CYATHUS, *κυαθος* (from the verb *κυειν*, to pour out), was a common measure among the Greeks and Romans, both of the liquid and dry kind. It was equal to an ounce, or the twelfth part of a pint. The cyathus was made with an handle like our punch-ladle. The Roman topers were used to drink as many *cyathi* as there were muses, i. e. nine; also as many as there were letters in the patron's name. Thus, they had modes of drinking similar to the modern health-drinking or toasting. They say, that the cyathus of the Greeks weighed 10 drachms; and Galen says the same; though elsewhere he says, that a cyathus contains 12 drachms of oil, 13 drachms and one scruple of wine, water, or vinegar, and 18 drachms of honey. Galen says, that among the Veterinarii the cyathus contained two ounces.

CYAXARES, son of Phraortes, was king of Media.

Cutts
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Cyaxar

axares
||
Cybele.

dia and Persia. He bravely defended his kingdom, which the Scythians had invaded. He made war against Alyattes king of Lydia; and subjected to his power all Asia beyond the river Halys. He died after a reign of 40 years, in the year of Rome 160.

CYAXARES II. is supposed by some to be the same as Darius the Mede. He was son of Astyages king of Media. He added seven provinces to his father's dominions, and made war against the Assyrians, whom Cyrus favoured.

CYBEBE, a name of Cybele, from *κυβηβειν*, because in the celebration of her festivals men were driven to madness.

CYBELE, in Pagan mythology, the daughter of Cœlus and Terra, and wife of Saturn. She is supposed to be the same as Ceres, Rhea, Ops, Vesta, Bona Mater, Magna Mater, Berecynthia, Dindymene, &c. According to Diodorus, she was the daughter of a Lydian prince, and as soon as she was born she was exposed on a mountain. She was preserved by sucking some of the wild beasts of the forest, and received the name of Cybele from the mountain where her life had been preserved. When she returned to her father's court, she had an intrigue with Atys, a beautiful youth whom her father mutilated, &c. All the mythologists are unanimous in mentioning the amours of Atys and Cybele. In Phrygia the festivals of Cybele were observed with the greatest solemnity. Her priests, called *Corybantes*, *Galli*, &c. were not admitted in the service of the goddesses without a previous mutilation. In the celebration of the festivals, they imitated the manners of madmen, and filled the air with shrieks and howlings mixed with the confused noise of drums, tabrets, bucklers, and spears. This was in commemoration of the sorrow of Cybele for the loss of her favourite Atys. Cybele was generally represented as a robust woman far advanced in her pregnancy, to intimate the fecundity of the earth. She held keys in her hand, and her head was crowned with rising turrets, and sometimes with the leaves of an oak. She sometimes appears riding in a chariot drawn by two tame lions: Atys follows by her side, carrying a ball in his hand, and supporting himself upon a fir tree which is sacred to the goddesses. Sometimes she is represented with a sceptre in her hand, with her head covered with a tower. She is also seen with many breasts, to show that the earth gives aliments to all living creatures; and she generally carries two lions under her arms. From Phrygia the worship of Cybele passed into Greece, and was solemnly established at Eleusis under the name of the *Eleusinian mysteries of Ceres*. The Romans, by order of the Sibylline books, brought the statue of the goddesses from Pessinus into Italy; and when the ship which carried it had run on a shallow bank of the Tiber, the virtue and innocence of Claudia was vindicated in removing it with her girdle. It is supposed that the mysteries of Cybele were first known about 257 years before the Trojan war, or 1580 years before the Augustan age. The Romans were particularly superstitious in washing every year, on the 6th of the kalends of April, the shrine of this goddess in the waters of the river Almon. There prevailed many obsecrities in the observation of the festivals; and the priests themselves were the

most eager to use indecent expressions, and to show their unbanded licentiousness by the impurity of their actions.

CYBELICUM MARMOR, a name given by the ancients to a species of marble dug in a mountain of that name in Phrygia. It was of an extremely bright white, with broad veins of bluish black.

CYCAS, in botany: A genus of plants belonging to the first natural order, *Palme*. The fruit is a dry plum with a bivalved kernel. There is but one species described by Linnæus, viz. the *circinalis*, or sago-tree, which grows spontaneously in the East Indies, and particularly on the coast of Malabar. It runs up with a straight trunk to 40 feet or more, having many circles the whole length, occasioned by the old leaves falling off; for they standing in a circular order round the stem, and embracing it with their base, whenever they drop, they leave the marks of their adhesion behind. The leaves are pinnated, and grow to the length of seven or eight feet. The pinnæ or lobes are long, narrow, entire, of a shining green, all the way of a breadth, lance-shaped at the point, are closely crowded together, and stand at right angles on each side the midrib, like the teeth of a comb. The flowers are produced in long bunches at the footstalks of the leaves, and are succeeded by oval fruit, about the size of large plums, of a red colour when ripe, and a sweet flavour. Each contains a hard brown nut, enclosing a white meat, which tastes like a chestnut.

This is a valuable tree to the inhabitants of India, as it not only furnishes a considerable part of their constant bread, but also supplies them with a large article of trade. The body contains a farinaceous substance, which they extract from it and make into bread in this manner: they saw the body into small pieces, and after beating them in a mortar, pour water upon the mass; this is left for some hours to settle. When fit, it is strained through a cloth, and the finer particles of the mealy substance running through with the water, the gross ones are left behind and thrown away. After the farinaceous part is sufficiently subsided, the water is poured off, and the meal being properly dried, is occasionally made into cakes and baked. These cakes are said to eat nearly as well as wheaten bread, and are the support of the inhabitants for three or four months in the year.

The same meal more finely pulverized, and reduced into granules, is what is called *Sago*, which is sent into all parts of Europe, and sold in the shops for a great strengthener and restorative.

There is a sort of sago made in the West Indies, and is sent to Europe in the same manner as that from the East; but the West India sago is far inferior in quality to the other. It is supposed to be made from the pith of the *areca oleracea*. See *ARECA*.

The *brood boom* (or bread-tree) of the Hottentots, a plant lately discovered by professor Thunberg, is described as a new species of this genus, by the name of *cycas Caffra*, in the *Nova Acta Reg. Soc. Scient. Upsl.* vol. ii. p. 283. tab. V. The pith, or *medulla*, which abounds in the trunk of this little palm, Mr Sparman informs us, is collected and tied up in dressed calf or sheep-skins, and then buried in the earth for the space of several weeks, till it becomes sufficiently

Cybell-
cum,
Cycas.

Cyceon
||
Cyclamen.

mellow and tender to be kneaded up with water into a paste, of which they afterwards make small loaves or cakes, and bake them under the ashes. Other Hot-tentots, not quite so nice, nor endued with patience enough to wait this tedious method of preparing it, are said to dry and roast the pith or marrow, and afterwards make a kind of brown frumenty of it.

CYCEON, from *κωκελίς*, "to mix;" a name given by the ancient poets and physicians to a mixture of meal and water, and sometimes of other ingredients. These constituted the two kinds of cyceon; the coarser being of the water and meal alone; the richer and more delicate composed of wine, honey, flour, water, and cheese. Homer, in the 11th Iliad, talks of cyceon made with cheese and the meal of barley mixed with wine, but without any mention either of honey or water; and Ovid, describing the draught of cyceon given by the old woman of Athens to Ceres, mentions only flour and water. Dioscorides understood the word in both these senses; but extolled it most in the coarse and simple kind: he says, when prepared with water alone, it refrigerates and nourishes greatly.

CYCINNIS, a Grecian dance, so called from the name of its inventor, one of the satyrs belonging to Bacchus. It consisted of a combination of grave and gay movements.

CYCLADES *INSULAE*; islands anciently so called, as Pliny informs us, from the *Cyclus* or orb in which they lie; beginning from the promontory *Geraestum* of Euboea, and lying round the island *Delos*, (Pliny).

Where they are, and what their number, is not so generally agreed. Strabo says, they were at first reckoned 12, but that many others were added: yet most of them lie to the south of *Delos*, and but few to the north, so that the middle or centre, ascribed to *Delos*, is to be taken in a loose, not a geometrical sense. Strabo recites them after *Artemidorus*, as follows: *Helena*, *Ceos*, *Cynthus*, *Scriphus*, *Melus*, *Siphus*, *Cimolus*, *Prepefinthus*, *Olearus*, *Naxus*, *Parus*, *Syrus*, *Myconus*, *Tenus*, *Andrus*, *Gyarus*; but he excludes from the number, *Prepefinthus*, *Olearus*, and *Gyarus*.

CYCLAMEN, *SOWBREAD*: A genus of the monogynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 21st order, *Precia*. The corolla is verticillated, with the tube very short, and the throat prominent; the berry is covered with the capsule. There are but two species; which, however, produce many beautiful varieties. They are low, herbaceous, showery perennials of the tuberous rooted kind, with numerous, angular, heart-shaped, spotted, marbled leaves; with many fleshy foot-stalks six inches high, carrying monopetalous, five-parted reflexed flowers of various colours. All the varieties are extremely ornamental, and some of the flowers very fragrant. They may be planted in any of the common borders, but require to be sheltered from hard frosts by being covered with mats. They should also have a light dry soil, otherwise their roots are apt to rot. The species are propagated by seeds, and the particular varieties by dividing their roots.

The root of the cyclamen has, when fresh, an extremely acrimonious burning taste, which it loses almost entirely on being dried. It is recommended as

an errhine; in cataplasms for scorrhous and cancerous tumors; and internally as a cathartic, detergent, and aperient. It operates very slowly, but with great virulence, inflaming the fauces and intestines.

CYCLE, in chronology, a certain period or series of numbers, which regularly proceed from the first to the last, and then return again to the first, and so circulate perpetually. See *CHRONOLOGY*, n^o 26.

Cycle of Indiction, a period of 15 years, in use among the Romans. It has no connection with the celestial motion, but was instituted, according to *Baronius*, by *Constantine*; who having reduced the time which the Romans were obliged to serve to 15 years, he was consequently obliged every 15 years to impose, or *indicere* according to the Latin expression, an extraordinary tax for the payment of those who were discharged; and hence arose this cycle, which, from the Latin word *indicere*, was styled *indiction*.

Cycle of the Moon, called also the *golden number*, and the *Metonic cycle* from its inventor *Meton* the Athenian, is a period of 19 years, which when they are completed, the new moons and full moons return on the same days of the month, so that on whatever days the new and full moons fall this year, 19 years hence they will happen on the very same days of the month, though not at the same hour, as *Meton* and the fathers of the primitive church thought; and therefore, at the time of the council of *Nice*, when the method of finding the time for observing the feast of *Easter* was established, the numbers of the lunar cycle were inserted in the kalendar, which, upon the account of their excellent use, were set in golden letters, and the year of the cycle called the *golden number* of that year.

Cycle of the Sun, a revolution of 28 years, which being elapsed, the dominical or Sunday-letters return to their former place, and proceed in the same order as before, according to the *Julian kalendar*.

CYCLISUS, in surgery, an instrument in the form of a half moon, used in scraping the skull, in case of fractures of that part.

CYCLOID, a curve on which the doctrine of pendulums, and time-measuring instruments, in a great measure depend; *Mr Huygens* demonstrated, that from whatever point or height a heavy body, oscillating on a fixed centre, begins to descend, while it continues to move in a cycloid, the time of its falls or oscillations will be equal to each other. It is likewise demonstrable, that it is the curve of quickest descent, *i. e.* a body falling in it, from any given point above, to another, not exactly under it, will come to this point in a less time than in any other curve passing through those two points.

CYCLOPÆDIA, or *ENCYCLOPÆDIA*, denotes the circle or compass of arts and sciences. A cyclopædia, say the authors of the French *Encyclopédie*, ought to explain as much as possible the order and connection of human knowledge.

CYCLOPS, in fabulous history, the sons of *Neptune* and *Amphitrite*; the principle of whom were *Brontes*, *Steropes*, and *Peræmon*; but their whole number amounted to above an hundred. *Jupiter* threw them into *Tartarus* as soon as they were born; but they were delivered at the intercession of *Tellus*, and became

Cycle
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Cyclops

Cyclopterus. came the assistants of Vulcan. They were of prodigious stature, and had each only one eye, which was placed in the middle of their foreheads.

Some mythologists say, that the Cyclops signify the vapours raised in the air, which occasion thunder and lightning; on which account they are represented as forging the thunderbolts of Jupiter. Others represent them as the first inhabitants of Sicily, who were cruel, of a gigantic form, and dwelt round mount *Ætna*.

CYCLOPTERUS, the **SUCKER**, in ichthyology, a genus belonging to the order of amphibia nantes. The head is obtuse, and furnished with saw-teeth: there are four rays in the gills; and the belly-fins are connected together in an orbicular form. The species are,

1. The **lumpus**, or **lump-fish**, grows to the length of 19 inches, and weighs seven pounds. The shape of the body is like that of the bream, deep and very thick, and it swims edge-ways. The back is sharp and elevated; the belly flat, of a bright crimson colour. Along the body there run several rows of sharp bony tubercles, and the whole skin is covered with small ones. The pectoral fins are large and broad, almost uniting at their base. Beneath these is the part by which it adheres to the rocks, &c. It consists of an oval aperture, surrounded with a fleshy, muscular, and obtuse soft substance; edged with many small threaded appendages, which concur as so many clasps. The tail and vent-fins are purple. By means of this part it adheres with vast force to any thing it pleases. As a proof of its tenacity, it hath been known, that in flinging a fish of this species just caught into a pail of water, it fixed itself so firmly to the bottom, that on taking the fish by the tail, the whole pail by that means was lifted, though it held some gallons, without once making the fish quit its hold. These fish resort in multitudes during spring to the coast of Sutherland near the Ord of Caithness. The seals which swarm beneath, prey greatly upon them, leaving the skins; numbers of which, thus emptied, float ashore at that season. It is easy to distinguish the place where the seals are devouring this or any other unctuous fish, by a smoothness of the water immediately above the spot. This fact is now established; it being a tried property of oil to still the agitation of the waves and render them smooth. Great numbers of lump-fish are found in the Greenland seas during the months of April and May, when they resort near the shore to spawn. Their roe is remarkably large, which the Greenlanders boil to a pulp and eat. They are extremely fat, which recommends them the more to the natives, who admire all oily food. They call them *nipisets* or *cat-fish*, and take quantities of them during the season. The fish is sometimes eaten in England, being stewed like carp; but is both flabby and insipid.

2. The **liparis** takes the name of *sea-snail* from the soft and unctuous texture of its body, resembling that of the land-snail. It is almost transparent, and soon dissolves and melts away. It is found in the sea near the mouths of great rivers, and hath been seen full of spawn in January. The length is five inches; the colour a pale brown, sometimes finely streaked with a darker. Beneath the throat is a round depression of

a whitish colour like the impression of a seal, surrounded by twelve small pale yellow tubera, by which probably it adheres to the stones like the other species.

3. The lesser sucking-fish is found in different parts of the British seas. It is about four inches in length; the skin without scales, slippery, and of a dusky colour. It hath also an apparatus for adhering to stones and rocks similar to the others.

CYDER, or **CIDER**, an excellent drink made of the juice of apples, especially of the more curious table kinds; the juice of these being esteemed more cordial and pleasant than that of the wild or harsh kinds. In making this drink it hath long been thought necessary, in every part of England, to lay the harder cyder-fruits in heaps for some time before breaking their pulps; but the Devonshire people have much improved this practice. In other counties the method is to make these heaps of apples in a house, or under some covering inclosed on every side. This method hath been found defective, because, by excluding the free air, the heat soon became too violent, and a great perspiration ensued, by which in a short time the loss of juices was so great, as to reduce the fruit to half their former weight, attended with a general rotteness, rancid smell, and disagreeable taste. In the South-hams, a middle way has been pursued, to avoid the inconveniences and loss attending the above. They make their heaps of apples in an open part of an orchard, where, by the means of a free air and less perspiration, the desired maturity is brought about, with an inconsiderable waste of the juices and decay of the fruit, entirely free of rankness; and though some apples rot even in this manner, they are very few, and are still fit for use; all continue plump and full of juices, and very much heighten the colour of cyders; without ill taste or smell.

In pursuing the Devonshire method, it is to be observed, 1. That all the promiscuous kinds of apples that have dropped from the trees, from time to time, are to be gathered up and laid in a heap by themselves, and to be made into cyder after having so lain about ten days. 2. Such apples as are gathered from the trees, having already acquired some degree of maturity, are likewise to be laid in a heap by themselves for about a fortnight. 3. The later hard fruits, which are to be left on the trees till the approach of frost is apprehended, are to be laid in a separate heap, where they are to remain a month or six weeks, by which, notwithstanding frost, rain, &c. their juices will receive such a maturation, as will prepare them for a kindly fermentation, and which they could not have attained on the trees by means of the coldness of the season.

It is observable, that the riper and mellowier the fruits are at the time of collecting them into heaps, the shorter should be their continuance there; and on the contrary, the harsher, immaturer, and harder they are, the longer they should rest.

These heaps should be made in an even and open part of an orchard, without any regard to covering from rain, dews, or what else may happen during the apples staying there; and whether they be carried in and broke in wet or dry weather, the thing is all the same. If it may be objected that during their having,

Cyder
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Cydnus.

lain together in the heap, they may have imbibed great humidity, as well from the air as from the ground, rain, dews, &c. which are mixed with their juices; the answer is, this will have no other effect than a kindly diluting, natural to the fruit, by which means a speedier fermentation ensues, and all heterogeneous humid particles are thrown off.

The apples are then ground, and the pumice is received in a large open-mouthed vessel, capable of containing as much thereof as is sufficient for one making, or one cheese. Though it has been a custom to let the pumice remain some hours in the vessel appropriated to contain it, yet that practice is by no means commendable; for if the fruits did not come ripe from the trees, or otherwise matured, the pumice, remaining in the vat too long, will acquire such harshness and coarseness from the skins as is never to be got rid of; and if the pumice is of well ripened fruit, the continuing too long there will occasion it to contract a sharpness that very often is followed with want of spirit and pricking; nay, sometimes it even becomes vinegar, or always continues of a wheyish colour; all which proceeds from the heat of fermentation that it almost instantly falls into on lying together; the pumice therefore should remain no longer in the vat than until there may be enough broke for one pressing, or that all be made into a cheese, and pressed the same day it is broken.

In Plate CLIV. is a perspective view of the cyder-press and apple-mill.

A, B, the bottom or lower beam; C, D, the upper beam; 5, 6, 7, 8, 9, the uprights; 4, 4, e, e, spurs; Z, 2, 12, braces, or cross-pieces; a, b, capitals; X, blocks; g, the screw; E, the back or receiver; F, the cheese or cake of pumice, placed on the stage or bafon; G, the stage or bafon; 10, 10, beams that support the pieces of which the bafon is composed; 11, perpendicular pieces for supporting these beams; H, the buckler; R, S, Q, a circular trough of the apple-mill; T, L, V, compartments or divisions, for different sorts of apples; M, the mill-stone; L, M, axis of the mill stone; N, the spring-tree bar.

Cyder-Spirit, a spirituous liquor drawn from cyder by distillation, in the same manner as brandy from wine. The particular flavour of this spirit is not the most agreeable, but it may with care be divested wholly of it, and rendered a perfectly pure and insipid spirit upon rectification. The traders in spirituous liquors are well enough acquainted with the value of such a spirit as this; they can give it the flavours of some other kinds, and sell it under their names, or mix it in large proportion with the foreign brandy, rum, and arack, in the sale, without any danger of a discovery of the cheat.

CYDIUS, a painter who made a painting of the Argonauts in the 11th Olympiad. This celebrated piece was bought by the orator Hortensius for 164 talents.

CYDNUS (anc. geog.), a river of Cilicia; rising in mount Taurus, to the north of Tarsus, through whose middle it ran, in a very clear and cold stream, which had almost proved fatal to Alexander on bathing in it; falling into the sea at a place called Rhegma, a breach, the sea breaking in there, and affording

the people of Tarsus a station or port for their ships. The water of the Cydnus is commended by Strabo, as of service in nervous disorders and the gout. Cydonia.

CYDONIA (anc. geog.), one of the three most illustrious cities of Crete, situated in the north-west of the island, with a locked port, or walled round. The circumstances of the founding of Cydon are uncertain. Stephen of Byzantium says, that it was at first named Apollonia from Cydon the son of Apollo. Pausanias ascribes the founding of it to Cydon the son of Tegetus, who travelled into Crete. Herodotus affirms, that it was founded by the Samians, and that its temples were erected by them. Alexander, in the first book of the Cretans, informs us, that it received its name from Cydon the son of Mercury. Cydon was the largest city in the island; and was enabled to hold the balance between her contending neighbours. She sustained some famous sieges. Phalucus, general of the Phocceans, making an expedition into Crete with a fleet and a numerous army, invested Canea both by sea and land; but lost his army and his life before its walls. In succeeding times, when Metellus subdued the island, he assailed Cydon with all his forces; and after combating an obstinate resistance, subjected it to the power of Rome. Cydon occupied the present situation of Canea; only extending half a league farther towards St Odero; where on the sea shore the remains are still to be seen of some ancient walls which appear to have been of a very solid construction. See CANEA.

CYDONIA, the QUINCE; so called from Cydon, a town of Crete, famous for its abounding with this fruit. Linnæus has joined this genus to the apple and pear; but as there is such a remarkable difference between the fruits, we follow Mr Miller, who treats the quince as a genus by itself.

Species. 1. The oblonga, with an oblong fruit, lengthened at the base. 2. The maliforma, with oval leaves woolly on their under side, and lengthened at their base. 3. The lusitanica, with obverse oval leaves, woolly on their under side. There are some other varieties of this fruit propagated in fruit-gardens, and in the nurseries for sale; one of which is a soft eatable fruit, another very astringent, and a third with a very small fruit cottony all over, which is scarce worth keeping. These Mr Miller supposed to be feminal variations, but the three others to be distinct species. The Portugal quince is the most valuable: its pulp turns to a fine purple when stewed or baked, and becomes much softer and less austere than the others; so is much fitter for making marmalade. The trees are all easily propagated, either by layers, suckers, or cuttings; which must be planted in a moist soil. Those raised from suckers are seldom so well rooted as those which are obtained from cuttings or layers, and are subject to produce suckers again in greater plenty; which is not so proper for fruit-bearing trees. These trees require very little pruning; the chief thing to be observed is, to keep their stems clear from suckers, and cut off such branches as cross each other: likewise all upright luxuriant shoots from the middle of the tree should be taken off, that the head may not be too much crowded with wood, which is of ill consequence to all fruit-trees. These sorts may also be propagated by budding or grafting upon stocks raised by

gnus
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mbal.

by cuttings; so that the best forts may be cultivated this way in greater plenty than by any other method. These are also in great esteem to bud or graft pears upon; which for summer or autumn fruits are a great improvement to them, especially those designed for walls and espaliers; for the trees upon these stocks do not shoot so vigorously as those upon free-stocks, and therefore may be kept in less compass, and sooner produce fruit: but hard winter-fruits do not succeed so well upon these stocks, their fruit being subject to crack, and are commonly stony, especially all the breaking pears: therefore these stocks are only fit for melting pears and a moist soil.

CYGNUS, or SWAN, in ornithology. See ANAS.

CYGNUS, the SWAN, in astronomy, a constellation of the northern hemisphere, between Lyra and Cepheus. The stars in the constellation Cygnus, in Ptolemy's catalogue, are 19; in Tycho's 18; in Hevelius's 47; in the Britannic catalogue 81.

CYLINDER, in geometry, a solid body supposed to be generated by the rotation of a parallelogram.

Rolling, or Loaded CYLINDER, a cylinder which rolls up an inclined plane; the phenomena of which are explained under MECHANICS.

CYLINDROID, in geometry, a solid body, approaching to the figure of a cylinder, but differing from it in some respects, as having the bases elliptical, but parallel and equal.

CYLINDRUS, in natural history, the name of a genus of shell-fish, of which there are many elegant and precious species.

CYMA, in botany, the tender stalks which herbs send forth in the beginning of the spring, particularly those of the cabbage kind.

CYMA, or CYMATIUM, in architecture, a member or moulding of the cornice, the profile of which is waved, that is, concave at top, and convex at bottom.

CYMBAL, *κymbalon*, a musical instrument in use among the ancients. The cymbal was made of brass, like our kettle-drums, and, as some think, in their form, but smaller, and of different use. Ovid gives cymbals the epithet of *genialia*, because they were used at weddings and other diversions.

Cassiodorus and Isidore call this instrument *acetabulum*, the name of a cup or cavity of a bone wherein another is articulated; and Xenophon compares it to a horse's hoof; whence it must have been hollow: which appears, too, from the figure of several other things denominated from it: as a basin, caldron, goblet, cask, and even a shoe, such as those of Empedocles, which were of brass.

In reality, the ancient cymbals appear to have been very different from our kettle drums, and their use of another kind: to their exterior cavity was fastened a handle; whence Pliny compares them to the upper part of the thigh, and Ravanus to phials.

They were struck against one another, in cadence, and made a very acute sound. Their invention was attributed to Cybele; whence their use in feasts and sacrifices: setting aside this occasion, they were seldom used but by dissolute and effeminate people. M. Lampe, who has written expressly on the subject, attributes the invention to the Curetes, or inhabitants of mount Ida in Crete; it is certain these, as well as the Cory-

bantes or guards of the kings of Crete, and those of Rhodes and Samothracia, were reputed to excel in the music of the cymbal.

The Jews had their cymbals, or at least instruments which translators render cymbals; but as to their matter and form, critics are still in the dark. The modern cymbal is a mean instrument, chiefly in use among vagrants, gypsies, &c. It consists of steel wire, in a triangular form, whereon are passed five rings, which are touched and shifted along the triangle with an iron rod held in the left hand, while it is supported in the right by a ring, to give it the freer motion. Durandus says, that the monks used the word *cymbal* for the cloister-bell used to call them to the refectory.

CYME (anc. geog.), a city built by Pelops on his return from Greece. Cyme the Amazon gave it name, on expelling the inhabitants, according to Mela. Latin authors, as Nepos, Livy, Mela, Pliny, Tacitus, retain the appellation *Cyme*, after the Greek manner. It stood in Aeolia, between Myrina and Phocæa (Ptolemy); and long after, in Peutinger's map, is set down nine miles distant from Myrina.—From this place was the Sybilla Cumæa, called *Erythraea*, from *Erythra*, "a neighbouring place." It was the country of Ephorus. Hesiod was a Cumean originally (Stephanus); his father coming to settle at Afcra in Bœotia.

CYMENE, in botany, a name given by the ancient Greeks to a plant with which they used to dye woollen things yellow, and with which the women of those times used also to tinge the hair yellow, that being the favourite colour in those ages. The *cymene* of the Greeks is evidently the same plant with the *lutca herba* of the Latins; or what we call *dyer's weed*. See RESEDA.

CYNÆGIRUS, an Athenian, celebrated for his extraordinary courage. He was brother to the poet Æschylus. After the battle of Marathon, he pursued the flying Persians to their ships, and seized one of their vessels with his right hand, which was immediately severed by the enemy. Upon this he seized the vessel with his left hand, and when he had lost that also, he still kept his hold with his teeth.

CYNANCHE, a species of quincy, in which the tongue is inflamed and swelled, so that it hangs out beyond the teeth.

CYNANCHUM, BASTARD DOGSBANE: A genus of the digynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 30th order, *Contorta*. The nectarium is cylindrical and quinque-dentated. There are six species; of which the following are the most remarkable. 1. The acutum, commonly called *Montpelier scammony*; and, 2. The montpelicacum, or round-leaved Montpelier scammony. They abound with a milky juice like the spurge, which issues out wherever they are broken; and this milky juice when concreted has frequently been sold for scammony. These plants propagate so fast by their creeping roots, that few people care to admit them into gardens.

CYNARA, the ARTICHOKE: A genus of the polygamia æqualis order, belonging to the syngenesia class of plants. The calyx is dilated, imbricated with carnosous squamæ, and emarginated with a sharp point.

Cyme
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Cynara.

Cynara.

Of this genus there are four species, but only two are cultivated for use.

1. The scolynius, or garden artichoke, hath large, thick, perennial roots, crowned by a considerable cluster of large pennatifid, erect leaves, two or three feet long. In the middle are upright stalks rising a yard high, on the top of which is a large round scaly head, composed of numerous, oval, calycinal scales, inclosing the florets, sitting on a broad fleshy receptacle, which, with the fleshy base of the scales, is the only eatable part of the plant. The varieties of this species are,

(1.) The conical green-headed French artichoke, having the small leaves terminated by spines, a tall stalk, the head somewhat conical, and of a light green colour, with the scales pointed at top, opening and turning outward. (2.) The globular-headed red Dutch artichoke, having leaves without spines, a strong stalk, the head large, globular, a little compressed at top, and of a reddish-green colour; broad obtuse scales emarginated at top, growing close, and turning inward. Of these varieties the last is deservedly the most esteemed, both on account of its superiority in size and the agreeableness of its flavour. Both varieties are perennial in their root: but the leaves and fruit-stem die to the ground in winter; and their roots remaining, send up fresh leaves and stems every summer, producing a supply of artichokes for 20 years if required. The flowers and seed of all the plants of this genus are produced in the centre of the head; the scales of which are the proper calyx of the flower, which consists of numerous small bluish florets, succeeded by downy seeds sitting naked on the receptacle.

2. The cardunculus, or cardoon, greatly resembles the artichoke, but is of larger and more regular growth; the leaves being more upright, taller, broader, and more regularly divided; and the stalks of the leaves blanched are the only eatable parts of the plant.

Culture. Both the varieties of the artichoke are propagated by slips or suckers, arising annually from the stool or root of the old plants in spring, which are to be taken from good plants of any present plantation in March or the beginning of April, and planted in the open quarter of the kitchen-garden, in rows five feet asunder; and they will produce artichokes the same year in autumn. It should, however, be remarked, that though artichokes are of many years duration, the annual produce of their fruit will gradually lessen in the size of the eatable parts after the third or fourth year, so that a fresh plantation should be made every three or four years. The cardoon is a very hardy plant, and prospers in the open quarters of the kitchen-garden. It is propagated by seed sowed annually in the full ground in March; either in a bed for transplantation, or in the place where they are designed to remain. The plants are very large, so must stand at considerable distances from one another. By this means you may have some small temporary crops between the rows, as of lettuce, spinach, endive, cabbage, favoy, or brocoli plants. In the latter end of September, or in October, the cardoons will be grown very large, and their footstalks have acquired a thick substance; you must then tie up the leaves of each plant, to admit of earthing them closely all round for blanching, which will take up six or eight weeks; and thus the plants will come

N^o 96.

in for use in November and December, and continue all winter.

CYNÆUS of Theffaly, the scholar of Demosthenes, flourished 275 years before Christ. Pyrrhus had so high an esteem for him, that he sent him to Rome to solicit a peace; and so vast was his memory, that the day after his arrival he saluted all the senators and knights by name. Pyrrhus and he wrote a Treatise of War, quoted by Tully.

CYNICS, a sect of ancient philosophers, who valued themselves upon their contempt of riches and state, arts and sciences, and every thing, in short, except virtue or morality.

The cynic philosophers owe their origin and institution to Antisthenes of Athens, a disciple of Socrates; who being asked of what use his philosophy had been to him, replied, "It enables me to live with myself." Diogenes was the most famous of his disciples, in whose life the system of this philosophy appears in its greatest perfection. He led a most wretched life, a tub having served him for a lodging, which he rolled before him wherever he went. Yet he was nevertheless not the more humble on account of his ragged cloak, bag, and tub; for one day entering Plato's house, at a time when there was a splendid entertainment there for several persons of distinction, he jumped up upon a very rich couch in all his dirt, saying, "I trample on the pride of Plato." "Yes (replied Plato), but with great pride, Diogenes." He had the utmost contempt for all the human race; for he walked the streets of Athens at noon day with a lighted lantern in his hand, telling the people, "He was in search of a man." Amongst many excellent maxims of morality, he held some very pernicious opinions; for he used to say, that the uninterrupted good fortune of Harpalus, who generally passed for a thief and a robber, was a testimony against the gods. He regarded chastity and modesty as weaknesses: hence Laertius observes of him, that he did every thing openly, whether it belonged to Ceres or Venus; though he adds, that Diogenes only ran to an excess of impudence to put others out of conceit with it. But impudence was the characteristic of these philosophers; who argued, that what was right to be done, might be done at all times and in all places. The chief principle of this sect, in common with the stoics, was, that we should follow nature. But they differed from the stoics in their explanation of that maxim; the cynics being of opinion, that a man followed nature that gratified his natural motions and appetites; while the stoics understood right reason by the word nature.

CYNIC Spasm, a kind of convulsion, wherein the patient imitates the howlings of dogs.

CYNIPS, in zoology, a genus of insects belonging to the hymenoptera order. The mouth is armed with jaws, but has no proboscis: the sting is spiral, and mostly concealed within the body. The quercus folii, or oak-leaf cynips, is of a burnished shining brown colour. The antennæ are black; the legs and feet of a chestnut-brown; and the wings white, but void of marginal spots. It is in the little smooth, round, hard galls, found under the oak-leaves, generally fastened to the fibres, that this insect is produced, a single one in each gall. These latter are ligneous, of a hard compact sub-

Cynus

Cynips

noce-
alus
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C ofar-
es.

substance, formed like the rest, by the extravasation of the sap of the leaf, occasioned by the puncture of the gall-fly when it deposits its eggs. Sometimes, instead of the cynips, there is seen to proceed from the gall a larger insect of a brown colour, which is an ichneumon. This ichneumon is not the real inmate of the gall, or he that formed it. He is a parasite, whose mother deposited her egg in the yet tender gall; which, when hatched, brings forth a larva that destroys the larva of the cynips, and then comes out when it has undergone its metamorphosis and acquired its wings.

The quercus gemmæ, or oak-bud cynips, is of a very dark green, slightly gilded: its antennæ and feet are of a dun colour, rather deep. It deposits its eggs in the oak buds, which produces one of the finest galls, leaved like a rose-bud beginning to blow. When the gall is small, that great quantity of leaves is compressed, and they are set one upon another like the tiles of a roof. In the centre of the gall there is a kind of ligneous kernel, in the middle of which is a cavity; and in that is found the little larva, who feeds there, takes its growth, undergoes its metamorphosis, and breaks through the inclosure of that kind of cod in order to get out. The whole gall is often near an inch in diameter, sometimes more when dried and displayed; and it holds to a branch by a pedicle.

There are a great number of other species.

CYNOCEPHALUS, in zoology, the trivial name of a species of SIMIA.

CYNOGLOSSUM, HOUND'S TONGUE: A genus of the monogynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 41st order, *Asperifolia*. The corolla is funnel-shaped, with its throat closed up by little arches formed in it; the seeds depressed, and affixed to the style or receptacle only on their inner side. There are eight species, none of them remarkable for their beauty. The root of one of them, viz. the officinale, or common greater hound's tongue, was formerly used in medicine, and supposed to possess narcotic virtues; but it is discarded from the present practice. The smell of the whole plant is very disagreeable. Goats eat it: sheep, horses, and swine refuse it.

CYNOMETRA, in botany: A genus of the monogynia order, belonging to the decandria class of plants; and in the natural method ranking with those of which the order is doubtful. The calyx is tetraphyllous; the antheræ bifid at top; the legumen carnosus, crescent-shaped, and monospermous.

CYNOMORIUM, in botany: A genus of the monandria order, belonging to the monœcia class of plants; and in the natural method ranking under the 50th order, *Amentacea*. The male calyx is an imbricated catkin; there is no corolla: the calyx of the female is in the same catkin; no corolla; one style; and one roundish seed.

CYNOPHONTIS, in antiquity, a festival observed in the dog-days at Argos, and so called *απο της κυνας φονιης*, i. e. from killing dogs; because it was usual on this day to kill all the dogs they met with.

CYNOREXY, an immoderate appetite, to the degree of a disease; called also *fames canina* and *vulvity*.

CYNOSARGES, a place in the suburbs of Athens, named from a white or swift dog, who snatched away part of the sacrifice offering to Hercules. It had a

gymnasium, in which strangers or those of the half-blood performed their exercises; the case of Hercules, to whom the place was consecrated. It had also a court of judicature, to try illegitimacy, and to examine whether persons were Athenians of the whole or half blood. Here Antisthenes set up a new sect of philosophers called *Cynics*, either from the place, or from the snarling or the impudent disposition of that sect.

CYNOSCEPHALÆ (anc. geog.), a place in Thessaly near Scotussa; where the Romans, under Q. Flaminius, gained a great victory over Philip, son of Demetrius king of Macedon. These Cynoscephalæ are small tops of several equal eminences; named from their resemblance to dogs heads, according to Plutarch.

CYNOSSEMA, the tomb of Hecuba, on the promontory Mastusia, over against Sigeum, in the south of the Chersonesus Thracia; named either from the figure of a dog, to which she was changed, or from her sad reverse of fortune (Pliny, Mela).

CYNOSURA, in astronomy, a denomination given by the Greeks to *ursa minor*, or "the little bear," by which sailors steer their course. The word is formed of *κυνοςυρα*, q. d. *the dog's tail*. This is the constellation next our pole, consisting of seven stars; four whereof are disposed like the four wheels of a chariot, and three lengthwise representing the beam; whence some give it the name of the *chariot*, or *Charles's wain*.

CYNOSURA, *Cynofura*, or *Cynofuris*, (anc. geog.), a place in Laconica; but whether maritime or inland, uncertain. Here Æsculapius, being thunderstruck, was buried (Cicero).

CYNOSURA was also the name of the promontory of Marathon in Attica, obverted to Eubœa.

CYNOSURA, in mythology, a nymph of Ida in Crete. She nursed Jupiter, who changed her into a star which bears the same name. It is the same as the *ursa minor*.

CYNOSURUS, in botany: A genus of the digynia order, belonging to the triandria class of plants; and in the natural method ranking under the 4th order, *Gramina*. The calyx is bivalved and multiflorous; the receptacle proper, unilateral, and foliaceous. There are ten species, four of which are natives of Britain, viz. the *cristatus*, or crested dog-tail grass; the *echinatus*, or rough dog-tail-grass; the *cæruleus*, or blue dog-tail grass; and the *panicus*, or bearded dog-tail grass.

CYNTHIUS and CYNTHIA, in mythology, surnames of Apollo and Diana, derived from *Cynthia* the name of a mountain in the middle of the island of Delos.

CYNTHUS (anc. geog.), a mountain of the island Delos, so high as to overshadow the whole island. On this mountain Latona brought forth Apollo and Diana: hence the epithet *Cynthius* (Virgil), and *Cynthia* (Lucan, Statius).

CYNURIA, or *CYNURIUS Ager*, (anc. geog.), a district of Laconica, on the confines of Argolis. A territory that proved a perpetual bone of contention between the Argives and Spartans (Thucydides). For the manner of deciding the dispute, see *THYREA*.

CYPERUS, in botany: A genus of the monogynia order, belonging to the triandria class of plants;

Cynosee-
phalæ.
||
Cyperus.

Cyphon
||
Cyprianus.

and in the natural method ranking under the 3d order, *Calamariæ*. The glumes are paleaceous, and imbricated towards each side; the corolla is wanting, and there is one naked seed. There are 20 species; the only remarkable are the round and the long sweet cyperus. The former is a native of the East Indies, and grows by the sides of rivulets, ditches, and the like. The root is knotty, wrapped round with fibrous strings not easy to break, of a brown colour without and grey within; of a pleasant scent, especially when fresh and well dried; the leaves are green, and resemble those of the reed and leek. The latter, commonly called *English* or *Flemish cyperus*, grows in the water, and along banks and river sides. Its root is as thick as an olive, full of little knots or specks, of an oblong figure, grey colour, sweet and somewhat sharp taste, and almost without smell when it is newly taken out of the ground. The roots of both plants are esteemed cordial, diuretic, and cephalic, resistors of poisons, and expellers of wind. Long cyperus is much used by perfumers and glovers.

CYPHON, in antiquity, a kind of punishment used by the Athenians. It was a collar made of wood; so called because it constrained the criminal who had this punishment inflicted on him to bow down his head.

CYPHONISM, CYPHONISMUS, from κυφων, which has various significations; derived from κυφως, *crooked*: a kind of torture or punishment in use among the ancients.

The learned are at a loss to determine what it was. Some will have it to be that mentioned by St Jerom in his *Life of Paul the Hermit*, chap. 2. which consisted in smearing the body over with honey, and thus exposing the person, with his hands tied, to the warm sun, to invite the flies and other vermin to persecute him.

CYPRÆA, or GOWRIE, in zoology, a genus of insects belonging to the order of *vermes testacea*. It is an animal of the limax or snail kind; the shell is one involuted, subovated, obtuse, smooth valve. The aperture on each side is linear, longitudinal, and toothed. There are 44 species, distinguished by the form of their shells. The pediculus, or common gowrie, is represented on Plate CLIV.

This genus is called *cypræa* and *venerea* from its being peculiarly dedicated to Venus; who is said to have endowed a shell of this genus with the powers of a *remora*, so as to impede the course of the ship which was sent by Periander tyrant of Corinth with orders to castrate the young nobility of Coreyra.

CYPRESS. See CUPRESSUS.

CYPRIANUS (Thascius-Cæcilius), a principal father of the Christian church, was born at Carthage in Africa, at the latter end of the second or beginning of the third century. We know nothing more of his parents than that they were heathens; and he himself continued such till the last 12 years of his life. He applied himself early to the study of oratory; and some of the ancients, particularly Lactantius, inform us, that he taught rhetoric in Carthage with the highest applause. Cyprian's conversion is fixed by Pearson to the year 246; and was at Carthage, where, as St Jerome observes, he had often employed his rhetoric in the defence of paganism. It was brought about by one Cæcilius, a priest of the church of Car-

thage, whose name Cyprian afterwards took; and between whom there ever subsisted so close a friendship, that Cæcilius at his death committed to Cyprian the care of his family. Cyprian was also a married man himself; but as soon as he was converted to the faith, he resolved upon a state of continence, which was thought a high degree of piety, as not being yet become general. Being now a Christian, he was to give the usual proof of the sincerity of his conversion; and that was by writing against paganism and in defence of Christianity. With this view he composed his piece *De Gratia Dei*, "or concerning the grace of God," which he addressed to Donatus. It is a work of the same nature with the Apologetic of Tertullian, and the Oæavius of Minutius Felix. He next composed a piece *De Idolorum Vanitate*, or "upon the vanity of idols." Cyprian's behaviour, both before and after his baptism, was so highly pleasing to the bishop of Carthage, that he ordained him a priest a few months after. It was rather irregular to ordain a man thus in his very noviciate; but Cyprian was so extraordinary a person, and thought capable of doing such singular service to the church, that it seemed allowable in this case to dispense a little with the form and discipline of it. For besides his known talents as a secular man, he had acquired a high reputation of sanctity since his conversion; having not only separated himself from his wife, as we have observed before, which in those days was thought an extraordinary act of piety, but also consigned over all his goods to the poor, and given himself up entirely to the things of God. It was on this account no doubt, too, that when the bishop of Carthage died the year after, that is, in the year 248, none was judged so proper to succeed him as Cyprian. The quiet and repose which the Christians had enjoyed during the last 40 years, had, it seems, greatly corrupted their manners; and therefore Cyprian's first care, after his advancement to the bishopric, was to correct disorders and reform abuses. Luxury was prevalent among them; and many of their women were not so strict as they should be, especially in the article of dress. This occasioned him to draw up his piece *De habitu virginum*, or "concerning the dress of young women;" in which, besides what he says on that particular head, he inculcates many lessons of modesty and sobriety. In the year 249, the emperor Decius began to issue out very severe edicts against the Christians, which particularly affected those upon the coast of Africa; and in the beginning of 250, the heathens, in the circus and amphitheatre of Carthage, insisted loudly upon Cyprian's being thrown to the lions: a common method of destroying the primitive Christians. Cyprian upon this withdrew from his church at Carthage, and fled into retirement, to avoid the fury of the persecutions. He wrote in the place of his retreat, pious and instructive letters to those who had been his hearers; and also to the *libellatici*, a name by which those pusillanimous Christians were called, who procured certificates of the heathen magistrates, to show that they had complied with the emperor's orders in sacrificing to idols. At his return to Carthage he held several councils on the repentance of those who had fallen during this persecution, and other points of discipline; he opposed the schemes of Navatus and Novatianus;

Cyprinus. Novatianus; and contended for the rebaptizing of those who had been baptized by heretics. At last he died a martyr in the persecution of Valerian and Gallienus, in 258. Cyprian wrote 81 letters, and several treatises. The best edition of his works are those of Pamelius in 1568; of Rigaltius in 1648; and of Oxford in 1682. His words have also been translated into English by Dr Marshall.

CYPRINUS, in ichthyology; a genus of fishes, belonging to the order of abdominales. The mouth is toothless; there are three rays in the gills; the body is smooth and white; and the belly-fins have frequently nine rays. There are 31 species, principally distinguished by the number of rays in the vent-fin. The most remarkable are,

1. The carpio, or carp. This was introduced into England about the year 1514, by Leonard Maschal, to whom we are also indebted for that excellent apple the *pepin*. Russia wants these fish at this day. Sweden has them only in the ponds of people of fashion. They chiefly abound in the rivers and lakes of Polish Prussia, where they are sometimes taken of a vast size. They are there a great article of commerce, and sent in well-boats to Sweden and Russia. The merchants purchase them out of the waters, of the noblesse of the country, who draw a good revenue from this article. The ancients do not separate the carp from the sea-fish. They are sometimes found in the harbour of Dantzic between the town and a place called *Hela*.

Carp are very long-lived. Gesner brings an instance of one that was near 100 years old. They grow also to a very great size; some authors speak of carp weighing 200 pounds weight, and five feet in length. The carp is a prodigious breeder: its quantity of roe has been sometimes found so great, that when taken out and weighed against the fish itself, the former has been found to preponderate. From the spawn of this fish, caviare is made for the Jews, who hold the sturgeon in abhorrence. The carp is extremely cunning, and on that account is sometimes styled the *river-fox*. They will sometimes leap over the nets and escape that way; at other times they will immerse themselves so deep in the mud as to let the nets pass over them. They are also very shy in taking a bait; yet at the spawning-time they are so simple as to suffer themselves to be tickled, handled, and caught by any body that will attempt it. This fish is apt to mix its milt with the roe of other fish; from which is produced a spurious breed, as has been observed in the offspring of the carp and tench, which bore the greatest resemblance to the first. The same has also been observed of the carp and bream.

In Polish Prussia, and many other parts of Germany, the sale of carp constitutes a part of the revenue of the nobility and gentry: so that the proper management of that fish is reduced to a kind of system, founded on the experience of several generations. Of the methods there practised, we have an account in the Philosophical Transactions for 1771, art. 37. communicated by Mr J. Reinhold-Forster; who says, he has seen carp treated and maintained according to those methods, "above a yard long, and of 25 pounds weight;" but had no opportunity of ascertaining their age. "In the pond, however, at Charlottenburg (he adds), a palace belonging to the king of Prussia, I saw more

than two or three hundred carp, between two and three feet long; and I was told by the keeper they were between 50 and 60 years standing. They were tame, and came to the shore in order to be fed; they swallowed with ease a piece of white bread of the size of half a halfpenny-roll."—Mr Forster, in this paper, also vouches a most extraordinary circumstance, namely, the possibility of the carp's not only living for a considerable time out of water, but of its growing fat in its new element. The author has seen the experiment successfully tried, and attended to the whole process, in a nobleman's house where he then resided, in the principality of Anhalt-Deffau. The fish being taken out of the water, is wrapped up in a large quantity of wet moss, spread on a piece of net, which is then gathered into a purse; in such a manner, however, as to allow him room to breathe. The net is then plunged into water, and hung up to the ceiling of a cellar. At first the dipping must be repeated every three or four hours; but afterwards the carp need only to be plunged into the water once in about six or seven hours. Bread soaked in milk is first given him in small quantities. In a short time, the fish will bear more, and grow fat under this seemingly unnatural treatment. Mr Daines Barrington, in a note, confirms a part of the preceding account, by mentioning the practice of a certain fishmonger near Claremarket, who, in the winter, frequently exposes a bushel at least of carp and tench, for sale, in the same dry vessel, for six or seven hours; many of which are not sold, and yet continue in health, though breathing nothing but air, during the time above mentioned, for several days successively.

2. The barbus, or barbel, is so extremely coarse as to be overlooked by the ancients till the time of the poet Ausonius, who gives it no great character. They frequent the still and deep parts of rivers, and live in society, rooting like swine with their noses in the soft banks. It is so tame as to suffer itself to be taken by the hand; and people have been known to take numbers by diving for them. In summer they move about during night in search of food; but towards autumn, and during winter, confine themselves to the deepest holes. The barbel is about the length of three feet, and will weigh 18 pounds; the belly white; the dorsal fin is armed with a remarkable strong spine, sharply serrated, with which it can inflict a very severe and dangerous wound on the incautious handler, and even do much damage to nets. They are the worst and coarsest of fresh-water fish, and seldom eaten but by the poorer sort of people, who sometimes boil them with a bit of bacon to give them a relish. Their roe is very noxious, affecting those who unwarily eat of it with a nausea, vomiting, purging, and a slight swelling.

3. The tinca, or tench, was treated with the same disrespect by the ancients as the barbel; but is now in much more repute. It has by some been called the *physician* of the fish; and its slime has been said to be of so healing a nature, that the wounded fishes apply it as a styptic. In this country it is reckoned a wholesome and delicious food; but the Germans are of a different opinion. By way of contempt they call it the *shoemaker*. Gesner even says, that it is insipid and unwholesome. It does not commonly exceed four or five

Cyprinus. pounds in weight, though some have been known to weigh ten or twenty. They love still waters, and are rarely found in rivers: they are very foolish and easily caught. The tench is thick and short in proportion to its length. The colour of the back is dusky; the dorsal and ventral fins of the same colour; the head, sides, and belly, of a greenish cast, most beautifully mixed with gold, which is in its greatest splendor when the fish is in the highest season.

4. The gudgeon is generally found in gentle streams, and is of a small size, the largest not exceeding half a pound weight. They bite eagerly; and are assembled by raking the bed of the river; to this spot they immediately crowd in shoals, in expectation of food.

5. The brama, or bream, is an inhabitant of lakes, or the deep parts of still rivers. It is a fish that is very little esteemed, being extremely insipid.

6. The rutilus, or roach, is a common fish, found in many of the deep still rivers of this country. They are gregarious, keeping in large shoals. It has never been known to exceed five pounds in weight.

7. The leuciscus, or dace, like the roach is gregarious, haunts the same places, is a great breeder, very lively, and during summer is very fond of frolicking near the surface of the water. It never exceeds the weight of a pound and an half: the scales are smaller than those of the roach.

8. The cephalus, or chub, is a very coarse fish and full of bones. It frequents the deep holes of rivers; and in summer commonly lies on the surface beneath the shade of some tree or bush. It is very timid, sinking to the bottom on the least alarm, even at the passing of a shadow; but they will soon resume their former situation. It feeds on worms, caterpillars, grasshoppers, and other coleopterous insects that happen to fall into the water; and it will even feed on cray-fish. It will rise to a fly. Some of this kind have been known to weigh eight or nine pounds.

9. The alburnus, or bleak. These fish are very common in many of our rivers, and keep together in large shoals. At certain seasons they seem to be in great agonies: they tumble about near the surface of the water, and are incapable of swimming far from the place; but in about two hours they recover and disappear. Fish thus affected, the Thames fishermen call *mad* bleaks. They seem to be troubled with a species of *gordius*, or hair-worm, which torments them so, that they rise to the surface and then die. The bleak seldom exceeds five or six inches in length. Artificial pearls are made with the scales of this fish, and probably also with those of the dace. They are beat into a fine powder, then diluted with water, and introduced into a thin glass bubble, which is afterwards filled with wax. The French were the inventors of this art. During the month of July there appear in the Thames, near Blackwall and Greenwich, innumerable multitudes of small fish, known to the Londoners by the name of *white bait*. They are esteemed very delicious when fried with fine flour, and occasion, during the season, a vast resort of the lower order of epicures to the taverns at the places where they are taken at. There are various suppositions concerning these fishes, all of which terminate in reckoning them the fry of some other fish. Mr Pennant thinks they are

of the carp kind, though he cannot determine the species to which they belong. They have a greater similarity to the bleak than to any other, but he thinks they cannot be the young fry of this species; because the bleak is found in many of the British streams, but the white bait only in the Thames. The usual length of this fish is only two inches.

10. The auratus, or golden fish, a small fish domesticated by the Chinese, and generally kept for ornament by great people in their courts and gardens. They breed them in small ponds made for the purpose, in basons, and even in porcelain vessels. This fish is no larger than our pilchard. The male is of a bright red colour from the top of the head to the middle of the body: the rest is of a gold-colour; but it is so bright and splendid, that the finest gilding, according to F. le Comte, cannot approach it. The female is white; but its tail and half of its body resemble the lustre of silver. F. du Halde, however, observes, that a red and white colour are not always the distinguishing marks of the male and female; but that the females are known by several white spots which are seen round the orifices that serve them as organs of hearing, and the males, by having these spots much brighter. Gold-fish are light and lively; they love to sport on the surface of the water, soon become familiarised, and may even be accustomed to come and receive their food on sounding a small rattle. Great care is necessary to preserve them; for they are extremely delicate, and sensible of the least injuries of the air: a loud noise, such as that of thunder or cannons; a strong smell, a violent shaking of the vessel, or a single touch, will oft-times destroy them. These fish live with little nourishment: those small worms which are engendered in the water, or the earthy particles that are mixed with it, are sufficient for their food. The Chinese, however, take care, from time to time, to throw into the basons and reservoirs where they are kept small balls of paste, which they are very fond of when dissolved; they give them also lean pork dried in the sun and reduced to a fine and delicate powder, and sometimes snails: the slime which these insects leave at the bottom of the vessel is a great delicacy for them, and they eagerly hasten to feed on it. In winter they are removed from the court to a warm chamber, where they are kept generally shut up in a porcelain vessel. During that season they receive no nourishment; however, in spring, when they are carried back to their former bason, they sport and play with the same strength and liveliness as they did the preceding year.

In warm countries these fish multiply fast, provided care be taken to collect their spawn, which floats on the water, and which they almost entirely devour. This spawn is put into a particular vessel exposed to the sun, and preserved there until vivified by the heat: gold-fish, however, seldom multiply when they are kept in close vases, because they are then too much confined. In order to render them fruitful, they must be put into reservoirs of considerable depth in some places at least, and which are constantly supplied with fresh water. At a certain time of the year, a prodigious number of barks may be seen in the great river *Yang-tse-kiang*, which go thither to purchase the spawn of these fish.

Cyprius fish. Towards the month of May, the neighbouring inhabitants shut up the river in several places with mats and hurdles, which occupy an extent of almost nine or ten leagues; and they leave only a space in the middle sufficient for the passage of barks. The spawn of the fish, which the Chinese can distinguish at first sight, although a stranger could perceive no traces of it in the water, is stopped by these hurdles. The water mixed with spawn is then drawn up, and after it has been put into large vessels, it is sold to merchants, who transport it afterwards to every part of the empire. This water is sold by measure, and purchased by those who are desirous of stocking their ponds and reservoirs with fish.

Notwithstanding the tenderness of these fish even in their native climates, they are now naturalized in Britain, where they even breed. They were first introduced into England about the year 1691; but were not generally known till 1728, when a great number were brought over, and presented first to Sir Matthew Dekker, and by him circulated round the neighbourhood of London, from whence they have been distributed to most parts of the country.

Nothing can be more amusing than a glass bowl containing such fishes: the double refractions of the glass and water represent them, when moving, in a shifting and changeable variety of dimensions, shades, and colours; while the two mediums, assisted by the concavo-convex shape of the vessel, magnify and distort them vastly; not to mention that the introduction of another element and its inhabitants into our parlours engages the fancy in a very agreeable manner. Some people exhibit this sort of fish in a very fanciful way; for they cause a glass bowl to be blown with a large hollow space within that does not communicate with it. In this cavity they put a bird occasionally; so that you may see a goldfinch or a linnæus hopping as it were in the midst of the water, and the fishes swimming in a circle round it. The simple exhibition of the fishes is agreeable and pleasant; but in so complicated a way becomes whimsical and unnatural, and liable to the objection due to him,

Qui variare cupit rem prodigialiter unam.

CYPRIPEDIUM, the LADY'S SLIPPER, in botany: A genus of the diandria order, belonging to the gynandria class of plants; and in the natural method ranking under the 7th order, *Orchidææ*. The nestarium is ventricose, inflated, and hollow. There are three species; of which only one, viz. the calceolus, is a native of Britain. It grows in rough ground in different parts of the island. The other species are natives of America. None of them are easily propagated in gardens, and therefore must be transplanted from those places where they are natives.

CYPRUS, an island situated in the Levant, or most easterly part of the Mediterranean sea, between 33 and 36 degrees of east longitude, and 30 and 34 of north latitude. In ancient times this island was known by the names of *Acamis*, *Cerattis*, *Aspasia*, *Amathus*, *Macaria*, *Cryptos*, *Colinia*, *Sphacia*, *Paphia*, *Salaminia*, *Ærofa*, and *Cyprus*. The etymologies of these names are neither very easily found, nor are they of much importance. The name by which it was most generally known is that of *Cyprus*, said to be derived from *cyprus*, the name of a shrub or tree with which the island abounded; supposed to be the cypress.

Cyprus, according to Eratosthenes, was first discovered by the Phœnicians, two or three generations before the days of Asterius and Minos kings of Crete; that is, according to Sir Isaac Newton's computation, 2006 years before the Christian era. It was at that time so full of wood that it could not be tilled, and the Phœnicians first cut down that wood for melting copper, with which the island abounded; and afterwards, when they began to sail without fear on the Mediterranean, that is, after the Trojan war, they built great navies of the wood produced on the island. Josephus, however, informs us, that the descendants of *Cittim*, the son of Javan, and grandson of Japhat, were the original inhabitants of Cyprus. According to his account, *Cittim*, seeing his brother *Tarshish* settled in Cilicia where he built the city of *Tarsus*, settled with his followers in this opposite island; and either he or his descendants laid the foundations of the city of *Cittium*, which, according to Ptolemy, was the most ancient in the island. As Cyprus was too narrow to contain the great numbers who attended him, he left here as many as might serve to people the country, and with the rest passed over into Macedon.

The island of Cyprus was divided among several petty kings till the time of Cyrus the Great. He subdued them all; but left each in possession of his kingdom, obliging them only to pay him an annual tribute, and to send supplies of men, money, and ships, when required. The Cyprian princes lived thus subject to the Persians till the reign of Darius Hystaspes, when they attempted to shake off the yoke, but with bad success; their forces being entirely defeated, and themselves again obliged to submit. They made another more successful attempt about the year before Christ 357; but, however, could never totally free themselves from their subjection. It is very probable that they submitted to Alexander the Great, though historians are silent as to that event. On the death of the Macedonian conqueror, the dominion of Cyprus was disputed by Antigonus and Ptolemy the son of Lagus. At last Antigonus prevailed, and the whole island submitted to him about 304 years before Christ. He and his son Demetrius kept possession of it for 11 years, when it was recovered by Ptolemy, and quietly possessed by him and his descendants till 58 years before Christ, when it was most unjustly seized by the Romans. In the time of Augustus, it began to be ranked among the proconsular provinces, and to be governed by magistrates sent thither by the senate. In the year 648 it was conquered by the Saracens; but recovered by the Romans in 957. They held it, however, but for a very short time, and the barbarians kept possession of it till the time of the croisades. It was then reduced by the croisaders; and Richard I. of England gave it to the princes of the Lusignan family, who held it till the year 1570. They divided it into 12 provinces, in each of which was a capital city from which the province was denominated. So considerable was the island at this time, that besides the cities above mentioned, and others of less note, it contained 800 villages. In 1570 it was taken by the Turks, and though it hath ever since continued under their tyrannical yoke, is still so considerable as to be governed by a beglerbeg, and seven sangiacs under him.

The air in this island is for the most part very unwholesome.

Cyrano,
Cyrenaica.

wholesome, on account of the many fens and marshes with which the country abounds. The soil is an excellent fertile clay; and would produce all the necessaries of life in abundance, if properly cultivated. There are but few springs or rivers in this island; so that when the rains do not fall plentifully at the usual seasons, the inhabitants are much distressed by the scarcity of water. By reason of the uncultivated state of the country, they are also greatly infested with poisonous reptiles of various kinds. The people are extremely ignorant and lascivious, as indeed they are remarked to have been from the remotest antiquity. Anciently the worship of Venus was established in this island, whence her title among the poets of the *Cyprian queen*; and such an inclination had the inhabitants to become the votaries of this goddess, both in theory and practice, that the young women used to prostitute themselves in her temple in order to raise themselves portions. Nor are their successors said to be much better at this day. The exports of the island are silks, oil, cotton, wine, salt, and turpentine: the imports are French and Venetian broad cloths; and sometimes a few bales of English manufacture, cutlery wares, sugar, tin, lead, &c.

Knights of Cyprus, an order instituted by Guy de Lusignan, titular king of Jerusalem, to whom Richard I. of England, after conquering this island, made over his right.

CYRANO (Bergerac), a French author, born in Gascony, about the year 1620. He first entered into the army, where his natural courage engaged him frequently in duels in the quality of a second: which, with other rash actions, procured him the title of the *Intrepid*. But the little prospect he saw of preferment made him renounce the trade of war for the exercise of wit. His comic histories of the states and empires in the sun and moon, show him well acquainted with the Cartesian philosophy, and to have a lively imagination. Our Lord Orrery classes him with Swift for his turn of humour, which he says the latter adopted and pursued.

CYRENAICA, an ancient kingdom of Africa, corresponding to the present kingdom and desert of Barca and Tripoli. It was originally inhabited by a number of barbarous nations, differing little from great gangs of robbers. Afterwards some colonies from Greece settled here, and Cyrenaica became so powerful a state, that it waged war with Egypt and Carthage, often with success. In the time of Darius Hystaspes, Arcefilaus, the reigning prince in Cyrenaica, was driven from the throne; on which his mother Pheretima applied for assistance to the king of Cyprus. Her son afterwards returning to Barca, the chief city of Cyrene, was there assassinated, together with his father-in-law. Pheretima finding herself disappointed by the king of Cyprus, applied to Darius Hystaspes, and by the assistance of the Persians reduced Barca. Here she behaved with the utmost cruelty, causing all those who had been concerned in her son's death to be impaled, and the breasts of their wives to be cut off and affixed near them. She is said to have been afterwards devoured by worms; which was looked upon as a divine judgment for her excessive cruelty. The prisoners in the mean time were sent to Darius, who settled them in a district of Bactria, from them called

Barca. Cyrenaica, however, seems to have remained free till the time of Alexander the Great, who conquered it along with Egypt. Soon after his death the inhabitants recovered their liberty; but were in a short time reduced by Ptolemy king of Egypt. Under these kings it remained till Ptolemy Physcon made it over to his bastard son Apian, who in the 658th year of Rome left it by will to the Romans. The senate permitted all the cities to be governed by their own laws; and this immediately filled the country with tyrants, those who were most potent in every city or district endeavouring to assume the sovereignty of it. Thus the kingdom was thrown into great confusion; but Lucullus in a good measure restored the public tranquillity on his coming thither during the first Mithridatic war. It was found impossible, however, totally to suppress these disturbances till the country was reduced to the form of a Roman province, which happened about 20 years after the death of Apian, and 76 before Christ. Upon a revolt, the city of Cyrene was ruined by the Romans; but they afterwards rebuilt it. In process of time it fell to the Arabs; and then to the Turks, who are the present masters of it.

CYRENAICS, a sect of ancient philosophers, so called from their founder Aristippus of Cyrene, a disciple of Socrates.

The great principle of their doctrine was, that the supreme good of man in this life is pleasure; whereby they not only meant a privation of pain, and a tranquillity of mind, but an assemblage of all mental and sensual pleasures, particularly the last.

Cicero makes frequent mention of Aristippus's school; and speaks of it as yielding debauchees. Three disciples of Aristippus, after his death, divided the sect into three branches; under which division it languished and sunk: the first called the *Hegefiac* school; the second the *Anniverian*; and the third the *Theodoran*; from the names of their authors.

CYRENE (anc. geog.), the capital of Cyrenaica, and one of the cities called *Pentapolis*, distant from Apollonia, its sea-port, 10 miles, situated on a plain, of the form of a table, according to Strabo. A colony of the Thereans. Though they were descendants of the Lacedemonians, yet they differed from them in their turn of mind or disposition, applying themselves to philosophy; and hence arose the Cyrenaic sect, at the head of which was Aristippus, who placed all happiness in pleasure. The Cyreneans were a people much given to aurigation, or the use of the chariot, from their excellent breed of horses, (Pindar, Ephorus, Strabo.)

CYRIL (St) bishop of Jerusalem, succeeded Maximus in 350. He was afterward deposed for the crime of exposing to sale the treasures of the church, and applying the money to the support of the poor during a great famine. Under Julian he was restored to his see, and was firmly established to all his old honours and dignities under Theodosius; in which he continued unmolested to his death in 386. The remains of this father consist only of 23 catecheses, and one letter to the emperor Constantius.

CYRILL (St) patriarch of Alexandria, succeeded Theophilus, his uncle, in 412. Scarce was he installed, when he began to exert his authority with great vigour; he drove the Novatians and Jews from Alexandria,

Cyrenaica
||
Cyrill.

andria, permitting their wealth and synagogues to be taken from them. This proceeding highly displeas'd Orestes, the governor of the city, who saw that if the bishop's authority was not soon suppress'd it might grow too strong for that of the magistrate. Upon which a kind of civil war broke out between Orestes and the bishop; many tumults were rais'd, and some battles fought in the very streets of Alexandria. St Cyrill also distinguish'd himself by his zeal against Nestorius bishop of Constantinople, who, in some of his homilies, had assert'd that the Virgin Mary ought not to be call'd the mother of God. The dispute at first prov'd unfavourable to Cyrill, whose opinion was not only condemn'd, but himself deprived of his bishopric and thrown into prison. But he was soon after released, and gain'd a complete victory over Nestorius, who in 431 was deposted from his see of Constantinople. Cyrill return'd to his see at Constantinople, where he died in 444. St Cyrill also wrote against Theodorus of Mopsuestia, Diosdorus of Tarsus, and Julian the apostate. He compos'd commentaries on St John's gospel, and wrote several other books. His works were published in Greek and Latin in 1638, in six volumes folio.

CYRUS, the son of Cambyfes the Persian, by Mandane the daughter of Astyages king of the Medes. The two chief historians, who have written the life of Cyrus, are Herodotus and Xenophon; but their accounts of him are different, in as much as the latter makes his father a king of Persia, and the former a meaner man. The account of Herodotus, as Dr Prideaux observes, indeed contains narratives that are much more strange and surprizing, and consequently more diverting and agreeable to the reader: and for this reason more have chose to follow him than Xenophon.

Herodotus informs us, that Astyages king of the Medes, dream'd, that a vine sprung from the womb of his daughter Mandane, the branches whereof overshadow'd all Asia; whereupon having consult'd the soothsayers, he was told that this dream portend'd the future power and greatness of a child who should be born of his daughter; and further, that the same child should deprive him of his kingdom. Astyages, to prevent the accomplishment of this prediction, instead of marrying his daughter to some powerful prince, gave her to Cambyfes a Persian of mean condition, and one who had no great capacity for forming any important design, nor for supporting the ambition of his son, by his own riches and authority. Nor did Astyages stop here; the apprehensions he was under, lest Mandane's son might perhaps find that assistance in his own courage, or some lucky circumstances which his family was not able to supply him with, induc'd him to take a resolution of dispatching the child, if there should be any. As soon, therefore, as he understood his daughter was with child, he command'd one of his officers, whose name was Harpagus, to destroy the infant as soon as it came into the world. Harpagus, fearing the resentment of Mandane, put the child into the hands of one who was the king's shepherd, in order to expose him. The shepherd's wife was so extremely touch'd with the beauty of Cyrus, that she desired her husband rather to expose her own son, who was born some time before, and preserve the young prince. Af-

ter this manner Cyrus was preserv'd, and brought up among the king's shepherds. Cyrus.

One day, as the neighbouring children were at play together, Cyrus was chosen king; and having punish'd one of his little play-fellows with some severity, for disobeying his commands, the child's parent complain'd of Cyrus to Astyages. This prince sent for young Cyrus, and observing something great in his air, his manner and behaviour, together with a great resemblance of his daughter Mandane, he made particular inquiry into the matter, and discover'd that, in reality, Cyrus was no other than his grandson. Harpagus, who was the instrument of preserv'ing him, was punish'd with the death of his own son: however, Astyages believing that the royalty which the soothsayers had promis'd to the young prince, was only that which he had lately exercis'd among the shepherds children, trouble'd himself no more about it. Cyrus being grown up, Harpagus disclos'd the whole secret of his birth to him, together with the manner wherein he had deliver'd him from the cruel resolution of his grandfather. He encourag'd him to come into Media, and promis'd to furnish him with forces, in order to make him master of the country, and depose Astyages. Cyrus hearken'd to these propositions, engag'd the Persians to take arms against the Medes, march'd at the head of them to meet Astyages, defeat'd him, and possess'd himself of Media. He carried on many other wars; and at length sat down before Babylon, which after a long siege he took.

The relation of Cyrus's life from Xenophon is as follows: Astyages king of Media married his daughter Mandane to Cambyfes king of Persia, son to Achæmenes king of the same nation. Cyrus was born at his father's court, and was educated with all the care his birth required. When he was about the age of 12 years, his grandfather Astyages sent for him to Media, together with his mother Mandane. Some time after, the king of Assyria's son having invaded Media, Astyages, with his son Cyaxares and his grandson Cyrus, march'd against him. Cyrus distinguish'd himself in this war, and defeat'd the Assyrians. Cambyfes afterwards recall'd him, that he might have him near his own person; and Astyages dying, his son Cyaxares, uncle by the mother's side to Cyrus, succeed'd him in the kingdom of Media.

Cyrus, at the age of 30 years, was, by his father Cambyfes, made general of the Persian troops; and sent at the head of 30,000 men to the assistance of his uncle Cyaxares, whom the king of Babylon with his allies the Cappadocians, Carians, Phrygians, Cilicians, and Paphlagonians, were preparing to attack. Cyaxares and Cyrus prevent'd them, by falling upon them and dispersing them. Cyrus advanced as far as Babylon, and spread terror throughout the country. From this expedition he retir'd to his uncle, towards the frontiers of Armenia and Assyria, and was receiv'd by Cyaxares in the tent of the Assyrian king whom he had defeat'd.

After this, Cyrus carried the war into the countries beyond the river Halys, enter'd Cappadocia, and subdu'd it entirely. From thence he march'd against Croesus king of Lydia, beat him in the first battle; then besieg'd him in Sardis his capital; and after a
siege

Cyrus.

siege of fourteen days obliged him to surrender. See **CROESUS**. After this, Cyrus having almost reduced all Asia, repassed the Euphrates, and made war upon the Assyrians. He marched directly to Babylon, took it, and there prepared a palace for his uncle Cyaxares, whether he might retire, if at any time he had an inclination to come to Babylon; for he was not then in the army. After all these expeditions, Cyrus returned to his father and mother into Persia, where they were still living; and going some time after to his uncle Cyaxares into Media, he married his cousin the only daughter and heiress of all Cyaxares's dominions, and went with her to Babylon, from whence he sent men of the first rank and quality to govern all the several nations which he had conquered. He engaged again in several wars, and subdued all the nations which lie between Syria and the Red Sea. He died at the age of 70 years, after a reign of 30: but authors differ very much concerning the manner of his death. Herodotus, Justin, and Valerius Maximus relate, that he died in the war against the Scythians; and that falling into an ambush which queen Tomyris had laid for him, she ordered his head to be cut off, and cast into a vessel full of blood, saying, "Thou hast always thirsted after human blood, now glut thyself with it." Diodorus the Sicilian says, that he was taken in an engagement and hanged. Ctesias assures us, that he died of a wound which he received in his thigh: but by Xenophon's account he died peaceably in his bed, amidst his friends and servants; and certain it is, that in Alexander's time his monument was shown at Pasagarda in Persia.

From all this, it is easy to conclude that we are but imperfectly acquainted with the history of this great prince, the founder of the Persian, and destroyer of the Chaldean empire. We learn fewer particulars of it from scripture, but then they are more certain than any that we have produced. Daniel (viii. 3—20.) in the famous vision wherein God showed him the ruin of several great emperors, which were to precede the birth of the Messiah, represents Cyrus to us under the idea of "a ram, which had two horns; and the two horns were high, but the one was higher than the other, and the higher came up last. This ram pushed westward, and northward, and southward, so that no beasts might stand before him; neither was there any that could deliver out of his hand, but he did according to his will, and became great." The ram's two horns signify the two empires which Cyrus reunited in his person; that of the Medes, and that of the Persians. The last was greater and more powerful than the empire of the Medes: or otherwise, these two horns signify the two branches of Cyrus's successors. His son Cambyzes dying, the empire was transferred to Darius the son of Hytaspes, and was continued down to Darius Codomannus, who, as Calmet thinks, is the great horn which the he-goat, that denotes Alexander, run against. In chap. vii. 5. Daniel compares Cyrus to a bear, with three ribs in the mouth of it, to which it was said, "Arise, devour much flesh." Cyrus succeeded his father Cambyzes in the kingdom of Persia, and Darius the Mede, by Xenophon called Cyaxares, and Astyages in the apocryphal chapter (xiii. 1.) of Daniel, in the kingdom of the Medes and empire of Babylon. He was monarch of

N^o 96.

all the East; or as he speaks (2 Chr. xxxvi. 22, 23, and Ezr. i. 1. 2.) "of all the earth," when he permitted the Jews to return into their own country, in the year of the world 3466, before Jesus Christ 538. The enemies of the Hebrews, making use of this prince's affection to his own religion, prevailed with him to put a stop by his orders to the building of the temple at Jerusalem; (Ezr. iv. 5.) The prophets frequently foretold the coming of Cyrus; and Isaiah (xlv. 28.) has been so particular as to declare his name 200 years before he was born. Josephus (Antiq. l. II. c. 2.) says, that the Jews of Babylon showed this passage of the prophet to Cyrus; and that this prince, in the edict which he granted them for their return, acknowledged that he received the empire of the world from the God of Israel; and that the same God had described him by name in the writings of the prophets, and foretold that he should build a temple to him at Jerusalem. Cyrus is pointed out in scripture under the name of the righteous man and the shepherd of Israel, (Isaiah xli. 2. 10. xlv. 11. and xlv. 28.) Notwithstanding this, God says of him, (Isa. xlv. 5.) "I girded thee, though thou hast not known me." And Jeremiah calls Cyrus and his people, who overthrew the Babylonish empire, thieves and robbers. The taking of Babylon by Cyrus is clearly set down by the prophets, and may be seen under the articles **BABYLON** and **BELSHAZZAR**. Archbishop Usher fixes the birth of Cyrus to the year of the world 3405; his first year at Babylon to 3466, and his death to 3475. The eastern people will have it, that Cyrus by the mother's side was descended from some of the Hebrew prophets; as also that his wife was a Jew, which is the reason (say they), that this prince so attached himself to the Jews, to whom he was so nearly allied.

CYRUS II. was the younger son of Darius Nothus, and the brother of Artaxerxes. He was sent by his father at the age of 16 to assist the Lacedemonians against Athens. Artaxerxes succeeded to the throne at the death of Nothus; and Cyrus, who was of an aspiring soul, attempted to assassinate him. He was discovered, and had been punished with death, had not his mother Parysatis saved him from the hands of the executioner by her tears and intreaties. This circumstance did not in the least check the ambition of Cyrus; he was appointed over Lydia and the sea-coasts, where he secretly fomented rebellion and levied troops under various pretences. At last he took the field with an army of 100,000 barbarians, and 13,000 Greeks under the command of Clearchus. Artaxerxes met him with 900,000 men near Cunaxa. The battle was long and bloody; and Cyrus might have perhaps obtained the victory, had not his uncommon rashness proved his ruin. It is said that the two royal brothers met in person, and their engagement ended in the death of Cyrus, 401 years before the Augustan age. Artaxerxes was so anxious of its being universally reported that his brother had fallen by his hand, that he put to death two of his subjects for boasting that they had killed Cyrus. The Greeks who were engaged in the expedition, obtained much glory in the battle; and after the death of Cyrus, they remained victorious in the field without a commander. They were not discouraged though at the distance of above

600

600 leagues from their country, and surrounded on every side by a powerful enemy. They unanimously united in the election of commanders, and traversed all Asia, in spite of the continual attacks of the Persians; and nothing is more truly celebrated in ancient history than the bold retreat of the ten thousand. The journey that they made from the place of their first embarkation till their return has been calculated at 1155 leagues performed in the space of 15 months, including all the time which was devoted to take rest and refreshment. This retreat has been celebrated by Xenophon, who was one of their leaders, and among the friends and supporters of Cyrus.

CYST, the bag or tunic including all incysted tumors, as the scirrhus, atheroma, steatoma, meliceris, &c.

CYSTIC, in anatomy, a name given to two arteries and two veins.

CYSTIC DUCT. See ANATOMY, n^o 97.

CYTHERA, *orum*, (anc. geog.) an island opposite to Mallea a promontory, and to Boix a town of Laconica; with a cognominal town, which has an excellent port called *Scandea*. The island was sacred to Venus, with a very ancient temple of that goddess exhibited in armour at Cythera, as in Cyprus. Now *Cerigo*.

CYTHEREA, in mythology, the surname of Venus, so called from Cytheræ an island, where she had a temple esteemed the most ancient in Greece, and on the shores of which she was believed to be borne by the Zephyrs, surrounded by the Loves, the Tritons, and Nereides, reclining in a languishing posture in a seashell. They give the name of Cytheriades to the Graces which attended her on the shore without quitting her, except on those occasions when she rather chose to be waited on by the Pleasures.

CYTINUS, in botany: A genus of the dodecandria order, belonging to the gynandria class of plants; and in the natural method ranking under the 11th order, *Sarmentacea*. The calyx is quadrifid, superior; there is no corolla; the antheræ are 16, and sessile; the fruit an octolocular polyspermous berry.

CYTISUS, TREE TREFOIL: A genus of the decandria order, belonging to the diadelphia class of plants; and in the natural method ranking under the 32d order, *Papilionacea*. The calyx is bilabiated, with the upper lip bifid; inferior, tridentate; the legumen attenuated at the base. There are 11 species; of which the most remarkable are, 1. The laburnum, or large deciduous cytistus, hath a large upright tree-stem, branching into a full-spreading head, 20 or 30 feet high, having smooth greenish branches, oblong oval entire leaves, growing by threes on long slender footstalks; and from the sides of all the branches numerous yellow flowers collected into long spikes, hanging loosely downward, and appearing in May. 2. The sessilifolius, often called *cytistus secundus clusii*, have a low shrubby stem dividing into numerous erect brownish branches, forming a bushy head five or six feet high, garnished with small oval leaves growing by threes; some on very short footstalks, others sitting close; and bright yellow flowers in short erect spikes at the ends of the branches, appearing in June. 3. The nigricans grows with a short shrubby stem, dividing low into many erect slender branches, forming a bushy

head four or five feet high, with oblong, oval, trifoliate leaves, and yellow flowers, terminating all the branches in upright spikes, appearing in July. 4. The hirsutus, or hairy evergreen Neapolitan cytistus, rises with an upright shrubby grey stem, sending out many erect greenish hairy branches, forming a fine head six or eight feet high, closely garnished with small hairy trifoliate leaves on short footstalks, and yellow flowers from the sides of the branches in short pendulous spikes, appearing in June. 5. The Austriacus, Austrian, or Tartarian evergreen cytistus, hath a shrubby stem, dividing low into many greenish branches, forming a bushy head three or four feet high, having smooth whitish-green leaves, and bright yellow flowers in close umbellate heads at the ends of the branches, having a cluster of leaves under each head. These flowers appear in May.

Culture, &c. All the sorts are hardy, and will prosper in any common soil and exposure: though, as the hirsutus is sometimes affected by severe frost, it should have a dry soil, and a somewhat sheltered situation. They may all be propagated by seeds or cuttings, and all the culture they require in the nursery is to have the ground kept clear from weeds, and dug annually between the rows. Though they are generally considered only as ornamental shrubs, yet the first species, if originally trained to a stem, and suffered to stand, will grow to the size of pretty large timber trees. They grow naturally on the Alps, the mountains of Dauphine, and the highlands of Scotland; and the timber being very hard, and taking a fine polish, is frequently used for making chairs, tables, bedsteads, and other furniture; and is said to equal the finest mahogany in beauty. A species of cytistus, called by Linnæus *cytistus cajan*, is known in the West Indies, where it is a native, by the name of the *pigeon-pea*, from the seeds being the common food of these birds in that part of the world. These seeds are also sometimes used as food for the human species; and as they are of a very binding quality, afford a wholesome nourishment during the wet season, when dysenteries are so frequent.

CYZICENS, CYZICENA, among the ancient Greeks, were a sort of magnificent banqueting-houses, always looking towards the north, and usually opening upon gardens.

They had their name from Cyzicus, a city very considerable for the grandeur of its buildings; situated in an island of Mysia, bearing the same name.

CYZICUM, or CYZICUS (anc. geog.), one of the noblest cities of the Hither Asia; situated in a cognominal island of the Propontis, on the coast of Mysia; joined to the continent by two bridges (Strabo); the first by Alexander: the city, a colony of the Milesians (Pliny). Rendered famous by the siege of Mithridates, which was raised by Lucullus.—The inhabitants were made a free people by the Romans, but forfeited their freedom under Tiberius. It was adorned with a citadel and walls round it; had a port and marble towers; and three magazines, one for arms, another for warlike engines, and a third for corn. Cyziceni, the people; noted by the ancients for their timidity and effeminacy: hence the proverb in Zenodotus and others, *Tinctura Cyzenica*, applied to persons guilty of an indecency through fear: but *Stateres Cyziceni*,

Cytifus
||
Cyzicum.

Czack-
thurn,
Czar.

ziceni, nummi Czyceni, denote things executed to perfection.

CZACKTHURN, a strong town of Germany, in Austria, and near the frontiers of Hungary. It is seated between the rivers Drave and Muhir, in E. Long. 17. 19. N. Lat. 46. 24.

CZAR, a title of honour, assumed by the grand-dukes, or, as they are now styled emperors of Russia.

The natives pronounce it *tzar*, or *zear*; and this, by corruption (it has been fancied) from *Cesar* "emperor," from some imagined relation to the Roman emperors. But this etymology does not seem correct. When the czar Peter formally required of the European courts an acknowledgement of his imperial titles, and that the appellation of *Emperor* should never be omitted, there was great difficulty made about it, especially at the court of Vienna; which occasioned him to produce the famous letter, written in the German tongue, from Maximilian I. emperor of Germany, to Vassili Ivanovitch, confirming a treaty of alliance offensive and defensive against Sigismund king of Poland. In this dispatch, which is dated August the 4th, 1514, and is ratified with the seal of the golden-bull, Maximilian addresses Vassili by calling him *Kayser* and *Herrscher aller Russen*; "emperor and ruler of all the Russias." But independently of this document, there could be no doubt that the foreign courts, in their intercourse with that of Moscow, styled the sovereigns indiscriminately *Great Duke*, *Czar*, and *Emperor*. With respect to England in particular, it is certain, that in Chancellor's Account of Russia, so early as the middle of the 16th century, Ivan Vassilievitch II. is called *Lord and Emperor of all Russia*; and in the English dispatches, from the reign of Elizabeth to that of Anne, he is generally addressed under the same appellation. When the European powers, however, styled the *tzar Emperor of Muscovy*, they by no means intended to give him a title similar to that which was peculiar to the emperor of Germany; but they bestowed upon him that appellation as upon an Asiatic sovereign, in the same manner as we now say the emperors of China and Japan. When Peter, therefore, determined to assume the title of emperor, he found no difficulty in proving that it had been conferred upon his predecessors by most of the

European powers; yet when he was desirous of affixing to the term the European sense, it was considered as an innovation, and was productive of more negotiations than would have been requisite for the termination of the most important state affair. At the same time it occasioned a curious controversy among the learned, concerning the rise and progress of the titles by which the monarchs of this country have been distinguished. From their researches, it appeared that the early sovereigns of Russia were called great duke, and that Vassili Ivanovitch was probably the first who styled himself *tzar*, an expression which in the Sclavonian language signifies *king*; and that his successors continued to bear within their own dominions that title as the most honourable appellation, until Peter the Great first took that of *Povelitel* or emperor. After many delays and objections, the principal courts of Europe consented, about the year 1722, to address the sovereign of Russia with the title of Emperor; without prejudice, nevertheless, to the other crowned heads of Europe.

CZASLAU, a town of Bohemia, and capital of a circle of the same name. Here is the highest tower in all Bohemia; and near this place the king of Prussia gained a victory over the Austrians in 1742. It is seated on the river Crudenka, in E. Long. 15. 33. N. Lat. 49. 50.

CZENSTOKOW, a town of Poland in the palatinate of Cracovia, with a fort, in which they keep a rich treasure, called "the treasure of the virgin Mary." The pilgrims flock hither so much for the sake of a convent near it, that it is called the *Loretto* of Poland. The town is situated on the river in Warta, E. Long. 19. 15. N. Lat. 50. 48.

CZERNIC, a town of Carniola, in Austria, situated in E. Long. 15. 0. N. Lat. 46. 12. It is remarkable for its lake; for a particular description of which see the article **CIRCHNITZER**.

CZERNIKOU, a considerable town of Muscovy, and capital of a duchy of the same name, with a castle. It is seated on the river Dezna, in E. Long. 32. 13. N. Lat. 51. 20.

CZONGRODT, a town of Upper Hungary, and capital of a territory of the same name, at the confluence of the rivers Teiffe and Keres. E. Long. 20. 57. N. Lat. 46. 50.

Czastau
||
Czongrod.

D A C

D.

D A C

D, THE fourth letter of the alphabet, and the third consonant.

Grammarians generally reckon D among the lingual letters, as supposing the tongue to have the principal share in the pronunciation thereof; though the Abbot de Dangeau seems to have reason in making it a palate letter. The letter D is the fourth in the Hebrew, Chaldee, Samaritan, Syriac, Greek, and Latin alphabets; in the five first of which languages it has the same name, though somewhat differently spoke, *e. g.* in Hebrew and Chaldee *Daleth*, in Syriac *Dolet*, and in Greek *Delta*.

The form of our D is the same with that of the Latins, as appears from all the ancient medals and inscriptions; and the Latin D is no other than the Greek Δ, rounded a little, by making it quicker and at two strokes. The Δ of the Greeks, again, is borrowed from the ancient character of the Hebrew *Daleth*; which form it still retains, as is shown by the Jesuit Souciet, in his Dissertation on the Samaritan Medals.

D is also a numeral letter, signifying *five hundred*; which arises hence, that, in the Gothic characters, the D is half the M, which signifies a *thousand*. Hence the verse,

Litera D velut A quingentos significabit.

A dash added a-top, \overline{D} , denotes it to stand for five thousand.

Used as an abbreviation, it has various significations: thus D stands for Doctor; as, M. D. for Doctor of Medicine; D. T. Doctor of Theology; D. D. implies Doctor of Divinity, or "dono dedit;" D. D. D. is used for "dat, dicat, dedicat;" and D. D. D. D. for "dignum Deo donum dedit."

DAB, in ichthyology, the English name of a species of PLEURONECTES.

DABUL, a town of Asia, in the East Indies, on the coast of Malabar, and to the south of the gulf of Cambaye, on a navigable river. It was formerly very flourishing, but is now much decayed. It belongs to the Portuguese, and its trade consists principally in pepper and salt. E. Long. 73. 55. N. Lat. 17. 30.

DACCA, a town of Asia, in the kingdom of Bengal in the East Indies, situated in E. Long. 89. 10. N. Lat. 24. 0.—The advantages of the situation of this place, and the fertility of the soil round it, have long since made it the centre of an extensive commerce. The courts of Delhi and Muxadav are furnished from thence with the cottons wanted for their own consumption. They each of them maintain an agent on the spot to superintend the manufacture of them; and he has an authority, independent of the magistrate, over the brokers, weavers, embroiderers, and all the workmen whose business has any relation to the object of his commission. These unhappy people are forbidden, under pecuniary and corporal penalties, to sell, to any person whatever, a piece exceeding the value of

three guineas: nor can they, but by dint of money, relieve themselves from this oppression.

In this, as in all the other markets, the Europeans treat with the Moorish brokers settled upon the spot, and appointed by the government. They likewise lend their name to the individuals of their own nation, as well as to Indians and Armenians living in their settlements, who, without this precaution, would infallibly be plundered. The Moors themselves, in their private transactions, sometimes avail themselves of the same pretence, that they may pay only two, instead of five *per cent*. A distinction is observed, in their contracts, between the cottons that are bespoke and those which the weaver ventures, in some places, to manufacture on his own account. The length, the number of threads, and the price, of the former are fixed: nothing further than the commission for the latter is stipulated, because it is impossible to enter into the same detail. Those nations that make a point of having fine goods, take proper measures that they may be enabled to advance money to their workmen at the beginning of the year. The weavers, who in general have but little employment at that time, perform their work with less hurry than in the months of October, November, and December, when the demand is pressing.

Some of the cottons are delivered unbleached, and others half-bleached. It were to be wished that this custom might be altered. It is very common to see cottons that look very beautiful, go off in the bleaching. Perhaps the manufacturers and brokers foresee how they will turn out; but the Europeans have not so exquisite a touch, nor such an experienced eye to discern this. It is a circumstance peculiar to India, that cottons, of what kind soever they are, can never be well bleached and prepared but in the place where they are manufactured. If they have the misfortune to get damage before they are shipped for Europe, they must be sent back to the places from whence they came.

DACE, in ichthyology, a species of CYPRINUS.

This fish is extremely common in our rivers, and gives the expert angler great diversion. The dace will bite at any fly; but he is more than ordinarily fond of the stone caddis, or May-fly, which is plentiful in the latter end of April and the whole month of May. Great quantities of these may be gathered among the reeds of fedges by the water-side; and on the hawthorn bushes near the waters. These are a large and handsome bait; but as they last only a small part of the year in season, recourse is to be had to the ant-fly. Of these the black ones found in large mole-hills or ant-hills are the best. These may be kept alive a long time in a bottle, with a little of the earth of the hill, and some roots of grass; and they are in season throughout the months of June, July, August, and September. The best season of all is when they swarm, which is in the

Dacca,
Dace.

Dachaw
Dacier.

end of July or beginning of August; and they may be kept many months in a vessel washed out with a solution of honey in water, even longer than with the earth and grass-roots in the vial; though that is the most convenient method with a small parcel taken for one day's fishing. In warm weather this fish very seldom refuses a fly at the top of the water; but at other times he must have the bait sunk to within three inches of the bottom. The winter fishing for dace requires a very different bait: this is a white maggot with a reddish head, which is the produce of the eggs of the beetle, and is turned up with the plough in great abundance. A parcel of these put in any vessel, with the earth they were taken in, will keep many months, and are an excellent bait. Small dace may be put into a glass jar with fresh water; and there preferred alive for a long time, if the water is properly changed. They have been observed to eat nothing but the animalcula of the water. They will grow very tame be degrees.

DACHAW, a town of Bavaria in Germany. It is pretty large, well built, and seated on a mountain, near the river Amber. Here the elector has a palace and fine gardens. E. Long. 11. 30. N. Lat. 48. 20.

DACIA (anc. geog.), a country which Trajan, who reduced it to a province, joined to Moesia by an admirable bridge. This country lies extended between the Danube and the Carpathian mountains, from the river Tibiscus, quite to the north bend of the Danube; so as to extend thence in a direct line to the mouth of the Danube and to the Euxine; on the north-side next the Carpathes, terminated by the river Hierafus, now the Pruth; on the west by the Tibiscus or Teis; comprising a part of Upper Hungary, all Transylvania and Wallachia, and a part of Moldavia. *Daci*, the people; a name which Strabo takes to be the same with the *Davi* of Comedies: neighbours, on the west, to the *Getae*; an appellation common also in Comedies. Josephus mentions a set of religious men among the *Daci*, whom he calls *Plisti*, and compares with the *Esseni*; of these *Plisti* no other author makes any mention. *Dacicus*, the epithet; assumed by some emperors, (Juvenal.) There was a Dacia Aureliani, a part of Illyricum, which was divided into the eastern and western; Sirmium being the capital of the latter, and Sardica of the former. But this belongs to the lower age.

DACIER (Andrew), born at Castres in Upper Languedoc, 1651, had a great genius and inclination for learning, and studied at Saumur under Tannegui le Fevre, then engaged in the instruction of his daughter, who proved afterwards an honour to her sex. This gave rise to that mutual tenderness which a marriage of 40 years could never weaken in them. The duke of Montausier hearing of his merit, put him in the list of commentators for the use of the dauphin, and engaged him in an edition of Pompeius Festus, which he published in 1681. His edition of Horace printed at Paris in 10 vols in 12mo, and his other works, raised him a great reputation. He was made a member of the academy of inscriptions in 1695. When the history of Louis XIV. by medals was finished, he was chosen to present it to his majesty; who being informed of the pains which he had taken in it, settled upon him a pension of 2000 livres, and appointed him keep-

er of the books of the king's closet in the Louvre. When that post was united to that of library-keeper to the king, he was not only continued in the privileges of his place during life, but the survivance was granted to his wife, a favour of which there had been no instance before. But the death of Madam Dacier in 1720, rendered this grant, which was so honourable to her, ineffectual. He died September 18. 1722, of an ulcer in the throat. In his manners, sentiments, and the whole of his conduct, he was a complete model of that ancient philosophy of which he was so great an admirer, and which he improved by the rules and principles of Christianity.

DACIER (Anne), daughter of Tannegui le Fevre, professor of Greek at Saumur in France. She early showed a fine genius, which her father cultivated with great care and satisfaction. After her father's death she went to Paris, whither her fame had already reached; she was then preparing an edition of Callimachus, which she published in 1674. Having shown some sheets of it to Mr Huet, preceptor to the dauphin, and to several other men of learning at the court, the work was so highly admired, that the duke of Montausier made a proposal to her of publishing several Latin authors for the use of the dauphin. She rejected this proposal at first, as a task to which she was not equal. But the duke insisted upon it; so that at last he gained her consent; upon which she undertook an edition of Florus, published in 1674. Her reputation being now spread over all Europe, Christina queen of Sweden ordered count Konigsmark to make her a compliment in her name: upon which Mademoiselle le Fevre sent the queen a Latin letter, with her edition of Florus: to which her majesty wrote an obliging answer; and not long after sent her another letter, to persuade her to abandon the Protestant religion, and made her considerable offers to settle at her court. In 1683 she married Mr Dacier; and soon after declared her design to the duke of Montausier and the bishop of Meaux of reconciling herself to the church of Rome, which she had entertained for some time: but as Mr Dacier was not yet convinced of the reasonableness of such a change, they retired to Castres in 1684, where they had a small estate, in order to examine the points of controversy between the Protestants and the Roman Catholics. They at last determined in favour of the latter, and made their public abjuration in 1685. After this, the king gave both husband and wife marks of his favour. In 1693, she applied herself to the education of her son and daughter, who made a prodigious progress: the son died in 1694, and the daughter became a nun in the abbey of Longchamp. She had another daughter, who had united in her all the virtues and accomplishments that could adorn the sex; but she died at 18. Her mother has immortalized her memory in the preface to her translation of the Iliad. Madam Dacier was in a very infirm state of health the two last years of her life; and died, after a very painful sickness, August 17. 1720, aged 69. She was remarkable for her firmness, generosity, equality of temper, and piety.

DACTYL, *dactylus*, a foot in the Latin and Greek poetry, consisting of a long syllable, followed by two short ones: as *cārmīnē*.

Some say it is derived from *δακτυλος*, "a finger," because

Dacier,
Dactyl.

because it is divided into three joints, the first of which is longer than the other two.

The dactyl is said to have been the invention of Dionysius or Bacchus, who delivered oracles in this measure at Delphos, before Apollo. The Greeks call it *ωολιτικός*. The dactyl and spondee are the most considerable of the poetical feet; as being the measures used in heroic verse, by Homer, Virgil, &c. These two are of equal time, but not equal motion. The spondee has an even, strong, and steady pace, like a trot: the dactyl resembles the nimbler strokes of a gallop.

DACTYLUS was also a sort of dance among the ancient Greeks, chiefly performed, Hesychius observes, by the athletes.

DACTYLS also denote the fruit of the palm-tree, more usually called *dates*.

DACTYLI IDÆI; the *Fingers of Mount Ida*. Concerning these, Pagan theology and fable give very different accounts. The Cretans paid divine worship to them, as those who had nursed and brought up the god Jupiter; whence it appears, that they were the same as the Corybantes and Curetes. Nevertheless Strabo makes them different; and says, that the tradition in Phrygia was, that "Curetes and Corybantes were descended from the Dactyli Idæi: that there were originally an hundred men in the island, who were called *Dactyli Idæi*; from whom sprang nine Curetes, and each of these nine produced ten men, as many as the fingers of a man's two hands; and that this gave the name to the ancestors of the Dactyli Idæi." He relates another opinion, which is, that there were but five Dactyli Idæi; who, according to Sophocles, were the inventors of iron: that these five brothers had five sisters, and that from this number they took the name of *fingers of mount Ida*, because they were in number ten; and that they worked at the foot of this mountain. Diodorus Siculus reports the matter a little differently. He says "the first inhabitants of the island of Crete were the Dactyli Idæi, who had their residence on mount Ida: that some said they were an hundred; others only five, in number equal to the fingers of a man's hand, whence they had the name of *Dactyli*: that they were magicians, and addicted to mystical ceremonies: that Orpheus was their disciple, and carried their mysteries into Greece: that the Dactyli invented the use of iron and fire, and that they had been recompensed with divine honours."

Diomedes the Grammarian says, The Dactyli Idæi were priests of the goddess Cybele: called *Idæi*, because that goddess was chiefly worshipped on mount Ida in Phrygia; and *Dactyli*, because that, to prevent Saturn from hearing the cries of infant Jupiter, whom Cybele had committed to their custody, they used to sing certain verses of their own invention, in the Dactylic measure. See CURETES and CORYBANTES.

DACTYLIC, something that has a relation to dactyls.

Anciently, there were dactylic as well as spondaic flutes, *tibiæ dactylica*. The dactylic flutes consisted of unequal intervals; as the dactylic foot does of unequal measures.

Dactylic Verses are hexameter verses, ending in a dactyl instead of a spondee; as spondaic verses are those which have a spondee in the fifth foot instead of a dactyl.

An instance of a dactylic verse we have in Virgil:

*Bis patriæ occidere manus: quin protinus omnia
Perlegerent oculis*—ÆN. vi. 33.

DACTYLIOMANCY, DACTYLIOMANTIA, a sort of divination performed by means of a ring. The word is composed of the Greek *δακτυλιος* "ring," of *δακτυλος* "finger," and *μαντεία* "divination."

Dactyliomancy consisted principally in holding a ring, suspended by a fine thread, over a round table, on the edge whereof were made divers marks with the twenty-four letters of the alphabet. The ring in shaking, or vibrating over the table, stopped over certain of the letters, which, being joined together, composed the answer required. But the operation was preceded and accompanied by several superstitious ceremonies; for first the ring was to be consecrated with a great deal of mystery: the person who held it was to be clad in linen garments to the very shoes; his head was to be shaved all round; and in his hand he was to hold vervain. And before he proceeded on any thing, the gods were first to be appeased by a formulary of prayers, &c. Ammianus Marcellinus gives the process at large in his 29th book.

DACTYLIS, COCK'S-FOOT GRASS: A genus of the digynia order, belonging to the triandria class of plants; and in the natural method ranking under the 4th order, *Gramina*. The calyx is bivalved and compressed, with the one valve longer than the other, carinated, or having the rachis prominent and sharp. There are two species, the cynosuoides or smooth cock's-foot grass, and the glomeratus or rough cock's foot grass. Both are natives of Britain: the first grows in marshy places, and the latter is common in meadows and pasture-grounds. This last is eat by horses, sheep, and goats; but refused by cows.

DACTYLUS, in zoology, a name given by Pliny to the PHOLAS.

DADUCHI, in antiquity, priests of Ceres. That goddess having lost her daughter Proserpine, say mythologists, began to make search for her at the beginning of the night. In order to do this in the dark, she lighted a torch, and thus set forth on her travels throughout the world: for which reason it is that she is always seen represented with a lighted torch in her hand. On this account, and in commemoration of this pretended exploit, it became a custom for the priests, at the feasts and sacrifices of this goddess, to run about in the temple, with torches after this manner; one of them took a lighted torch from off the altar, and holding it with his hand, ran with it to a certain part of the temple, where he gave it to another, saying to him, *Tibi trado*: this second ran after the like manner to another part of the temple, and gave it to the third, and so of the rest. From this ceremony the priests became denominated *daduchi*, *δαδουχι*, *q. d.* "torch-bearers;" from *δας*, "an unctuous resinous wood, as pine, fir, &c." whereof the ancients made torches; and *ἔχω*, "I have, I hold."—The Athenians also gave the name *deduchus* to the high-priest of Hercules.

DÆDALA, a mountain and city of Lycia, where Dædalus was buried, according to Pliny.—Also two festivals in Bœotia, so called; one of them observed at Alalcomenos by the Platæans in a large grove, where they exposed in the open air pieces of boiled flesh, and carefully observed whether the crows that came to

Dactylio-
mancy
||
Dædala.

Dædala,
Dædalus.

prey upon them directed their flight. All the trees upon which any of these birds alighted were immediately cut down, and with them statues were made, called *Dædala*, in honour of *Dædalus*. The other festival was of a more solemn kind. It was celebrated every 60 years by all the cities of Bœotia, as a compensation for the intermission of the smaller festivals, for that number of years, during the exile of the Platæans. Fourteen of the statues called *Dædala* were distributed by lot among the Platæans, Lebadæans, Coroneans, Orchomenians, Thespians, Thebans, Tanagræans, and Chæroneans, because they had effected a reconciliation among the Platæans, and caused them to be recalled from exile about the time that Thebes was restored by Cassander the son of Antipater. During this festival a woman in the habit of a bride-maid accompanied a statue which was dressed in female garments, on the banks of the Eurotes. This procession was attended to the top of mount Cithæron by many of the Bœotians, who had places assigned them by lot. Here an altar of square pieces of wood cemented together like stones was erected, and upon it were thrown large quantities of combustible materials. Afterwards a bull was sacrificed to Jupiter, and an ox or heifer to Juno, by every one of the cities of Bœotia, and by the most opulent that attended. The poorest citizens offered small cattle; and all these oblations, together with the *Dædala*, were thrown into the common heap and set on fire, and totally reduced to ashes. They originated in this: When Juno, after a quarrel with Jupiter, had retired to Eubœa, and refused to return to his bed, the god, anxious for her return, went to consult Cithæron king of Platæa, to find some effectual measure to break her obstinacy. Cithæron advised him to dress a statue in woman's apparel, and carry it in a chariot, and publicly to report it was Platæa the daughter of Afopus, whom he was going to marry. The advice was followed; and Juno, informed of her husband's future marriage, repaired in haste to meet the chariot, and was easily united to him, when she discovered the artful measures he made use of to effect a reconciliation.

DÆDALUS, an Athenian, son of Eupalamus, descended from Erechtheus king of Athens. He was the most ingenious artist of his age; and to him we are indebted for the invention of the wedge, and many other mechanical instruments, and the sails of ships. He made statues which moved of themselves, and seemed to be endowed with life. Talus his sister's son promised to be as great as himself by the ingenuity of his inventions; and therefore from envy he threw him down from a window and killed him. After the murder of this youth, *Dædalus*, with his son *Icarus*, fled from Athens to Crete, where *Minos* king of the country gave him a cordial reception. *Dædalus* made a famous labyrinth for *Minos*, and assisted *Pasiphae* the queen, to gratify her unnatural passion for a bull. For this action *Dædalus* incurred the displeasure of *Minos*, who ordered him to be confined in the labyrinth which he had constructed. Here he made himself wings with feathers and wax, and carefully fitted them to his body and that of his son, who was the companion of his confinement. They took their flight in the air from Crete; but the heat of the sun melted the wax on the wings of *Icarus*, whose flight was too

Dæmon

high, and he fell into that part of the ocean which from him has been called the *Icarian Sea*. The father by a proper management of his wings alighted at Cumæ, where he built a temple to *Apollo*, and thence directed his course to Sicily, where he was kindly received by *Cocalus*, who reigned over part of the country. He left many monuments of his ingenuity in Sicily, which still existed in the age of *Diodorus Siculus*. He was dispatched by *Cocalus*, who was afraid of the power of *Minos*, who had declared war against him because he had given an asylum to *Dædalus*. The flight of *Dædalus* from Crete with wings is explained by observing that he was the inventor of sails, which in his age might pass at a distance for wings. He lived 1400 years before the Christian era. There were two statues of the same name; one of *Sicyon* son of *Patroclus*; the other a native of *Bithynia*.

DÆMON *Δαιμων*, a name given by the ancients to certain spirits or genii, which they say appeared to men, either to do them service or to hurt them.

The Greek word *δαιμων* is derived (according to *Plato*, in his *Cratylus*, p. 398. *ed. Serrani*, vol. i.) from *δαιμων*, "knowing or intelligent;" but according to others from *δαιρομαι*, "to distribute," (see the Scholiast on *Homer*, Il. i. ver. 222). Either of these derivations agrees with the office ascribed to dæmons by the ancient heathens, as the spirit intrusted with the inspection and government of mankind. For, according to the philosophers, dæmons held a middle rank between the celestial gods and men on earth, and carried on all intercourse between them; conveying the addresses of men to the gods, and the divine benefits to men. It was the opinion of many, that the celestial divinities did not themselves interpose in human affairs, but committed the entire administration of the government of this lower world to these subaltern deities: *Neque enim pro majestate deum caelestium fuerit, hac curare; (Apuleius de deo Socratis, p. 677). Cuncta caelestium voluntate, numine & auctoritate, sed demonum obsequio, & opera, & ministerio fieri arbitrandum est; (Id. p. 675.)* Hence they became the objects of divine worship. "*If idols are nothing,*" says *Celsus (apud Origen cont. Cels. lib. viii. p. 393.)*, "what harm can there be to join in the public festivals? If they are dæmons, then it is certain that they are gods, in whom we are to confide, and to whom we should offer sacrifices and prayers, to render them propitious."

Several of the heathen philosophers held, that there were different kinds of dæmons; that some of them were spiritual substances of a more noble origin than the human race, and that others had once been men.

But those dæmons who were the more immediate objects of the established worship amongst the ancient nations were human spirits, such as were believed to become dæmons or deities after their departure from their bodies. *Plutarch* teaches (*Vit. Romul. p. 36. ed. Paris*) "that according to a divine nature and justice, the souls of virtuous men are advanced to the rank of dæmons; and that from dæmons, if they are properly purified, they are exalted into gods, not by any political institution, but according to right reason." The same author says in another place (*de Is. & Osir. p. 361.*), "that *Isis* and *Osiris* were, for their virtue, changed from good dæmons into gods, as were *Hercules*

moniac. cules and Bacchus afterwards, receiving the united honours both of gods and dæmons." Hesiod and other poets who have recorded the ancient history or traditions on which the public faith and worship were founded, assert, that the men of the golden age, who were supposed to be very good, became dæmons after death, and dispensers of good things to mankind.

Though *demon* is often used in a general sense as equivalent to a *deity*; and is accordingly applied to *fate* or *fortune*, or whatever else was regarded as a god: yet those dæmons who were the more immediate objects of divine worship amongst the heathens were human spirits; as is shown in Farmer on Miracles, chap. iii. sect. 2.

The word *demon* is used indifferently in a good and in a bad sense. In the former sense, it was very commonly used among the ancient heathens. "We must not (says Menander) think any dæmon to be evil, hurtful to a good life, but every god to be good." Nevertheless, those are certainly mistaken who affirm, that *demon* never signifies an evil being till after the times of Christ. Pythagoras held dæmons who sent diseases to men and cattle (*Dingen. Laert. Vit. Pythagor. p. 514. ed. Amstel.*) Zaleucus, in his preface to his Laws (*apud Stobæum, Serm. 42.*) supposes that an evil dæmon might be present with a man, to influence him to injustice. The dæmons of Empedocles were evil spirits, and exiles from heaven; (*Plutarch, περὶ τῶν ἀνδρῶν δαίμονων*). And in his life of Dion (p. 958) he says, "It was the opinion of the ancients, that evil and mischievous dæmons, out of envy and hatred to good men, oppose whatever they do." Scarce did any opinion more generally prevail in ancient times than this, *viz.* that as the departed souls of good men became good dæmons, so the departed souls of bad men became evil dæmons.

It has been generally thought, that by *demons* we are to understand *devils*, in the Septuagint version of the Old Testament. Others think the word is in that version certainly applied to the ghosts of such dead men as the heathens deified, in Deut. xxxii. 17. Pf. cvi. 37. That *demon* often bears the same meaning in the New Testament, and particularly in Acts xvii. 18. 1 Cor. x. 21. 1 Tim. iv. 1. Rev. ix. 13. is shown at large by Mr Joseph Mede (*Works, p. 623, et seq.*) That the word is applied *always* to human spirits in the New Testament, Mr Farmer has attempted to show in his Essay on Demoniacs, p. 208, *et seq.* As to the meaning of the word *demon* in the fathers of the Christian church, it is used by them in the same sense as it was by the heathen philosophers, especially the latter Platonists; that is, sometimes for departed human spirits, and at other times for such spirits as had never inhabited human bodies. In the fathers, indeed, the word is more commonly taken in an evil sense, than in the ancient philosophers. Besides the two forementioned kinds of dæmons, the fathers, as well as the ancient philosophers, held a third, *viz.* such as sprang from the congress of superior beings with the daughters of men. In the theology of the fathers, these were the worst kind of dæmons.

Different orders of dæmons had different stations and employments assigned them by the ancients. Good dæmons were considered as the authors of good to mankind; evil dæmons brought innumerable evils both

upon men and beasts. Amongst evil dæmons there was a great distinction with respect to the offices assigned them; some compelled men to wickedness, others stimulated them to madness. See DEMONIAIC.

Much has been said concerning the dæmon of Socrates. He pretended to his friends and disciples, and even declared to the world, that a friendly spirit, whom he called his *demon*, directed him how to act on every important occasion in his life, and restrained him from imprudence of conduct.

In contemplating the character of this great philosopher, while we admire him as the noblest pattern of virtue and moral wisdom that appeared in the heathen world, we are naturally led to inquire, whether what he gave out concerning his dæmon were a trick of imposture, or the reverie of a heated imagination, or a sober and true account of a favour which heaven designed to confer on so extraordinary a man.

To ascertain in this case the object of our inquiries, is by no means so easy as the superficial thinker may be apt to imagine. When we consider the dignity of sentiment and simplicity of manners which Socrates displayed through the general tenor of his life, we cannot readily bring ourselves to think that he could be capable of such a trick of imposture. Nothing of the wildness of an enthusiast appears in his character; the modesty of his pretensions, and the respect which in his conversation and conduct he uniformly testified for the ordinary duties of social life, sufficiently prove that he was free from the influence of blind enthusiasm: we cannot infer, therefore, that, like the astronomer in Rasseles, he was deceived with respect to his dæmon by an overheated imagination. It is no less difficult to believe, that God would distinguish a heathen in so eminent a manner, and yet leave him uninstructed in the principles of true religion. Surely, if ever scepticism be reasonable, it must be in such matters as the present.

Yet, if it be still insisted, that some one of these three notions concerning the dæmon of Socrates must be more probable than the others; we would rather esteem Socrates an enthusiast in this instance, than degrade him to the base character of an impostor, or suppose that a spiritual being actually revealed himself to the philosopher, and condescended to become his constant attendant and counsellor. People are often under the influence of an over-heated imagination with regard to some one thing, and cool and sober as to every thing else.

1
DÆMONIAIC (from *demon*), a human being whose Definition. volition and other mental faculties are overpowered and restrained, and his body possessed and actuated, by some created spiritual being of superior power.

2
Such seems to be the determinate sense of the word; but it is disputed whether any of mankind ever were in this unfortunate condition. Dispute concerning dæmoni-

3
It is generally agreed, that neither good nor evil spirits are known to exert such authority at present over the human race: but in the ancient heathen world, and among the Jews, particularly in the days of our Saviour, evil spirits, at least, are thought by many to have been more troublesome.

4
The Greeks and Romans imagined, that their deities, to reveal future events, frequently entered into the prophet or prophets who was consulted, overpowered possession. Notions of the Greeks and Romans concerning the power of possession.

Dæmoniac powered their faculties, and uttered responses with their organs of speech. Apollo was believed to enter into the Pythones, and to dictate the prophetic answers received by those who consulted her. Other oracles besides that of Delphi were supposed to unfold futurity by the same machinery. And in various other cases, either malignant dæmons or benevolent deities were thought to enter into and to actuate human beings. The *Lymphatici*, the *Cerriti*, the *Larvati*, of the Romans, were all of this description; and the Greeks, by the use of the word *δαίμονες*, show that they referred to this cause the origin of madness. Among the ancient heathens, therefore, it appears to have been a generally received opinion, that superior beings entered occasionally into men, overpowered the faculties of their minds, and actuated their bodily organs. They might imagine that this happened in instances in which the effects were owing to the operation of different causes; but an opinion so generally prevalent had surely some plausible foundation.

4
Of the
Jews.

The Jews too, if we may trust the sacred writings or Josephus, appear to have believed in dæmoniacal possession. The case of Saul may be recollected as one among many in which superior created beings were believed by the Jews to exert in this manner their influence over human life. The general tenor of their history and language, and their doctrines concerning good and evil spirits, prove the opinion of dæmoniacal possession to have been well known and generally received among them.

5
Of mankind
in general
in the days
of our Sa-
viour.

In the days of our Saviour, it would appear that dæmoniacal possession was very frequent among the Jews and the neighbouring nations. Many were the evil spirits whom Jesus is related in the gospels to have ejected from patients that were brought unto him as possessed and tormented by those malevolent dæmons. His apostles too, and the first Christians, who were most active and successful in the propagation of Christianity, appear to have often exerted the miraculous powers with which they were endowed on similar occasions. The dæmons displayed a degree of knowledge and malevolence which sufficiently distinguished them from human beings: and the language in which the dæmoniacs are mentioned, and the actions and sentiments ascribed to them in the New Testament, show that our Saviour and his apostles did not consider the idea of dæmoniacal possession as being merely a vulgar error concerning the origin of a disease or diseases produced by natural causes.

6
Jesus
Christ and
his apostles
must have
believed
dæmoniacal
possession to be
real.

The more enlightened cannot always avoid the use of metaphorical modes of expression; which though founded upon error, yet have been so established in language by the influence of custom, that they cannot be suddenly dismissed. When we read in the book of Joshua, that the sun on a certain occasion stood still, to allow that hero time to complete a victory; we easily find an excuse for the conduct of the sacred historian, in accommodating his narrative to the popular ideas of the Jews concerning the relative motions of the heavenly bodies. In all similar instances, we do not complain much of the use of a single phrase, originally introduced by the prevalence of some groundless opinion, the falsity of which is well known to the writer.

But in descriptions of characters, in the narration of

facts, and in the laying down of systems of doctrine, we require different rules to be observed. Should any person, in compliance with popular opinions, talk in serious language of the existence, dispositions, declarations, and actions of a race of beings whom he knew to be absolutely fabulous, we surely could not praise him for candid integrity: we must suppose him to be either exulting in irony over the weak credulity of those around him, or taking advantage of their weakness, with the dishonesty and the selfish views of an impostor. And if he himself should pretend to any connection with this imaginary system of beings; and should claim, in consequence of his connection with them, particular honours from his contemporaries; whatever might be the dignity of his character in all other respects, nobody could hesitate even for a moment to brand him as an impostor of the basest character.

Precisely in this light must we regard the conduct of our Saviour and his apostles, if the idea of dæmoniacal possession were to be considered merely as a vulgar error. They talked and acted as if they believed that evil spirits had actually entered into those who were brought to them as possessed with devils, and as if those spirits were actually expelled by their authority out of the unhappy persons whom they had possessed. They expected, they demanded too, to have their professions and declarations believed, in consequence of their performing such mighty works, and to be honoured as having thus triumphed over the powers of hell. The reality of dæmoniacal possession stands upon the same evidence with the gospel system in general.

7
Reasonableness of the
doctrine.

Neither is there any thing absurd or unreasonable in this doctrine. It does not appear to contradict those ideas which the general appearances of nature and the series of events suggest concerning the benevolence and wisdom of the Deity, and the counsels by which he regulates the affairs of the universe. We often fancy ourselves able to comprehend things to which our understanding is wholly inadequate: we persuade ourselves, at times, that the whole extent of the works of the Deity must be well known to us, and that his designs must always be such as we can fathom. We are then ready, whenever any difficulty arises to us, in considering the conduct of Providence, to model things according to our own ideas; to deny that the Deity can possibly be the author of things which we cannot reconcile; and to assert, that he must act on every occasion in a manner consistent with our narrow views. This is the pride of reason; and it seems to have suggested the strongest objections that have been at any time urged against the reality of dæmoniacal possession. But the Deity may surely connect one order of his creatures with another. We perceive mutual relations and a beautiful connection to prevail through all that part of nature which falls within the sphere of our observation. The inferior animals are connected with mankind, and subjected to their authority, not only in instances in which it is exerted for their advantage, but even where it is tyrannically abused to their destruction. Among the evils to which mankind have been subjected, why might not their being liable to dæmoniacal possession be one? While the Supreme Being retains the sovereignty of the universe,

dæmoniac. universe, he may employ whatever agents he thinks proper in the execution of his purposes: he may either commission an angel or let loose a devil; as well as bend the human will, or communicate any particular impulse to matter.

All that revelation makes known, all that human reason can conjecture, concerning the existence of various orders of spiritual beings, good and bad, is perfectly consistent with, and even favourable to, the doctrine of dæmoniacal possession. It was generally believed through the ancient heathen world; it was equally well known to the Jews, and equally respected by them; it is mentioned in the New Testament in such language, and such narratives are related concerning it, that the gospels cannot well be regarded in any other light than as pieces of imposture, and Jesus Christ must be considered as a man who dishonestly took advantage of the weakness and ignorance of his contemporaries, if this doctrine be nothing but a vulgar error; it teaches nothing inconsistent with the general conduct of Providence; it is not the caution of philosophy, but the pride of reason, that suggests objections against this doctrine.

Those, again, who are unwilling to allow that angels or devils have ever intermeddled so much with the concerns of human life, urge a number of specious arguments in opposition to these.

The Greeks and Romans of old, say they, did believe in the reality of dæmoniacal possession. They supposed that spiritual beings did at times enter into the sons or daughters of men, and distinguish themselves in that situation by capricious freaks, deeds of wanton mischief, or prophetic enunciations. But in the instances in which they supposed this to happen, it is evident that no such thing took place. Their accounts of the state and conduct of those persons whom they believed to be possessed in this supernatural manner, show plainly that what they ascribed to the influence of dæmons were merely the effects of natural diseases. Whatever they relate concerning the *larvati*, the *ceriti*, and the *lymphatici*, shows that these were merely people disordered in mind, in the same unfortunate situation with those madmen and idiots and melancholy persons whom we have among ourselves. Festus describes the *Larvati* as being *furiosi et mente moti*. Horace says,

*Hellade percussit, Marius cum precipitat se,
Cerritus fuit?*

Plato, in his *Symposium*, says, *ἄνθρωπος γὰρ ἐνθὺς ἐπαίεται μανικὸς ἐνθουσιᾷ, ὁ ἄνθρωπος*. Lucian describes dæmoniacs as lunatic, and as staring with their eyes, foaming at the mouth, and being speechless.

It appears still more evidently, that all the persons spoken of as possessed with devils in the New Testament, were either mad or epileptic, and precisely in the same condition with the madmen and epileptics of modern times. The Jews, among other reproaches which they threw out against our Saviour, said, *He hath a devil, and is mad; why hear ye him?* The expressions *he hath a devil, and is mad*, were certainly used on this occasion as synonymous. With all their virulence, they would not surely ascribe to him at once two things that were inconsistent and contradictory. Those who thought more favourably of the character of Jesus, asserted concerning his discourses, in reply to

his adversaries, *These are not the words of him that hath a demon*; meaning, no doubt, that he spoke in a more rational manner than a madman could be expected to speak. The Jews appear to have ascribed to the influence of dæmons, not only that species of madness in which the patient is *raving and furious*, but also *melancholy* madness. Of John, who secluded himself from intercourse with the world, and was distinguished for abstinence and acts of mortification, they said, *He hath a demon*. The youth, whose father applied to Jesus to free him from an evil spirit, describing his unhappy condition in these words, *Have mercy on my son, for he is lunatic and sore vexed with a demon; for oft times he falleth into the fire, and oft into the water*, was plainly epileptic. Every thing indeed that is related in the New Testament concerning dæmoniacs, proves that they were people affected with such natural diseases as are far from being uncommon among mankind in the present age. When the symptoms of the disorders cured by our Saviour and his apostles as cases of dæmoniacal possession, correspond so exactly with those of diseases well known as natural in the present age, it would be absurd to impute them to a supernatural cause. It is much more consistent with common sense and sound philosophy to suppose, that our Saviour and his apostles wisely, and with that condescension to the weakness and prejudices of those with whom they conversed, which so eminently distinguished the character of the Author of our holy religion, and must always be a prominent feature in the character of the true Christian, adopted the vulgar language in speaking of those unfortunate persons who were groundlessly imagined to be possessed with dæmons, though they well knew the notions which had given rise to such modes of expression to be ill-founded, than to imagine that diseases, which arise at present from natural causes, were produced in days of old by the intervention of dæmons, or that evil spirits still continue to enter into mankind in all cases of madness, melancholy, or epilepsy.

Besides, it is by no means a sufficient reason for receiving any doctrine as true, that it has been generally received through the world. Error, like an epidemical disease, is communicated from one to another. In certain circumstances, too, the influence of imagination predominates, and restrains the exertions of reason. Many false opinions have extended their influence through a very wide circle, and maintained it long. On every such occasion as the present, therefore, it becomes us to inquire, not so much how generally any opinion has been received, or how long it has prevailed, as from what causes it has originated, and on what evidence it rests.

When we contemplate the frame of nature, we behold a grand and beautiful simplicity prevailing throughout the whole: Notwithstanding its immense extent, and though it contains such numberless diversities of being; yet the simplest machine constructed by human art does not display easier simplicity, or an happier connection of parts. We may therefore venture to draw an inference, by analogy, from what is observable of the order of nature in general to the present case. To permit evil spirits to intermeddle with the concerns of human life, would be to break through that order which the Deity appears to have established through his

It Inference from the analogy of nature.

Dæmoniacs works; it would be to introduce a degree of confusion unworthy of the wisdom of Divine Providence.

Such are the most rational arguments that have been urged on both sides in this controversy. Perhaps the dæmonianists have the stronger probabilities on their side; but we will not presume to take upon ourselves the office of arbitrators in the dispute.

DÆMONIACS, in church-history, a branch of the Anabaptists; whose distinguishing tenet is, that the devils shall be saved at the end of the world.

DAFFODIL. See **NARCISSUS**.

DAGO, a town of Turkey in Europe, in Albania, with a bishop's see. It is the capital of the district of Ducagini, and is seated on the rivers Drino and Nero, near their confluence. It is 15 miles south-east of Scutari, and 15 north-east of Alessio. E. Long. 19. 48. N. Lat. 42. 0.

DAGO, or **DAGHO**, an island in the Baltic Sea, on the coast of Livonia, between the gulf of Finland and Riga. It is of a triangular figure, and may be about 20 miles in circumference. It has nothing considerable but two castles, called *Dagger-wort* and *Paden*. E. Long. 22. 30. N. Lat. 58. 48.

* See *Sam.*
chap. v.

DAGON, the false god of Ashdod*, or, as the Greeks call it, *Azotus*. He is commonly represented as a monster, half man and half fish; whence most learned men derive his name from the Hebrew *dag*, which signifies "a fish." Those who make him to have been the inventor of *bread-corn*, derive his name from the Hebrew *Dagan*, which signifies *frumentum*; whence Philo Biblius calls him *Zeus Ἀγαθός*, *Jupiter Aratrius*.

This deity continued to have a temple at Ashdod during all the ages of idolatry to the time of the Maccabees: for the author of the first book of Maccabees tells us, that "Jonathan, one of the Maccabees, having beaten the army of Apollonius, Demetrius's general, they fled to Azotus, and entered into Bethdagon (the temple of their idol); but that Jonathan set fire to Azotus, and burnt the temple of Dagon and all those who were fled into it."

Dagon, according to some, was the same with Jupiter, according to others Saturn, according to others Venus, and according to most Neptune.

DAHGESTAN, a country of Asia, bounded by Circassia on the north, by the Caspian Sea on the east, by Chirvein a province of Persia on the south, and by Georgia on the west. Its chief towns are Tarku and Derbent, both situated on the Caspian Sea.

DAHOMÉ, a kingdom of Africa, on the coast of Guinea, to the north of Whidah, or Fida. The king of this country conquered Whidah, and very much disturbed the slave-trade of the Europeans.

DAILLE (John), a Protestant minister near Paris, was one of the most learned divines of the 17th century, and was the most esteemed by the Catholics of all the controversial writers among the Protestants. He was tutor to two of the grandsons of the illustrious Mr Du Pleffis Mornai. Mr Daille having lived 14 years with so excellent a master, travelled into Italy with his two pupils: one of them died abroad; with the other he saw Italy, Switzerland, Germany, Flanders, Holland, and England, and returned in 1621. He was received minister in 1623, and first exercised his office in the family of Mr Du Pleffis Mornai; but

this did not last long, for that lord died soon after. The memoirs of this great man employed Mr Daille the following year. In 1625 he was appointed minister of the church of Samur, and in 1626 removed to Paris. He spent all the rest of his life in the service of this last church, and composed several works. His first piece was his masterpiece, and an excellent work, *Of the Use of the Fathers*, printed 1631. It is a strong chain of reasoning, which forms a moral demonstration against those who would have religious disputes decided by the authority of the fathers. He died in 1670, aged 77.

DAIRI, or **DAIRO**, in the history of Japan, is the sovereign pontiff of the Japanese; or, according to Kämpfer, the hereditary ecclesiastical monarch of Japan. In effect, the empire of Japan is at present under two sovereigns, *viz.* an ecclesiastical one called the *daïro*, and a secular one who bears the title of *kubo*. The last is the emperor, and the former the oracle of the religion of the country.

DAIRY, in rural affairs, a place appropriated for the management of milk, and the making of butter, cheese, &c. See **BUTTER**, **CHEESE**, &c.

The dairy-house should always be kept in the neatest order, and so situated as that the windows or lattices never front the south, south-east, or south-west. Lattices are also to be preferred to windows, as they admit a more free circulation of the air than glazed lights possibly can do. It has been objected, that they admit cold air in winter and the sun in summer; but the remedy is easily obtained, by making a frame the size of or somewhat larger than the lattice, and constructing it so as to slide backward and forward at pleasure. Packthread strained across this frame, and oiled cap paper pasted thereon, will admit the light, and keep out the sun and wind.

It is hardly possible in the summer to keep a dairy-house too cool; on which account none should be situated far from a good spring or current of water. They should be neatly paved either with red brick or smooth hard stone; and laid with a proper descent, so that no water may lodge. This pavement should be well washed in the summer every day, and all the utensils belonging to the dairy should be kept perfectly clean. Nor should we ever suffer the churns to be scalded in the dairy, as the steam that arises from hot water will injure the milk. Nor should cheese be kept therein, nor rennet for making cheese, nor a cheese-press be fixed in a dairy, as the whey and curd will diffuse their acidity throughout the room.

The proper receptacles for milk are earthen pans, or wooden vats or trundles; but none of these should be lined with lead, as that mineral certainly contains a poisonous quality, and may in some degree affect the milk: but if people are so obstinate as to persist in using them, they should never forget to scald them, scrub them well with salt and water, and to dry them thoroughly, before they deposit the milk therein. Indeed all the utensils should be cleaned in like manner before they are used; and if after this they in the least degree smell sour, they must undergo a second scrubbing before they are fit for use.

DAKIR, in our statutes, is used for the twentieth part of a last of hides. According to the statute of

Dairi
Dakir.

Dais
||
Da-em.

51 Hen. III. *De compositione ponderum & mensurarum*, a last of hides consists of twenty dakirs, and every dakir of ten hides. But by 1 Jac. cap. 33. one last of hides or skins is twelve dozen. See DICKER.

DAIS, in botany: A genus of the monogynia order, belonging to the decandria class of plants; and in the natural method ranking under the 31st order, *Veprecule*. The involucre is tetraphyllous; the corolla quadrifid or quinquesfid; the fruit a monospermous berry.

DAISY. See BELLIS.

DALACA, an island of the Red Sea, over-against the coast of Abex, about 72 miles in length and 15 in breadth. It is very fertile, populous, and remarkable for a pearl fishery. The inhabitants are negroes, and great enemies to the Mahometans. There is a town of the same name seated over-against Abassia.

DALBERGIA, in botany; a genus of the octandria order, belonging to the diadelphia class of plants. There are two filaments or stamina quadrifid at top. The fruit is pedicellated, not gaping, leguminous, membrano-compressed, and bearing seeds.

DALEA, a province of Sweden, bounded on the north by Dalecarlia, on the east by the Wermeland and the lake Wener, on the south by Gothland, and on the north by Norway and the sea.

DALEBURG, a town of Sweden, and capital of the province of Dalia, seated on the western bank of the lake Wener, 50 miles north of Gottenburg. E. Long. 13. 0. N. Lat. 59. 0.

DALECARLIA, a province of Sweden, so called from a river of the same name, on which it lies, near Norway. It is divided into three parts, which they call *valleys*; and is about 175 miles in length and 100 in breadth. It is full of mountains, which abound in mines of copper and iron, some of which are of a prodigious depth. The towns are very small, and Idra is the capital. The inhabitants are rough, robust, and warlike; and all the great revolutions in Sweden had their rise in this province. The river rises in the Dofrine mountains; and, running south-east thro' the province, falls into the gulph of Bothnia.

DALECHAMP (James), a physician in Normandy, in the 16th century, wrote a History of Plants, and was well skilled in polite learning. He wrote notes on Pliny's Natural History, and translated Athenæus into Latin. He practised physic at Lyons from 1552 to 1558, when he died, aged 75.

DALECHAMPPIA, in botany: A genus of the adelphia order, belonging to the monœcia class of plants; and in the natural method ranking under the 38th order, *Tricoœca*. The involucre of the male is common and quadripartite; the calyces hexaphyllous; corolla none; the nectarium laminated or scaly; the stamina monodelphous or coalited at the base, and polyandrous or numerous. The female involucre is common and triphyllous; corolla none; style one; the capsule tricocous.—There is but one species, *viz.* the scandens, a native of Jamaica. It is a climbing plant, which rises to a considerable height; and is remarkable for nothing but having its leaves armed with bristly hairs, which sting the hands of those who unwarily touch them.

DALEM, a town of the United Provinces, and capital of a district of the same name. It was taken by

the French in 1672, who demolished the fortifications. It is seated on the river Bervine, five miles north-east of Liege. E. Long. 5. 59. N. Lat. 50. 40.

D'ALEMBERT. See ALEMBERT.

DALEN (Cornelius Van), an eminent engraver, who flourished about the year 1640. He was a native of Holland; but under what master he learned the art of engraving, is uncertain. It is difficult to form a proper judgment of his merit; for sometimes his prints resemble those of Cornelius Vischer, of Lucas Vosterman, of P. Pontius, of Bolwert, and other masters. A set of antique statues, engraved by him, are in a bold, free style, as if founded upon that of Goltzius; others, again, seem imitations of that of Francis Poilly. In all these different manners he has succeeded; and they plainly manifest the great command he had with his graver, for he worked with that instrument only. He engraved a great variety of portraits, some of which are very valuable, and form the best as well as the larger part of his works.

DALKEITH, a town of Scotland, in Mid-Lothian, six miles south-east of Edinburgh; W. Long. 2. 20. N. Lat. 55. 50. It is the principal residence of the Duke of Buccleugh, who has here a noble house and extensive parks. In this house, which at the time was the head-quarters of General Monk, the restoration of Charles II. was planned.—The Duke's eldest son has the title of Earl of Dalkeith. Here is a considerable market weekly on Thursdays, which supplies in part both Edinburgh and Glasgow.

DALMATIA, a province of Europe, bounded on the north by Bosnia, on the south by the gulph of Venice, on the east by Servia, and on the west by Morlachia. Spalatio is the capital of that part belonging to the Venetians; and Ragusa, of a republic of that name; the Turks have a third, whose capital is Herzegovina. The air is wholesome, and the soil fruitful; and it abounds in wine, corn, and oil.

DALTON, a town of Lancashire, in England. It is seated on the spring-head of a river, in a champaign country, not far from the sea; and the ancient cattle is made use of to keep the records, and prisoners for debt in the liberty of Furness. W. Long. 3. 0. N. Lat. 54. 18.

DALTON (John), D. D. an eminent divine and poet, was the son of the Rev. Mr John Dalton rector of Dean near Whitehaven in Cumberland, where he was born in 1709. He was educated at Queen's College, Oxford; and became tutor or governor to the Lord Beauchamp, only son of the Earl of Hertford, late Duke of Somerset; during which time he adapted Milton's admirable Mask of Comus to the stage, by a judicious insertion of several songs and different passages selected from other of Milton's works, as well as of several songs and other elegant additions of his own, suited to the characters and to the manner of the original author. During the run of this piece he industriously fought out a grand-daughter of Milton's, oppressed both by age and poverty; and procured her a benefit from it, the profits of which amounted to a very considerable sum. He was promoted by the king to a prebend of Worcester; where he died on the 22d of July 1763. Besides the above, he wrote a descriptive poem, addressed to two ladies at their return from view-

D'Alem-
bert
||
Dalton.

Dam

Damascus.

ing the coal-mines near Whitehaven; and Remarks on 12 historical designs of Raphael, and the *Museum Græcum & Egyptiacum*.

DAM, a boundary or confinement, as to *dam up* or *dam out*. *Infra damnum suum*, within the bounds or limits of his own property or jurisdiction.

DAMA, in zoology. See CERVUS.

DAMAGE, in law, is generally understood of a hurt or hindrance attending a person's estate: but, in common law, it is part of what the jurors are to inquire of in giving verdict for the plaintiff or defendant in a civil action, whether real or personal; for after giving verdict on the principal cause, they are likewise asked their consciences touching costs and damages, which contain the hindrances that one party hath suffered from the wrong done him by the other. See COSTS.

DAMAN, a maritime town of the East Indies, at the entrance into the gulph of Cambay. It is divided by the river Daman into two parts; one of which is called *New Daman*, and is a handsome town, well fortified, and defended by a good Portuguese garrison. The other is called *Old Daman*, and is very ill built. There is a harbour between the two towns, defended by a fort. It was taken by the Portuguese in 1535. The mogul has attempted to get possession of it several times, but always without effect. E. Long. 72. 35. N. Lat. 21. 5.

DAMASCENUS (John), an illustrious father of the church in the 8th century, born at Damascus, where his father, though a Christian, enjoyed the office of counsellor of state to the Saracen caliph; to which the son succeeded. He retired afterwards to the monastery of St Sabas, and spent the remainder of his life in writing books of divinity. His works have been often printed: but the Paris edition in 1712, 2 vols folio, is esteemed the best.

DAMASCIUS, a celebrated heathen philosopher, born at Damascus in the year 540, when the Goths reigned in Italy. He wrote the life of his master Iſidorus; and dedicated it to Theodora, a very learned and philosophical lady, who had also been a pupil to Iſidorus. In this life, which was copiously written, he frequently made oblique attacks on the Christian religion. We have nothing remaining of it but some extracts preserved by Photius. Damascius succeeded Theon in the rhetorical school, and Iſidorus in that of philosophy, at Athens.

DAMASCUS, a very ancient city of Syria in Asia, seated in E. Long. 47. 18. N. Lat. 35. 0. Some of the ancients suppose this city to have been built by one Damascus, from whom it took its name; but the most generally received opinion is, that it was founded by Uz the eldest son of Aram. It is certain, from *Gen. xiv. 5.* that it was in being in Abraham's time, and consequently may be looked upon as one of the most ancient cities in the world. In the time of king David it seems to have been a very considerable place; as the sacred historian tells us, that the Syrians of Damascus sent 20,000 men to the relief of Hadadezer king of Zobah. We are not informed whether at that time it was governed by kings, or was a republic. Afterwards, however, it became a monarchy which proved very troublesome to the kingdom of Israel, and would even have destroyed it entirely, had not the Deity miraculously interposed in its behalf. At last this

monarchy was destroyed by Tiglath Pileser king of Assyria, and Damascus was never afterwards governed by its own kings. From the Assyrians and Babylonians it passed to the Persians, and from them to the Greeks under Alexander the Great. After his death it belonged, with the rest of Syria, to the Seleucidæ; till their empire was subdued by the Romans, about 70 years before Christ. From them it was taken by the Saracens in 633; and it is now in the hands of the Turks.— Notwithstanding the tyranny of the Turkish government, Damascus is still a considerable place. It is situated in a plain of so great extent, that one can but just discern the mountains which compass it on the other side. It stands on the west side of the plain, about two miles from the head of the river Barrady, which waters it. It is of a long, strait figure, extending about two miles in length, adorned with mosques and steeples, and encompassed with gardens computed to be full 30 miles round. The river Barrady, as soon as it issues from the clefts of the Antilibanus into the plain, is divided into three streams, whereof the middlemost and biggest runs directly to Damascus, and is distributed to all the cisterns and fountains of the city. The other two seem to be artificial; and are drawn round, one to the right, and the other to the left, on the borders of the gardens, into which they are let by little currents, and dispersed every where. The houses of the city, whose streets are very narrow, are all built on the outside either with sun-burnt brick, or Flemish wall: and yet it is no uncommon thing to see the gates and doors adorned with marble portals, carved and inlaid with great beauty and variety; and within these portals to find large square courts beautified with fragrant trees and marble fountains, and compassed round with splendid apartments. In these apartments the ceilings are usually richly painted and gilded; and their dauns, which are a sort of low stages seated in the pleasantest part of the room, and elevated about 16 or 18 inches above the floor, whereon the Turks eat, sleep, say their prayers, &c. are floored, and adorned on the sides with variety of marble mixed in mosaic knots and mazes, spread with carpets, and furnished all round with bolsters and cushions, to the very height of luxury. In this city are shown the church of John the Baptist, now converted into a famous mosque; the house of Ananias, which is only a small grotto or cellar wherein is nothing remarkable; and the house of Judas with whom Paul lodged. In this last is an old tomb, supposed to be that of Ananias; which the Turks hold in such veneration, that they keep a lamp continually burning over it. There is a castle belonging to Damascus, which is like a little town, having its own streets and houses; and in this castle a magazine of the famous Damascus steel was formerly kept. The fruit-tree called the *damascene*, and the flower called the *damask rose*, were transplanted from the gardens belonging to this city; and the silks and linens known by the name of *damasks*, were probably invented by the inhabitants.

DAMASCUS Steel. See DAMASK.

DAMASIA (anc. geog.), a town of Vindelicia on the Licus. Afterwards called *Augusta*. Now *Augsburg* in Suabia, on the Lech. E. Long. 10. 50. N. Lat. 48. 20.

DAMASK, a sort of silken stuff, having some parts raised

Damascus,
Damasia.

^{mask} raised above the ground, representing flowers or other figures. Damask should be of dressed silks, both in warp and woof. It has its name from its being originally brought from Damascus in Syria.

There is also a stuff in France called the *caffart damask*, made in imitation of the true damask, having woof of hair, coarse silk, thread, wool, or cotton. Some have the warp of silk and the woof of thread; others are all thread or all wool.

DAMASK is also a kind of wrought linen, made in Flanders, so called, because its large flowers resemble those of damasks. It is chiefly used for tables; a table-cloth and a dozen of napkins are called a *damask-service*.

DAMASK is also applied to a very fine steel, in some parts of the Levant, chiefly at Damascus in Syria; whence its name. It is used for sword and cutlass blades, and is finely tempered.

DAMASKEENING, or DAMASKING, the art or operation of beautifying iron, steel, &c. by making incisions therein, and filling them up with gold or silver wire; chiefly used for adorning sword-blades, guards and grips, locks of pistols, &c.

Damaskeening partakes of the mosaic, of engraving, and of carving: like the mosaic, it has inlaid work; like engraving, it cuts the metal, representing divers figures; and, as in chasing, gold and silver is wrought in relievo. There are two ways of damasking: the one, which is the finest, is when the metal is cut deep with proper instruments, and inlaid with gold and silver wire: the other is superficial only.

DAMELOPRE, a kind of bilander, used in Holland for conveying merchandize from one canal to another; being very commodious for passing under the bridges.

DAMIANISTS, in church-history, a branch of the ancient acephali-severitæ. They agreed with the catholics in admitting the VIth council, but disowned any distinction of persons in the Godhead; and professed one single nature, incapable of any difference: yet they called God "the Father, Son, and Holy Ghost."

DAMIETTA, a port-town of Egypt, situated on the eastern mouth of the river Nile, four miles from the sea, and 100 miles north of Grand Cairo. E. Long. 32. and N. Lat. 31. The present town stands upon a different site from the ancient Damietta so repeatedly attacked by the European princes. The latter, according to Abulfeda, was a "town surrounded by walls, and situated at the mouth of the eastern branch of the Nile." Stephen of Byzantium informs us, that it was called *Thamniatis* under the government of the Greeks of the lower empire, but that it was then very inconsiderable. It increased in importance every day, in proportion as Pelusium, which was frequently plundered, lost its power. The total ruin of that ancient town occasioned the commerce of the eastern parts of the Delta to be transferred to Damietta. It was, however, no longer a place of strength, when, towards the year 238 of the Hegira, the emperors of Constantinople took possession of it a second time. The importance of a harbour so favourably situated opened the eyes of the caliphs. In the year 244 of the Hegira, Elmetouakkel surrounded it with strong

walls. This obstacle did not prevent Roger king of Sicily from taking it from the Mahometans in the year 550 of the Hegira. He did not, however, long enjoy his conquest. Salah Eddin, who about that period mounted the throne of Egypt, expelled the Europeans from Damietta. Fifteen years after they returned to besiege it; but this able sultan baffled all their efforts. Notwithstanding their land army was supported by a fleet of 1200 sail, they were obliged to make a disgraceful retreat.

It was the fate of this place to be constantly besieged. In the year 615 of the Hegira, under the reign of Eladel, the crusaders attacked it with a very considerable force. They landed on the western shore of the Nile; and their first care was to surround their camp with a ditch and pallisado. The mouth of the river was defended by two towers, furnished with numerous garrisons. An enormous iron chain, stretching from one side to the other, hindered the approach of vessels. The crusaders carried by storm the tower on the same side with their camp, broke the chain, and opened the entrance of the river for their fleet. Nejm Eddin, the sultan's son, who was encamped near Damietta, covered it with an army. To stop the enemies vessels he threw a bridge over the Nile. The Franks overturned it, and the prince adopted the measure of choking up the mouth of the river, which he almost rendered impassable by several large boats he sunk there. After alternate and various successes, many bloody battles, and a siege of 17 months, the Christian princes took Damietta by storm. They did not, however, long enjoy the fruit of so much blood spilt, and of an armament which had cost immense sums. Completely invested near the canal of Achmoun, by the waters of the Nile and by the Egyptian army, they purchased their lives and their liberty by the sacrifice of their conquest.

One-and-thirty years after this defeat St Louis carried Damietta without striking a stroke. The Arabs, however, soon recovered it; but tired of keeping a place which continually drew upon them the most warlike nations of Europe, they totally destroyed it, and rebuilt it further up in the country. This modern Damietta, first called *Menchié*, as Abulfeda tells us, has preserved the memory of its origin in a square still called by that name. Writers in general have confounded these two towns, ascribing to the one the attributes of the other. The modern Damietta is rounded in a semicircle on the eastern bank of the Nile, two leagues and a half from the mouth of it. The eye, placed at one of the extremities of the crescent, takes in its whole extent. It is reckoned to contain 80,000 souls. It has several squares, the most considerable of which has retained the name of *Menchié*. The bazars are filled with merchants. Spacious *okals*, or *kbans*, collecting under their porticos the stuffs of India, the silks of mount Lebanon, sal-ammoniac, and pyramids of rice, proclaim that it is a commercial town. The houses, those in particular which are on the banks of the river, are very lofty. They have in general handsome saloons built on the top of their terraces, which are cheerful belvederes, open to every wind, where the Turk, effeminately reclining on a sofa, passes his life in smoking,

Damietta.

Damietta. king, in looking on the sea, which bounds the horizon on one side, on the great lake that extends itself on the other, and on the Nile, which, running between them, traverses a rich country. Several large mosques, adorned with lofty minarets, are dispersed over the town. The public baths, lined with marble, are distributed in the same manner as those of Grand Cairo. The linen you are served with is clean, and the water very pure. The heat and the treatment in them, so far from injuring the health, serve to strengthen, nay even to improve it, if used with moderation. This custom, founded on experience, is general in Egypt.

The port of *Damietta* is continually filled with a multitude of boats and small vessels. Those called *Scherms* serve to convey the merchandize on board the ships in the road, and to unload them; the others carry on the coasting trade. This town carries on a great trade with Syria, with Cyprus, and Marseilles. The rice called *Mexelaoui*, of the finest quality there is in Egypt, is cultivated in the neighbouring plains. The exports of it amount annually to about six millions of livres. The other articles of the produce of the country are linens, sal-ammoniac, corn, &c. A ruinous policy for the country prohibits the exportation of this last article; but the law is evaded, and it passes under the name of rice.

The Christians of Aleppo and Damascus, settled in this town, have for several ages carried on its principal commerce. Turkish indolence, content with extorting from them from time to time, suffers them to become rich. The exportation of rice to foreign countries is prohibited; but by means of some *douceurs* to the customhouse officers, the people of Provence load annually several ships with it. The *Bogax* preventing them from entering the Nile, their cargoes are conveyed on board by the boats of the country. This inconvenience is the source of endless vexation and abuses. The boat, which is loaded in the evening with rice of the first quality, is frequently not that which arrives at the ship; an inferior quality is substituted for it during the night. The Marseilles captains, aware of these rogueries, without being able to prevent them, endeavour to play off trick against trick, so that this commerce has become a general scene of knavery. But the badness of the port is still more detrimental to *Damietta*. The road where the vessels lie being exposed to every wind, the slightest gale obliges the captains to cut their cables and take shelter at Cyprus, or to stand off to sea. It would be easy, by cutting a canal only of half a league, to open a passage for ships into the Nile, where there is deep water. This work, which might be executed at very little expence, would render *Damietta* a noble harbour; but despotism, insensible to the interest of the people, is always surrounded by destruction in its progress, and wants both the will and the power to create.

The tongue of land on which *Damietta* is situated, straitened on one side by the river, and on the other by the western extremity of lake *Menzalé*, is only from two to six miles wide from east to west. It is intersected by innumerable rivulets in every direction, which render it the most fertile spot in Egypt. The soil there produces, *communibus annis*, 80 bushels of rice for

one. The other produce is in the same proportion. It is there that nature, lavishing profusely her pomp and riches, presents flowers, fruits, and harvests, at every season of the year. Winter never deprives it of these advantages; its beauties are never impaired by summer. Destructive heats, as well as chilling colds, are equally unknown in that happy spot. The thermometer varies only from 9 to 24 degrees above the freezing point. *Damietta* is indebted for this charming temperature to the immense quantity of water with which it is surrounded. The verdure is no where so fresh; the trees are no where covered with such quantities of fruit. The rivulets around the fields of rice are lined with several kinds of reeds, some of which rise to a great height. The reed *calamus* is here found in abundance, which is made use of for writing by the orientals. Its slender stalk bears long narrow leaves, which hang gracefully, and spreading branches covered with white flowers. Here also are to be seen forests of papyrus, of which the ancient Egyptians made their paper. Strabo, who calls it *Biblus*, gives an accurate description of it. It is here also that the *Lotus*, of which the Arabs have preserved the primitive name of *Nuphar*, exalts its lofty stalk above the waters. Its large calyx blows either of an azure blue or of a brilliant white, and it appears with the majesty of the king of the aquatic plants. The marshes and the canals in the interior parts of the country are filled with this superb flower, which diffuses a most agreeable odour.

There are a great many villages around *Damietta*, in most of which are manufactures where the most beautiful linens of the country are fabricated. The finest napkins in particular are made there, fringed with silk. You are served at table with them, but especially on ceremonial visits, when the slave presents you with one to wipe your mouth with, after you have drank your sherbet, or eat the sweetmeats, which are carried round on a silver plate to all the company. These small towns, generally surrounded with little woods, or trees promiscuously planted, form a whimsical and picturesque assemblage. By the side of the sycamore and the melancholy tamarind, one sees the elegant cassia-tree, with its clusters of yellow flowers, like those of the cytissus. The top of the date-tree, loaded with enormous bunches, rises above the grove. The cassia, with its sweet-scented flower, grows under its shade. The orange and lemon trees cover the labourer's cabin with their golden fruit. The banana-tree with its long leaves, the pomegranate with its scarlet flower, and the fig-tree with its fugary fruit, throw a vast variety into these landscapes.

DAMNII, anciently a people of Britain; situated between the Selgovæ to the south and the Caledonii to the north. Now *Clydesdale*.

DAMNONII. See DANMONII.

DAMOCLES, one of the flatterers of Dionysius the Elder of Sicily. He admired the tyrant's wealth, and pronounced him the happiest man on earth. Dionysius prevailed upon him to undertake for a while the charge of royalty, and be convinced of the happiness which a sovereign enjoyed. Damocles ascended the throne, and while he gazed upon the wealth and splendor that surrounded him, he perceived a sword hang-

ing over his head by a horse hair. This so terrified him that all his imaginary felicity vanished at once, and he begged Dionysius to remove him from a situation which exposed his life to such fears and dangers.

DAMON, the name of several illustrious ancients; particularly of a Pythagorean philosopher very intimate with Pythias. When he had been condemned to death by Dionysius, he obtained from the tyrant leave to go and settle his domestic affairs, on promise of returning at a stated hour to the place of execution. Pythias pledged himself to undergo the punishment which was to be inflicted on Damon, should he not return in time, and he consequently delivered himself into the hands of the tyrant. Damon returned at the appointed moment, and Dionysius was so struck with the fidelity of those two friends, that he remitted the punishment, and intreated them to permit him to share their friendship and enjoy their confidence.

DAMPIER (William), a famous navigator, descended from a good family in Somersetshire in England, was born in 1652. Losing his father when very young, he was sent to the sea, where he soon distinguished himself, particularly in the South Sea. His voyage round the world is well known, and has gone through many editions. He appears afterward to have engaged in an expedition concerted by the merchants of Bristol to the South Sea, commanded by Captain Woods Rogers; who sailed in August 1708, and returned in September 1711: but we have no further particulars of his life or death.

DAMPS, in natural history (from the Saxon word *damp*, signifying vapour or exhalation), are certain noxious exhalations issuing from some parts of the earth, and which prove almost instantly fatal to those who breathe them.

These damps are chiefly observed in mines and coal-pits: though vapours of the same kind often issue from old lavas of burning mountains; and, in those countries where volcanoes are common, will frequently enter houses, and kill people suddenly without the least warning of their approach. In mines and coal-pits they are chiefly of two kinds, called by the miners and colliers the *choke* and *fire damps*; and both go under one general name of *foul air*. The *choke-damp* is very much of the nature of fixed air; and usually infests those places which have been formerly worked, but long neglected, and are known to the miners by the name of *wastes*. No place, however, can be reckoned safe from this kind of damps, except where there is a due circulation of air; and the procuring of this is the only proper means of preventing accidents from damps of all kinds. The *choke-damp* suffocates the miners suddenly, with all the appearances found in those that are suffocated by fixed air. Being heavy, it descends towards the lowest parts of the workings, and thus is dangerous to the miners, who can scarce avoid breathing it. The *fire-damp*, which seems chiefly to be composed of inflammable air, rises to the roof of the workings, as being specifically lighter than the common atmosphere; and hence, though it will suffocate as well as the other, it seldom proves so dangerous in this way as by its inflammable property, by which it often takes fire at the candles, and explodes with extreme violence.

In the Phil. Trans. n^o 119. there is an account of

some explosions by damps of this kind, on which we have the following observations. 1. Those who are in the place where the vapour is fired, suddenly find themselves surrounded with flames, but hear little or no noise; though those who are in places adjacent, or above ground, hear a very great one. 2. Those who are surrounded by the inflamed vapour feel themselves scorched or burnt, but are not moved out of their places, though such as unhappily stand in the way of it are commonly killed by the violence of the shock, and often thrown with great force out at the mouth of the pit; nor are the heaviest machines found able to resist the impetuosity of the blast. 3. No smell is perceived before the fire, but a very strong one of brimstone is afterwards felt. 4. The vapour lies towards the roof, and is not perceived if the candles are held low; but when these are held higher, the damp descends like a black mist, and catches hold of the flame, lengthning it to two or three handfuls; and this appearance ceases when the candles are held nearer the ground. 5. The flame continues in the vault for several minutes after the crack. 6. Its colour is blue, something inclining to green, and very bright. 7. On the explosion of the vapour, a dark smoke like that proceeding from fired gunpowder is perceived. 8. Damps are generally observed to come about the latter end of May, and to continue during the heat of summer. They return several times during the summer season, but observe no certain rule.

Besides these kinds of damps, which are very common, we find others described in the Philosophical Transactions, concerning the nature of which we can say nothing. Indeed the account seems somewhat suspicious. They are given by Mr Jessop, from whom we have the foregoing observations concerning the fire-damp, and who had these from the miners in Derbyshire. After describing the common damp, which consists of fixed air, "They call the second sort (says he) the *pease-bloom damp*, because, as they say, it smells like pease-bloom. They tell me it always comes in the summer-time; and those grooves are not free which are never troubled with any other sort of damps. I never heard that it was mortal; the scent, perhaps, freeing them from the danger of a surprize: but by reason of it many good grooves lie idle at the best and most profitable time of the year, when the subterraneous waters are the lowest. They fancy it proceeds from the multitude of red-trefoil flowers, by them called *bonney-suckles*, with which the limestone meadows in the Peake do much abound. The third is the strangest and most pestifential of any; if all be true which is said concerning it. Those who pretend to have seen it (for it is visible) describe it thus: In the highest part of the roof of those passages which branch out from the main groove, they often see a round thing hanging, about the bigness of a foot-ball, covered with a skin of the thickness and colour of a cob-web. This, they say, if it is broke by any accident, as the splinter of a stone, or the like, disperseth itself immediately, and suffocates all the company. Therefore, to prevent casualties as soon as they have espied it, they have a way, by the help of a stick and long rope, of breaking it at a distance; which done, they purify the place well with fire, before they dare enter it again. I dare not a-

Damps.

vouch

Damps.

vouch the truth of this story in all its circumstances, because the proof of it seems impossible, since they say it kills all that are likely to bear witness to the particulars: neither dare I deny but such a thing may have been seen hanging on the roof, since I have heard many affirm it."—Some damps, seemingly of the same nature with those last mentioned, are noticed by the author of the Chemical Dictionary, under the word *Damps*. "Amongst the noxious mineral exhalations (says he), we may place those which are found in the mines of Sal-gem in Poland. These frequently appear in form of light flocks, threads, and spiders webs. They are remarkable for their property of suddenly catching fire at the lamps of the miners with a terrible noise and explosion. They instantly kill those whom they touch. Similar vapours are found in some mines of fossil coal."

With regard to the formation of damps we have as yet no certain theory; nor, though the experiments of aerologists are abundantly able to show the composition and manner of forming these noxious airs artificially, have they yet thrown much light on the method by which nature prepares them on a large scale. There are two general ways in which we may suppose this to be done; one by the stagnation of atmospheric air in old waste places of mines and coal-pits, and its conversion into these mephitic exhalations; the other by their original formation from the phlogistic or other materials found in the earth, without any interference of the atmosphere. In favour of the former opinion it may be urged, that old wastes are never free from damps, especially those of the kind resembling fixed air; nor are they always deficient in the inflammable kind. The same is also true of old wells, or even cellars, and in short in every place where the air stagnates for any considerable time. But, on the other hand, we have many instances of fixed air coming out of the earth, and that in vast quantities, where no considerable stagnation of the atmosphere could be suspected; as for instance, in the grotto del Cani in Italy, where a continual stream of it has issued from time immemorial. The same seems to be the case with the tops of some high mountains, particularly Mont Blanc, the highest in Europe; on the top of which M. Sauffure found the atmosphere so much impregnated with fixed air, that lime-water exposed to it very quickly gathered a crust on its surface. Sir William Hamilton, in his account of the eruptions of Vesuvius, informs us, that the inhabitants in the neighbourhood of that mountain are infested with a kind of pestilential vapours named by them *mosfetes*, which issue from the old lavas thrown out by the volcano. These are of the nature of the damps in our mines or coal-pits, and issue forth in such quantity as either to infect the atmosphere for a very considerable way round, or to do mischief by being carried from place to place by the atmospheric currents, which are not strong enough to dissipate them for some time. From some late accounts, the *sumiel* (or scorching winds, as they have been represented) in the eastern countries, seem to be no other than streams of fixed air of considerable extent, which exert their usual and fatal effects on those who breathe them. A strong argument in favour of this opinion is, that these winds

N° 97.

cannot cross a river, it being the nature of water to absorb fixed air, and thus destroy them.

Hence it is rendered probable that these mephitic vapours are often to be met with in the open atmosphere, and consequently cannot always be the effect of stagnation; nor indeed does it at all appear that mere stagnation can affect the quality of the atmosphere either one way or other. This fluid cannot have its properties altered but by something immersed in it upon which it can act, and by means of which action its component parts may be changed or separated. While this process is going on, there is generally, if not always, an *absorption* of air, accompanied indeed frequently with an emission of some aerial fluid equal in quantity to that which is absorbed. Mr Schiele, in his Essay on Fire, has shown by a number of experiments the effect of exposing certain substances to the action of air, both on the substances themselves and on the aerial fluid. The result of all these is no other than what we might expect from a very slow combustion, and which perhaps may on inquiry be found to be the only way by which air can be decomposed. If the substance exposed to the air was capable of absorbing that part of the fluid which had undergone a change, there was always an evident diminution, but not otherwise. Thus, on inclosing some caustic fixed alkali in a phial of atmospheric air, a considerable diminution took place; and the alkali, by becoming saturated with fixed air, showed that a decomposition had taken place, and that the dephlogisticated part of the air had separated from the other, attached itself to the fixed alkali, and become fixed air by uniting with a certain proportion of phlogistic matter. Hence we may conceive, that in any place where the air was confined over a vast quantity of caustic alkaline salt, it would soon become unfit for the purposes of animal life, and we might say that a *damp* would be formed. But this would be a damp of a very different kind from that usually met with in mines; for here the dephlogisticated part of the atmosphere being converted into fixed air, and absorbed by the salt, only the poisonous mephitic, or as it is commonly called *phlogisticated*, air would remain, so that no fixed air could ever be separated from it.

Let us now suppose, that instead of the alkaline salt a quantity of burning charcoal is confined in a place where there is not a proper circulation of air, and we will soon see that a damp of the very same kind with that called by miners the *choke-damp* will be formed. But this, according to the late discoveries, takes place by reason of the dissipation of the charcoal by heat, and its union with the dephlogisticated part of the atmosphere, which always constitutes fixed air*. In this case, however, the damp must be but of short continuance, and will soon be dissipated after the charcoal is extinguished; but if, instead of the charcoal, we substitute a large quantity of fermenting liquor, from whence the fixed air is naturally emitted, a damp will be formed much more difficult to be dissipated than the former, because it renews itself in a very short time; and, unless there is a very constant circulation of air, it will be dangerous to enter the place where it is.

From the last example we may form an idea of the manner

Damp

See Art. *Logy* and *Fixed Air*

mpo. manner in which these damp, consisting chiefly of fixed air, are formed. We know not indeed thoroughly the nature of fermentation; but we are assured, that it is always accompanied by an internal heat; which, in some cases, is raised to the utmost height, insomuch that large quantities of moist vegetable substances, packed together, will sometimes burst out into flame. It is not, however, at all times necessary for the extrication of fixed air, that the heat should come to this extremity. The example of fermenting liquors shows, that in some cases a very moderate heat is sufficient for the purpose. Now, though the comparison may seem somewhat inadequate between the solid substance of the earth and a fermenting liquid, yet we know that a gentle heat constantly takes place in the bowels of the earth; and that almost all terrestrial substances will emit fixed air on being exposed to heat. It is not at all improbable, therefore, that, on the large scale of nature, the quantity of materials may compensate for the weakness of the heat, and thus occasion a constant emission of fixed air; which, though slow in comparison of what is effected in our experiments by a violent artificial heat, may yet accumulate in the narrow spaces of mines in such a manner as to be very troublesome. In volcanic countries, where the heat of the earth is much greater, the emission of fixed air is in proportion; and thus we may account for that continual stream of it, which issues from the grotto del Cani, and perhaps other places. The *mosetes*, which are said to proceed from old lavas, can only be accounted for by supposing the heat, which originally took place in them, to be in some measure renewed; or that they have been again, by some means or other, disposed to take fire as formerly: but this we offer merely as a conjecture; there not being as yet sufficient data to determine any thing positively upon the subject.

It may be objected to the hypothesis just now laid down, that, if there is a continual disposition in the earth to produce fixed air, the whole surface of it must pour out such a quantity as would destroy every living creature upon it. This indeed might be granted, were the surface of the earth quite bare, and destitute of vegetation: but we know that fixed air is composed of the dephlogisticated kind and phlogiston; and that these two ingredients, after being once joined, may be separated from each other, and reassume their proper characters. There is no absurdity, therefore, in supposing that the fixed air may be continually decomposed by the vegetables which grow all over the surface of the earth; and the atmosphere not only thus preserved from any taint from it, but supplied with a quantity of pure dephlogisticated air, which it is certain that vegetables do emit. It is also certain, that wherever the atmosphere is suffered to be in contact with the bare surface of the ground for some time, a considerable quantity of fixed air will be produced, unless there is a constant circulation of atmospherical air to carry off the former before it has time to produce any sensible effect. Hence we may account for the damp in wells, cellars, and even in the confined places of old castles and ruinous buildings, where the air is not in contact with the surface of the ground itself, but with mere heaps of rubbish and old walls.

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Damp. With regard to what is called the *fire damp*, the case seems to be more plain. In the Phil. Trans. n^o 136, we have the following account of one of this kind which seemed evidently to issue from the earth. "This work is upon a coal of five yards in thickness, and hath been begun upon about six or eight and thirty years ago. When it was first found, it was extremely full of water, so that it could not be wrought down to the bottom of the coal; but a *witchet*, or cave, was driven out of the middle of it, upon a level, for gaining room to work, and drawing down the spring of water that lies in the coal to the eye of the pit. In driving of which witchet, after they had gone a considerable way under ground, and were scanted off wind, the fire-damp did begin by little and little to breed, and to appear in crevices and slits of the coal, where water had lain before the opening of the coal, with a small bluish flame, working and moving continually; but not out of its first seat, unless the workmen held their candles to it; and then being weak, the blaze of the candle would drive it with a sudden fizz away to another crevice, where it would soon after appear blazing and moving as formerly. This was the first knowledge of it in this work, which the workmen made but a sport of; and so partly neglected, till it had gotten some strength; and then upon a morning, the first collier that went down, going forwards in the witchet with his candle in his hand, the damp presently darted out so violently at his candle, that it struck the man clear down, singed all his hair and clothes, and disabled him from working for a while after. Some other small warnings it gave them, insomuch that they resolved to employ a man on purpose that was more resolute than the rest, to go down a while before them every morning, to chase it from place to place, and so to weaken it. His usual manner was to put on the worst rags he had, and to wet them all in water, and when he came within the danger of it, then he fell down groveling upon his belly, and so went forward, holding in one hand a long wand or pole, at the head whereof he tied candles burning, and reached them by degrees towards it; then the damp would fly at them, and, if it missed of putting them out, would quench itself with a blast, and leave an ill-scented smoke behind. Thus they dealt with it till they had wrought the coal down to the bottom, and the water following, and not remaining as before in the body of it, among sulphureous and brassy metal that is in some veins of the coal, the fire-damp was not seen nor heard of till the latter end of the year 1675, which happened as followeth.

"After long working of this coal, it was found upon the rising grounds that there lay another roach of coal at the depth of 14 yards under it, which proved to be 3½ yards thick, and something more sulphureous. This encouraged us to sink in one of the pits we had formerly used on the five-yards coal.—As we sunk the lower part of it, we had many appearances of the fire-damp in the watery crevices of the rocks we sunk through, flashing and darting from side to side of the pit, and showing rainbow-like colours upon the surface of the water in the bottom; but upon drawing up of the water with buckets, which stirred the air in the pit, it would leave burning, till the colliers at work, with their breath and sweat, and the smoke of their candles, thickened

Damps. thickened the air in the pit, and then it would appear again; they lighted their candles at it sometimes when they went out; and so in this pit it did no further harm."

In another pit, however, it soon appeared, and at last produced a most terrible explosion. This was occasioned by one of the workmen going imprudently down with a lighted candle, after a cessation of work for some days, and the force exerted by it seemed equal to that of gun-powder.

The formation of inflammable air in mines cannot be attributed to any vitiation of the atmosphere; for there is no natural process with which we are acquainted, by which such a change could be accomplished. In one instance, however, we have an example of a fire-damp being produced, not only without any considerable stagnation of atmospherical air, but where there is the best circulation imaginable. This is in large bellows used in metallurgic works, which are sometimes burst by an explosion of inflammable matter proceeding from the rancid matters with which the leather is greased. Dr Priestley has shown, that inflammable air is composed of pure elementary fire, charcoal or phlogiston, and a little water; and that this composition may take place even *in vacuo*. All these materials are to be met with in the bowels of the earth. Coal, a bituminous substance, is abundantly able to supply the phlogiston; the natural moisture of the earth affords water, and the heat, however gentle, which constantly exists in the bowels of the earth, may be sufficient to produce a quantity of inflammable air, which gradually accumulating in those places where there is not a constant stream of atmospherical air to carry it off, will soon produce the dreadful effects already mentioned.

A much more important consideration than the formation of damps, however, is the proper method of avoiding their pernicious effects. The inflammability of one kind affords an easy method of preventing it from accumulating, viz. by setting fire to it. This may be done with safety, unless it has been suffered to go too far before the experiment is made: for the inflammable air, being much lighter than any other kind, will naturally rise to the top; so that a man, lying flat on the ground to avoid the force of the explosion, and holding up a lighted candle fixed upon a pole, may at once free the mine from such a troublesome guest. But where it has been allowed to accumulate in too great quantity, so that this method cannot be used, or in the other kind, which is not inflammable, the method commonly practised is to produce a constant circulation of air as much as possible through all parts of the mine. To procure this, they make a perpendicular opening, which they call a *skank* or *shaf*, so that the mine may have two or more openings; and thus by reason of the difference of temperature between the open atmosphere and that in the mine, there is a continual draught of air through them both. This current will always be stronger in proportion to the difference between the external atmosphere and that of the mine; and likewise in proportion to the difference between the depth of the two shafts. But as the temperature of the atmosphere is variable, it happens, at certain seasons of the year, that there is not a sufficient difference between that

of the atmosphere and in the mine to produce the necessary circulation. This happens principally in the spring and autumn; at which seasons it is necessary to light fires in the shafts, which are always efficacious for the purpose desired.

Among the other uses to which dephlogisticated air might be applied, Mr Cavallo reckons that of securing people from the dangerous effects of damps in mines, and other subterraneous places. "If a large bladder," says he, "into which a solution of lime in water is introduced, be filled with dephlogisticated air, and a small wooden or glass pipe be adapted to its neck, a man may hold that pipe in his mouth, and may breathe the dephlogisticated air; and thus equipped he may enter into these subterranean places, amidst the various elastic fluids contained in them. A large bladder of dephlogisticated air will serve for above a quarter of an hour, which is a length of time sufficient for various purposes; besides, if longer time is required to be spent in these places, a person may have two or more bladders of dephlogisticated air along with him, and may shift as soon as the air of one is contaminated. Without the necessity of any more complicated apparatus, the bladders full of dephlogisticated air may be kept stopped by putting corks into the glass or wooden pipes that are tied to their necks. This air might also be used for diving-bells."

DAMSEL, from the French *damoiselle* or *damoiseau*, an appellation anciently given to all young people of either sex, that were of noble or genteel extraction, as the sons and daughters of princes, knights, and barons: thus we read of Damfel Pepin, Damfel Louis le Gros, Damfel Richard prince of Wales.

From the sons of kings this appellation first passed to those of great lords and barons, and at length to those of gentlemen who were not yet knights.

At present damsel is applied to all maids or girls not yet married, provided they be not of the vulgar.

DAN, or **JOR-DAN**, which last literally denotes "the river Dan;" so named from the people where it has its source, which is a lake called *Phiala*, from its round figure, to the north of its apparent rising from the mountain Panium or Paneum, as was discovered by Philip, Tetrarch of Trachonites; for on throwing light bodies into the Phiala, he found them to emerge again at Paneum (Josephus). From Paneum it runs in a direct course to a lake called *Samachonites*; as far as which it is called *Jordan the Less*; and thence to the lake Genesareth, or of Tiberias, where it comes increased by the lake Samachonitis and its springs, and is called the *Greater Jordan*; continuing its direct course southwards, till it falls into the Asphaltites.

DAN (anc. geog.), a town to the west of the source of the Jordan; formerly called *Lais* (Joshua, Judges, Josephus). This was the north, as Beerheba was the south, boundary of the Israelites; as appears from the common expression in Scripture, from *Dan to Beerheba*. At Dan Jeroboam erected one of the golden calves (1 Kings xii.).

DAN, the tribe, extended itself westward of Judah, and was terminated by Azotus and Dora on the Mediterranean (Josephus).

DANAE, in antiquity, a coin somewhat more than an obolus, used to be put into the mouths of the dead, to pay their passage over the river Acheron.

DANAE,

Danae
Danaus.

DANAË, in fabulous history, was the daughter of Acrisius king of Argos, by Eurydice. She was confined in a brazen tower by her father, who had been told by an oracle that his daughter's son would put him to death. His endeavours to prevent Danae from becoming a mother proved fruitless; and Jupiter, who was enamoured of her, introduced himself to her bed by changing himself into a golden shower. From his embraces Danae had a son, with whom she was exposed on the sea by her father. The wind drove the bark which carried her to the coasts of the island of Seriphus; where she was saved by some fishermen, and carried to Polydectes king of the place, whose brother, called *Dileys*, educated the child called *Perseus*, and tenderly treated the mother. Polydectes fell in love with her; but as he was afraid of her son, he sent him to conquer the Gorgons, pretending that he wished Medusa's head to adorn the nuptials which he was going to celebrate with Hippodamia the daughter of Enomaus. When Perseus had victoriously finished his expedition, he retired to Argos with Danae to the house of Acrisius, whom he inadvertently killed. Some suppose that it was Prætus the brother of Acrisius who introduced himself to Danae in the brazen tower; and instead of a golden shower, it was maintained that the keepers of Danae were bribed by the gold of her seducer. Virgil mentions that Danae came to Italy with some fugitives of Argos, and that she founded a city called *Ardea*.

DANAIDES (fab. hist.), the fifty daughters of Danaus king of Argos. When their uncle Ægyptus came from Egypt with his fifty sons, they were promised in marriage to their cousins; and before the celebration of their nuptials, Danaus, who had been informed by an oracle that he was to be killed by the hands of one of his sons-in-law, made his daughters solemnly promise that they would destroy their husbands. They were provided with daggers by their father; and all except Hypermnestra stained their hands with the blood of their cousins the first night of their nuptials; and as a pledge of their obedience to their father's injunctions, they presented him each with the head of the murdered sons of Ægyptus. Hypermnestra was summoned to appear before her father, and answer for her disobedience in suffering her husband Lynceus to escape; but the unanimous voice of the people declared her innocent, and she dedicated a temple to the goddess of Persuasion. The sisters were purified of this murder by Mercury and Minerva by order of Jupiter; but according to the more received opinion, they were condemned to severe punishment in hell, and were compelled to fill with water a vessel full of holes, so that the water ran out as soon as poured into it; and therefore their labour was infinite, and their punishment eternal. The heads of the sons of Ægyptus were buried at Argos; but their bodies were left at Lerna, where the murder had been committed.

DANAUS (fab. hist.), a son of Belus and Anchinoe, who after his father's death reigned conjointly with his brother Ægyptus on the throne of Egypt. Some time after, a difference arose between the brothers, and Danaus set sail with his fifty daughters in quest of a settlement. He visited Rhodes, where he consecrated a statue to Minerva, and arrived safe on the coast of Peloponnesus, where he was hospitably received by Gela-

nor king of Argos. Gelanor had lately ascended the throne, and the first years of his reign were marked with dissensions with his subjects. Danaus took advantage of Gelanor's unpopularity, and obliged him to leave the crown. In Gelanor, the race of the Inachidæ was extinguished, and the Belides began to reign at Argos in Danaus. Some authors say, that Gelanor voluntarily resigned the crown to Danaus, on account of the wrath of Neptune, who had dried up all the waters of Argolus, to punish the impiety of Inachus. The success of Danaus invited the fifty sons of Ægyptus to embark for Greece. They were kindly received by their uncle; who, either apprehensive of their number, or terrified by an oracle which threatened his ruin by one of his sons-in-law, caused his daughters, to whom they were promised in marriage, to murder them the first night of their nuptials. His orders were executed. Hypermnestra alone spared the life of Lynceus: (See DANAIDES). Danaus at first persecuted Lynceus with unremitted fury; but he was afterwards reconciled to him, and he acknowledged him for his son-in-law and successor after a reign of 50 years. He began his reign about 1586 years before the Christian era; and after death he was honoured with a splendid monument in the town of Argos, which still existed in the age of Pausanias. According to Æschylus, Danaus left Egypt, not to be present at the marriage of his daughters with the sons of his brother, a connection which he deemed unlawful and impious.

DANCE, or DANCING, as at present practised, may be defined, "an agreeable motion of the body, adjusted by art to the measures or tune of instruments, or of the voice."—But, according to what some reckon more agreeable to the true genius of the art, dancing is "the art of expressing the sentiments of the mind, or the passions, by measured steps or bounds that are made in cadence by regulated motions of the body, and by graceful gestures; all performed to the sound of musical instruments or of the voice."

There is no account of the origin of the practice of dancing among mankind. It is found to exist among all nations whatever, even the most rude and barbarous; and, indeed, however much the assistance of art may be necessary to make any one perfect in the practice, the foundation must certainly lie in the mechanism of the human body itself.

The connection that there is between certain sounds and those motions of the human body called *dancing*, hath seldom or never been inquired into by philosophers, though it is certainly a very curious speculation. The power of certain sounds not only over the human species, but even over the inanimate creation, is indeed very surprising. It is well known, that the most solid walls, nay the ground itself, will be found to shake at some particular notes in music. This strongly indicates the presence of some universally diffused and exceedingly elastic fluid, which is thrown into vibrations by the concussions of the atmosphere upon it, produced by the motion of the sounding body.—If these concussions are so strong as to make the large quantity of elastic fluid vibrate that is dispersed through a stone wall or a considerable portion of earth, it is no wonder they should have the same effect upon that invisible and exceedingly subtle matter that pervades and seems to reside in our nerves.

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Some there are that have their nerves constructed in such a manner, that they cannot be affected by the sounds which affect others, and some scarce with any, while others have such an irritability of the nerves in this case, that they cannot, without the greatest difficulty, sit or stand still when they hear a favourite piece of music played.

It is conjectured by very eminent philosophers, that all the sensations and passions to which we are subject do immediately depend upon the vibrations excited in the nervous fluid above mentioned. Hence, musical sounds have the greatest power over those people who are of a delicate sensible frame, and who have strong passions. If it be true, therefore, that every passion in the human nature immediately depends upon a certain affection of the nervous system, or a certain motion or vibration in the nervous fluid, we shall immediately see the origin of the different dances among different nations. One kind of vibration, for instance, raises the passions of anger, pride, &c. which are indispensably necessary in warlike nations. The sounds, for such there are, capable of exciting a similar vibration, would naturally constitute the martial music among such nations, and dances conformable to it would be instituted. This appears to be the case particularly among barbarous nations, as we shall presently have occasion to remark. Other vibrations of the nervous fluid produce the passions of joy, love, &c.; and sounds capable of exciting these particular vibrations will immediately be formed into music for dances of another kind.

As barbarous people are observed to have the strongest passions, so they are also observed to be the most easily affected by sounds, and the most addicted to dancing. Sounds to us the most disagreeable, the drumming with sticks upon an empty cask, or the noise made by blowing into reeds incapable of yielding one musical note tolerable to us, is agreeable music to them. Much more are they affected by the sound of instruments which have any thing agreeable in them. Mr Gallini informs us, that "The spirit of dancing prevails almost beyond imagination among both men and women in most parts of Africa. It is even more than instinct, it is a rage, in some countries of that part of the globe.—Upon the gold coast especially, the inhabitants are so passionately fond of it, that in the midst of their hardest labour, if they hear a person sing, or any musical instrument played, they cannot refrain from dancing.—There are even well attested stories of some negroes flinging themselves at the feet of an European playing on a fiddle, intreating him to desist, unless he had a mind to tire them to death; it being impossible for them to cease dancing while he continued playing."—The same thing is found to take place in America, though, as the inhabitants of that continent are found to be of a more fierce and barbarous nature than the African nations, their dances are still more uncouth and barbarous than those of the negroes. "In Mexico, says Gallini, they have also their dances and music, but in the most uncouth and barbarous style. For their symphony they have wooden drums, something in form of a kettle-drum, with a kind of pipe or flagelet, made of a hollow cane or reed, but very grating to an European ear. It is observed they love every thing that makes a noise, how disagreeable soever the

found is. They will also hum over something like a tune when they dance 30 or 40 in a circle, stretching out their hands, and laying them on each others shoulders. They stamp and jump, and use the most antic gestures for several hours, till they are heartily weary. And one or two of the company sometimes step out of the ring to make sport for the rest, by showing feats of activity, throwing their lances up into the air, catching them again, bending backwards, and springing forwards with great agility."

The origin of dancing among the Greeks was most certainly the same as among all other nations; but as they proceeded a certain length in civilization, their dances were of consequence more regular and agreeable than those of the more barbarous nations. They reduced dancing into a kind of regular system; and had dances proper for exciting, by means of the sympathy above mentioned, any passion whatever in the minds of the beholders. In this way they are said to have proceeded very great lengths, to us absolutely incredible. At Athens, it is said, that the dance of the Eumenides or Furies on the theatre had so expressive a character as to strike the spectators with irresistible terror; men grown old in the profession of arms trembled; the multitude ran out; women with child miscarried; people imagined they saw in earnest those terrible deities commissioned with the vengeance of heaven to pursue and punish crimes upon earth.

The Greeks had martial dances, which they reckoned to be very useful for keeping up the warlike spirit of their youth; but the Romans, though equally warlike with the Greeks, never had any thing of the kind.—This probably may be owing to the want of that romantic turn for which the Greeks were so remarkable. The Romans had no heroes among them, such as Hercules, Achilles, or Ajax; nor does the whole Roman history furnish an example of a general that made war after the manner of Alexander the Great. Though their soldiers were as valiant as ever the Greeks could pretend to be, the object with them was the honour of the republic, and not their own personal praise. Hence there was less fury, and much more cool deliberate valour, exercised by the Romans, than any other nation whatever. The passions of pride, resentment, obstinacy, &c. were excited in them, not by the mechanical means of music and dancing, but by being taught that it was their chief honour to fight for the republic.—It does not however appear, that the Romans were at all less capable of being affected in this mechanical manner than the Greeks. When dancing was once introduced, it had the very same effects at Rome as at Athens.

Among the Jews, dancing seems to have made a part of the religious worship on some occasions, as we learn from some passages in the Psalms, though we do not find either that or singing positively enjoined as a divine precept.—In the Christian churches mentioned in the New Testament, there is no account of dancing being introduced as an act of worship, though it is certain that it was used as such in after ages. Mr Gallini tells us, that "at Limoges, not long ago, the people used to dance the round in the choir of the church which is under the invocation of their patron saint; and at the end of each psalm, instead of the *Gloria Patri*, they sung as follows: *St Marcel, pray for us, and we will dance in honour of you.*"—Though dan-

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inee. dancing would now be looked upon as the highest degree of profanation in a religious assembly, yet it is certain, that dancing, considered as an expression of joy, is no more a profanation than singing, or than simple speaking; nor can it be thought in the least more absurd, that a Christian should dance for joy that Jesus Christ is risen from the dead, than that David danced before the ark when it was returned to him after a long absence.

Plato reduces the dances of the ancients to three classes. 1. The military dances, which tended to make the body robust, active, and well-disposed for all the exercises of war. 2. The domestic dances, which had for their object an agreeable and innocent relaxation and amusement. 3. The mediatorial dances, which were in use in expiations and sacrifices.—Of military dances there were two sorts: the *gymnopedique* dance, or the dance of children; and the *enoplian*, or armed dance. The Spartans had invented the first for an early excitation of the courage of their children, and to lead them on insensibly to the exercise of the armed dance. This childrens dance used to be executed in the public place. It was composed of two choirs; the one of grown men, the other of children; whence, being chiefly designed for the latter, it took its name. They were both of them in a state of nudity. The choir of the children regulated their motions by those of the men, and all danced at the same time, singing the poems of Thales, Alcman, and Dionysodotus.—The *enoplian* or *pyrrhic* was danced by young men armed cap-a-pee, who executed, to the sound of the flute, all the proper movements either for attack or for defence. It was composed of four parts.—The first, the *podism* or footing; which consisted in a quick shifting motion of the feet, such as was necessary for overtaking a flying enemy, or for getting away from him when an overmatch.—The second part was the *xiphism*; this was a kind of mock-fight, in which the dancers imitated all the motions of combatants; aiming a stroke, darting a javelin, or dexterously dodging, parrying, or avoiding a blow or thrust. The third part, called the *komos*, consisted in very high leaps or vaultings, which the dancers frequently repeated, for the better using themselves occasionally to leap over a ditch, or spring over a wall. The *tetrakomos* was the fourth and last part: this was a square figure, executed by slow and majestic movements; but it is uncertain whether this was every where executed in the same manner.

Of all the Greeks, the Spartans were those who most cultivated the Pyrrhic dance. Athenæus relates, that they had a law by which they were obliged to exercise their children at it from the age of five years. This warlike people constantly retained the custom of accompanying their dances with hymns and songs. The following was sung for the dance called *trichoria*, said to be instituted by Lycurgus, and which had its name from its being composed of three choirs, one of children, another of young men, and the third of old. The old men opened the dance, saying, “In time past we were valiant.” The young men answered, “We are so at present.” “We shall be still more so when our time comes,” replied the chorus of children. The Spartans never danced but with real arms. In process of time, however, other nations came to use only wea-

pons of wood on such occasions. Nay, it was only so late as the days of Athenæus, who lived in the second century, that the dancers of the Pyrrhic, instead of arms, carried only flasks, ivy-bound wands (*thyrsus*) or reeds. But, even in Aristotle's days, they had begun to use thyrsuses instead of pikes, and lighted torches in lieu of javelins and swords. With these torches they executed a dance called the *conflagration of the world*.

Of the dances for amusement and recreation, some were but simply gambols, or sportive exercises, which had no character of imitation, and of which the greater part exist to this day. The others were more complex, more agreeable, figured, and were always accompanied with singing. Among the first or simple ones was the *ascoliasmus*; which consisted in jumping, with one foot only, on bladders filled with air or with wine, and rubbed on the outside with oil. The *dypodium* was jumped with both feet close. The *kybestesis* was what is called in this country the *somersét*.—Of the second kind was that called the *wine-press*, of which there is a description in Longinus, and the Ionian dances: these last, in the original of their institution, had nothing but what was decent and modest; but, in time, their movements came to be so depraved, as to be employed in expressing nothing but voluptuousness, and even the grossest obscenity.

Among the ancients there were no festivals nor religious assemblies but what were accompanied with songs and dances. It was not held possible to celebrate any mystery, or to be initiated, without the intervention of these two arts. In short, they were looked upon to be so essential in these kinds of ceremonies, that to express the crime of such as were guilty of revealing the sacred mysteries, they employed the word *kbeista*, “to be out of the dance.” The most ancient of these religious dances is the *Bacchic*; which was not only consecrated to Bacchus, but to all the deities whose festival was celebrated with a kind of enthusiasm. The most grave and majestic was the *hyporchematic*: it was executed to the lyre, and accompanied with the voice.—At his return from Crete, Theseus instituted a dance at which he himself assisted at the head of a numerous and splendid band of youth round the altar of Apollo. The dance was composed of three parts; the *strophe*, the *antistrophe*, and the *stationary*. In the *strophe*, the movements were from the right to the left; in the *antistrophe*, from the left to the right. In the *stationary*, they danced before the altar; so that the *stationary* did not mean an absolute pause or rest, but only a more slow or grave movement. Plutarch is persuaded, that in this dance there is a profound mystery. He thinks, that by the *strophe* is indicated the motion of the world from east to west; by the *antistrophe*, the motion of the planets from the west to the east; and by the *stationary*, the stability of the earth. To this dance Theseus gave the name of *geranos*, or “the crane;” because the figures which characterized it bore a resemblance to those described by cranes in their flight.

With regard to the modern practice of dancing as an art, there are few directions that can be of much service. The following is extracted from Mr Gallini's description of the several steps or movements.

“The dancing (says he) is generally on a theatre, or in a saloon or room. At the theatre there are four parts to be considered. 1. The nearest front to the

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spectators. 2. and 3. The two sides or wings. 4. The furthest front from the spectators.

“ In a saloon or room, the place in which are the spectators decides the appellation respectively to them of right and left. The dancer should place himself in as advantageous a point of view to them as possible.

“ In the dance itself, there are to be distinguished, the attitude of the body, the figure, the positions, the bends, the risings or leaps, the steps, the cabriole, the fallings, the slides, the turns of the body, the cadences.

“ The *attitude* of the body requires the presenting one's self in the most graceful manner to the company.

“ The *figure* is to follow the track prescribed to the steps in the dance.

“ The *position* is that of the varied attitudes, which must be at once striking and easy, as also of the different exertions of the legs and feet in dancing.

“ The *bends* are inflexions of the knees, of the body, of the head, or the arms.

“ The *risings* are the contrast to the bends, the extension of the knee. One of these two motions necessarily precedes the other.

“ The *step* is the motion by the foot or feet from one place to another.

“ The *leap* is executed by springing up into the air; it begins with a bend, and proceeds with a quick extension of the legs, so that both feet quit the ground.

“ The *cabriole* is the crossing, or cutting of capers, during the leap, before the return of the feet to the ground.

“ The *falling* is the return of the feet to the ground, by the natural gravitation of the body.

“ The *slide* is the action of moving the foot along the ground without quitting it.

“ The *turn* is the motion of the body towards either side, or quite round.

“ The *cadence* is the knowledge of the different measures, and of the times of movement the most marked in the music.

“ The *track* is the line marked by the dance: it may be either straight or curve, and is susceptible of all the inflections correspondent to the various designs of the composer.—There are the right, the diametral line, the circular line, and the oblique line. The *right* line is that which goes lengthwise, reckoning from one end of the room towards the other. The *diametral* line is across the room, from one side to the other. The *circular* line is waving, or undulatory, from one place to another. The *oblique* line proceeds obliquely from one quarter of the room towards another.—Each of these lines may directly or separately form the dancer's track, diversified with steps and positions.

“ The *regular* figure is when two or more dancers move in contrary directions; that is to say, that when one moves towards the right, the other moves to the left.—The *irregular* line is when the couples figuring together are both on the same side.

“ Commonly the man gives the right hand to the lady in the beginning or ending of the dance, as we see in the *minuet*, *louvre*, &c.

“ When a greater number of dancers figure together, they are to execute the figure agreeably to the composition of the dance, with special attention to keep an eye constantly on the partner.—When, in any given dance, the dancers have danced for some time in the

same place, the *track* is only to be considered as the conductor of the *steps*, but not of the *figure*; but when the dance continues, without being confined to the same place, then the *track* must be considered as the conductor both of the steps and of the figure.

“ Now, to observe the figure, the dancer must have placed himself at the beginning of the tract upon which he is to dance, and comprehend the figure before he himself begins it. He is to remark and conceive whether the figure is right, diametral, circular, or oblique; if it is progressive or retrogressive, or towards the right or left. He should have the air played or sung to him, to understand the movement.—Where the tracks cross one another, the steps of each of the couples must leave a sufficient distance between them not to confuse the figure.

“ There are commonly reckoned ten kinds of positions, which are divided into *true* and *false*, five each.—There are three principal parts of the foot to be observed; the toes, the heel, and the ankle.

“ The *true* positions are when the two feet are in a certain uniform regularity, the toes turned equally outwards.—The *false* are divided into regular and irregular. They differ from the true, in that the toes are either both turned inwards; or if the toes of one foot are turned outwards, the others are turned inward.

“ In the first of the true positions, the heels of the two feet are close together, so that they touch; the toes being turned out. In the second, the two feet are open in the same line, so that the distance between the two heels is precisely the length of one foot. In the third, the heel of one foot is brought to the ankle of the other, or seems to lock in with it. In the fourth, the two feet are the one before the other a foot's length distance between the two heels, which are on the same line. In the fifth, the two feet are across, the one before the other; so that the heel of one foot is directly opposite to the toes of the other.

“ In the first of the false positions, the toes of both feet are turned inwards, so that they touch, the heels being open. The second is, when the feet are asunder at a foot's distance between the toes of each, which are turned inward, the heels being on a line. The third is, when the toes of one foot are turned outwards, the other inwards, so that the two feet form a parallel. The fourth is, when the toes of the two feet are turned inwards; but the toes of one foot are brought nearer the ankle of the other. The fifth is, when the toes of the two feet are turned inwards, but the heel of one foot is opposite to the toes of the other.

“ There are mixed positions, composed of the true and false in combination; which admit of such an infinite variety, and are in their nature so unsusceptible of description by words, that it is only the sight of the performance that can give any tolerable idea of them.

“ Of the bends of the knee there are two kinds; the one *simple*, the other *forced*. The simple bend is an inflexion of the knees without moving the heel, and is executed with the foot flat to the ground. The forced bend is made on the toes with more force and lower.

“ Much is to be observed on the head of *steps*. First, not to make any movement before having put the body in an upright posture, firm on the haunches.

“ Begin with the inflexion of the knee and thigh; advance one leg foremost; with the whole foot on the ground,

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ance. ground, laying the stress of the body on the advanced leg.

“ There are some who begin the step by the point of the toes ; but that has an air of theatrical affectation. Nothing can be more noble than a graceful ease and dignity of step. The quantity of steps used in dancing are almost innumerable ; they are nevertheless reducible under five denominations, which may serve well enough to give a general idea of the different movements that may be made by the leg, viz. the direct step, the open step, the circular step, the twisted step, and the cut step.

“ The *direct* step is when the foot goes upon a right line, either forwards or backwards.

The *open* step is when the legs open. Of this step there are three kinds : one when they open outwards ; another, when, describing a kind of circle, they form an in-knee'd figure ; a third, when they open sideways ; this is a sort of right step, because the figure is in a right line.

“ The *round* step, is when the foot, in its motion, makes a circular figure, either inwards or outwards.

“ The *twisted* step, or *pas tortille*, is when the foot in its motion turns in and out. There are three kinds of this step ; one forwards, another backwards, the third sidelong.

“ The *cut* step is when one leg or foot comes to strike against the other. There are also three sorts of this step ; backwards, forwards, and sidelong.

“ The steps may be accompanied with bendings, risings, leaps, cabrioles, fallings, slidings, the foot in the air, the tip-toe, the rest on the heel, quarter-turns, half-turns, three-quarter turns, and whole-turns.

“ There may be practised three kinds of bends, or sinkings, in the steps ; viz. bending before the step proceeds, in the act of stepping, and at the last of the steps.

“ The beginning or initial sink-pace is at the first setting off, on advancing the leg.

“ The bend in the act of stepping continues the march or walk.

“ The final sink-pace closes the march.

“ The rising is just the reverse of the bend, or sink-pace, which shall have preceded it.

“ Some great masters in the art of dancing, having observed that music, which is inseparable from it, was capable of being preserved and conveyed by the musical characters, imagined by analogy, that the like advantage could be procured to the composition of dances. Upon this plan they attempted what is called the *chorography*, an art which they suppose was either utterly unknown to the ancients, or not transmitted to us from them.

“ It may indeed be easily allowed, that the track or figure of a dance may be determined by written or engraved lines ; but those lines will necessarily appear so perplexing, so intricate, so difficult, if not impossible to seize, in their various relations, that they are only fit to disgust and discourage, without the possibility of their conveying a satisfactory or retainable instruction. —Thence it is, that the article of *Chorography* in the French *Encyclopédie* is universally exploded as unintelligible and useless : though nothing more than an ele-

mentary indication of the art ; and an explanation, such as it is, of some of the technical terms of it.”

Stage-DANCES. The Greeks were the first who united the dance to their tragedies and comedies ; not indeed as making part of those spectacles, but merely as an accessory.

The Romans, as usual, copied after the Greeks ; but in the reign of Augustus they left their instructors far behind them. Two very extraordinary men made their appearance at that time : they invented a new species of entertainment, and carried it to an astonishing degree of perfection. Nothing was then talked of but the wonderful talents and amazing performances of Pylades and Bathylus, who were the first to introduce among the Romans what the French call the *ballet d'action*, wherein the performer is both actor and dancer.

Pylades undertook the hard task of representing, with the assistance of the dance alone, strong and pathetic situations. He succeeded perhaps beyond his own expectation, and may be called the father of that style of dancing which is known to us by the name of *grave* or *serious pantomime*.

Bathylus an Alexandrian, and a freedman of Me-cenas, took upon himself to represent such subjects as required a certain liveliness and agility. He was handsome in his person ; and the two great scourges of Roman follies, Persius and especially Juvenal, speak of him as the gallant of every woman in Rome. The latter, in his cynic style, even goes so far as to say, that when Bathylus performed the dance called, after the name of a celebrated female dancer, *Chiromenos-Leda*, the gravest matron was turned off her guard, and the young virgin longed for the dancer's addresses.

Nature had been excessively partial to those two men. They were endowed with genius, and all the exterior charms that could captivate the eye. By their study, application, and a desire to establish a lasting reputation, they displayed to the greatest advantage all the resources which the art of dancing could supply. These, like two phenomena, disappeared, and never did the world see “ their like again.” Government withdrew its protection, the art gradually sunk into obscurity, and became even entirely forgotten on the accession of Trajanus to the empire.

Thus buried with the other arts in entire oblivion, dancing remained uncultivated till about the 15th century, when ballets were revived in Italy at a magnificent entertainment given by a nobleman of Lombardy at Tortona on account of the marriage between Galeas Duke of Milan and Isabella of Arragon. Every resource that poetry, music, dancing, and machinery could supply, was employed and exhausted on the occasion. The description given of so superb an entertainment excited the admiration of all Europe, and excited the emulation of several men of genius, who improved the hint to introduce among their countrymen a kind of spectacle equally pleasing and novel.

It would seem, however, that at first the women had no share in the public or theatrical dance ; at least we do not see them mentioned in the various entertainments given at the opera in Paris till the 21st of January, 1681, when the then Dauphiness, the Princess of Conti, and some other ladies of the first distinction in the court of Louis XIV. performed a ballet with the opera

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opera called *Le Triomphe de l'Amour*. This union of the two sexes served to enliven and render the spectacle more pleasing and far more brilliant than it ever was at any other period. It was received with so much applause, that on the 16th of May following, when the same opera was acted in Paris at the theatre of the Palais Royal, it was thought indispensable for the success of that kind of entertainment to introduce female dancers. They have continued ever since to be the principal support of the opera.

The dance is now in such commendation, that, particularly in France, the opera-house seems rather an academy for dancing than calculated for the representation of lyric poems. The disgusting and immoderate length of their recitatives is one of the chief causes of that general taste for dancing which prevails amongst them. A wit being asked one day what could be done to keep up an opera threatened with a most complete damnation? "Do! (says he); why, lengthen the dances and shorten the petticoats." So evident it is, that singing, though apparently the chief purpose of an opera, is by no means the most pleasing part of the entertainment for the spectators.

Thus, what was at first introduced as a mere accessory to the musical performance, became in process of time its only support; and this circumstance excited the emulation of several eminent ballet-masters. The art, however, of composing those grand dances, which are now so much admired, was for many years in a state of infancy, till Monsieur Noverre stepped forth and gave it that degree of perfection which it seems impossible to exceed. This celebrated ballet-master and performer, in a work lately published, has with great elegance and ingenuity delineated the nature, objects, and powers of dancing, enumerated the proper requisites to give it effect, and shown how much it may be ennobled by an acquaintance with the kindred arts.

Ballets, he observes, have hitherto been the faint sketch only of what they may be one day. An art entirely subservient, as this is, to taste and genius, may receive daily variation and improvements. History, painting, mythology, poetry, all join to raise it from that obscurity in which it lies buried; and it is truly surprising, that composers have hitherto disdained so many valuable resources.

According to our author, the reason why this art has remained so long in its infancy, is because its effects have been restrained to the transitory ones of fire-works calculated only to please the eye; and it never was supposed to have powers sufficient to speak to the heart: whereas it may vie, he says, with the best dramatic pieces, prove equally interesting, and captivate the spectator by the charms of the most complete illusion.

If ballets, therefore, says he, "are for the most part uninteresting and uniformly dull; if they fail in the characteristic expression which constitutes their essence, the defect does not originate from the art itself, but should be ascribed to the artists. Are then the latter to be told, that dancing is an imitative art? I am indeed inclined to think that they know it not, since we daily see the generality of composers sacrifice the beauties of the dance, and give up the graceful *naïveté* of sentiment, to become the servile copyists of a certain number of figures, known and hackneyed for

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above a century; so that the ballets of Phaeton, or of any ancient opera, revived by a modern composer, would prove so very similar to former ones, that one would think they have undergone no alterations, and are the same in every step.

"Ballet-masters should consult the productions of the most eminent painters. This would bring them nearer to nature, and induce them to avoid, as often as possible, that symmetry of figures, which, by repeating the object, present two different pictures on one and the same canvas.

"Those symmetrical figures from right to left, according to my judgement, are supportable only in the entrées, which are not meant to express anything in particular, but are only calculated to afford some relief to the principal dancers. They may be introduced in a general dance at the conclusion of an entertainment, they may also be admitted in the *pas* of four, six, &c. though in my opinion it be ridiculous even in this case to prefer the display of bodily strength and agility to expression and sentiment. But such figures must give way to nature in what we term *ballets d'action*. An instance, though perhaps not very forcible, may serve to elucidate and support my argument.

"At the sudden and unexpected appearance of some young fauns, a troop of nymphs take themselves to flight with equal affright and precipitation. The former are in pursuit of the latter with that eagerness which the very hope of pleasure can inspire. Now they stop to observe what impression they have made on the nymphs; these at the same time, and for a similar reason, check their career: with fear they survey their pursuers, endeavour to guess at their intentions, and provide for a retreat to some spot, where they may rest secure from the dangers that threaten them. Both troops now join, the nymphs resist, defend themselves, and at last effect their escape with no less swiftness than dexterity.

"This I call a busy active scene in which the dance, as it were, should speak with energy. Here studied and symmetrical figures cannot be introduced without a manifest violation of the truth, without destroying the rules of probability, and without weakening the action and lessening its effect.—This scene should be conspicuous; for its beautiful disorder, and the art of the composer, must here be the handmaid of nature.

"A ballet-master, devoid of taste and discernment, will make of this a mechanical piece of dancing, and thus deprive it of the effect it was calculated to produce for want of entering into the spirit of it. His nymphs and fauns will be arranged upon a parallel line, he will place the former in attitudes awkwardly uniform, and insist on the latter holding up their arms to an even altitude; rather than deviate from the beaten path, and the antique rules of opera-dancing, he will cautiously avoid to have, on the right and left, his nymphs placed in unequal numbers, but will reduce a scene of action, which ought to be supported with spirit, to an exercise equally affected and uninteresting.

"Perhaps some ill-disposed critics, so far strangers to the art as not to judge of it from its various effects, will maintain, that the above scene should present only two different objects, the one portrayed in the love-sick

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100. sick fauns, the other expressed by the affright of the nymphs. But how many shades may serve to embellish those pictures? how varied may be the strokes of the pencil? how opposite the lights? and what a number of tints ought to be employed in order to draw from this twofold situation a multiplicity of images, each more lively and spirited than the other?

“As all men share the same passions, and these differ in proportion to their sensations and feelings, they may therefore be worked upon more or less powerfully in proportion as they manifest themselves outwardly with more or less force and impetuosity. This principle once acknowledged, and nature indeed inforces it daily, it would certainly be more to the purpose to diversify the attitudes and vary the expression; for then the pantomime action of each personage would be divested of a disgusting uniformity. The truth of imitation and the skill of the painter would conspicuously appear in giving a different aspect to the features, some of them expressive of a kind of ferocity, others betraying less eagerness, these casting a more tender look; and to the rest, the languishing air of voluptuousness. The sketch of this first picture naturally leads to the composition of the second: here some nymphs appear divided between fear and desire; there some others express by the contrast of their attitudes the various emotions of their soul. Some are more scornful than their companions, whilst others betray a curiosity equal to their fears. This ensemble gives life to the whole picture, and is the more pleasing that it is perfectly consistent with nature. From this exposition, you will not hesitate to agree with me, that symmetry, the offspring of art itself, should never find place in the ballets d’action.

“I shall beg leave to enquire of all those who reason from habitual prejudice, whether they will look for their favourite symmetry in a herd of sheep flying from the wolf, or amongst wretched peasants leaving their huts and fields, in order to shelter themselves from the fury of a party of enemies? By no means. But the art lies in concealing art itself; my aim is by no means to introduce disorder and confusion; on the contrary, I will have regularity even in irregularity. What I most insist upon is, the introducing of well concerted groups, situations forcibly expressed, but never beyond nature, and above all, a certain ease in the composition, which betrays not the labour of the composer. As for the figures, they are likely to please only in proportion as they quickly succeed each other, and are devised with equal taste and elegance.”

A ballet perfect in all its parts, our author proceeds to observe, is a picture, drawn from life, of the manners, dresses, ceremonies, and customs of all nations. It must therefore be a complete pantomime, and through the eyes speak, as it were, to the very soul of the spectator. If it wants expression, if it be deficient in point of situation and scenery, it degenerates into a spectacle equally flat and monotone.

According to Plutarch, a ballet is, if the expression may be allowed, a mute conversation, or a speaking and animated picture, whose language consists of motions, figures, and gestures.—These figures, says our author, are unlimited in their number, because there are a thousand things that the ballet may express.

Phrynicus, one of the oldest tragedy writers, says, that he could find in our ballet as many figures as the sea rolls waves in a high winter tide.

A well composed ballet, therefore, may do without the assistance of words: M. Noverre even remarks, that these only serve to weaken the action, and partly destroy its effects. He has no opinion of a pantomime which, in order to be understood, must borrow the help of a verbal explanation. “Any ballet whatever (says he), destitute of intrigue, action, and interest, displaying nothing more than the mechanical beauties of the art, and, though decorated with a pompous title, is unintelligible throughout, is not unlike those portraits and pictures to which the painters of old subscribed the names of the personages and action they meant to represent: because they were imperfect in point of imitation, the situations weakly expressed, the outlines incorrect, and the colours unseemly.

“When dancers shall feel, and, Proteus like, transform themselves into various shapes to express to the life the conflict of passions; when their features, their very looks, shall speak their inward feelings; when, extending their arms beyond the narrow circle prescribed by the rigid rules of pedantry, and with equal grace and judgment giving them a fuller scope, they shall by proper situations describe the gradual and successive progress of the passions; when, in fine, they call good sense and genius to the assistance of their art; then they may expect to distinguish themselves: explanatory speeches will become useless; a mute but powerful eloquence will be substituted to much better effect; each motion will be a sentence; every attitude will portray a situation; each gesture convey a thought, and each glance a new sentiment: every part will please, because the whole will be a true and faithful imitation of nature.”

A ballet, in whatever style it may be, should, according to Aristotle, be composed, as well as poetry, of two different parts, which he calls parts of quality and parts of quantity. Nothing exists in nature without matter, form, and figure: the ballet therefore becomes a mere nonentity, if it be deficient in any of those essential parts, which mark and constitute the being of any one thing animate or inanimate. The matter here is the subject intended for representation; its form consists in the ingenious distribution of the plan; and the various compounding parts constitute its figure. Form therefore contains the parts of quality, and the extent the parts of quantity.

Thus it appears, that ballets are in some degree subject to the rules of poetical composition. They, nevertheless, differ from tragedies and comedies, in that the former are not subject to the three unities of time, place, and action: Yet they require an unity of plot, in order that the various scenes may meet and end on the same point.—The ballet, therefore, may be termed the brother of the drama; though not restrained to its stricter rules: which only serve to cramp the imagination, check its flight, and confine genius; and if adhered to, must set aside all thought of composition of ballets, by depriving them of their chief ornament, pleasing variety.

M. Noverre considers tragedy as the subject most suitable for the art of dancing. The former abounds in noble incidents, situations, &c. and these produce

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the best stage effects. Besides, the passions are more forcibly expressed by great characters than by common men: the imitation is of course less difficult, the action in the pantomime more significant, natural, and intelligible.

“The business of a skilful master (he observes), is to foresee, as it were, at one glance, the general effect that may result from the ensemble, and never give the preference to one single part over the whole. The only way for him to bestow his thoughts on the greatest number, is to forget for a while the principal characters of the drama: if his whole attention should entirely be taken up with the parts of his first dancers of both sexes, the action is suspended, the scenes are slow in their progress, and the whole performance must fall short of its desired effect.

In the tragedy of *Merope* by Voltaire, the principal characters are, *Merope*, *Polifonte*, *Egiste*, and *Narbas*: But although the parts of the inferior actors are not of equal importance, yet they all concur to the general action, and to the progression of the drama, which would appear deficient in some parts, should either of those characters be wanting in the representation. No useless personage should be obtruded on the stage. Every thing therefore that may tend to weaken the effect of the drama ought to be carefully avoided, and only that number of actors introduced which is barely requisite for the execution of the performance.

“A ballet is a production of the same kind. It must be divided into acts and scenes, each of which, as well as the act itself, must have its beginning, its middle, and its end; that is, in other words, exposition, plot, and denouement.

“I have observed above, that the principal performers in a ballet should be forgotten for a while: My reason is, that, in my opinion, it is easier to give striking parts to *Hercules* and *Omphale*, *Ariadne* and *Bacchus*, *Ajax* and *Ulysses*, &c. than to 24 persons in their retinue: If these have nothing to say, they are superfluous, and of course ought to be rejected; but, if they are to speak, let their conversation be consonant with that of the principal characters.

“The difficulty, therefore, does not lie in assigning a primary and distinctive part to *Ajax* or *Ulysses*; since it springs naturally from the importance of their situation in the play: but in introducing the figurers in a becoming style, giving them parts of more or less importance, connected with the action of the two heroes; in introducing women, some of whom will appear concerned for *Ajax*, and the greater number showing their partiality for *Ulysses*. The triumph of the latter, the former's death, present to the man of genius a series of images that vie with each other in point of interesting and picturesque situations. These, by means of a colouring skilfully contrasted, cannot but produce the most lively sensations. In fine, a ballet pantomime should be dramatic in all its parts; and the figure-dancers, who succeed to the principal performers, ought to continue the scene, not by a number of symmetrical figures and studied steps, but by that kind of animated expression which keeps up the attention of the spectators to the main subject for which the preceding actors have prepared the audience.

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“Yet, either through ignorance or in consequence of a vitiated habit, there are but few well supported ballets. Dance is introduced for the mere purpose of dancing: the end is supposed to be answered by the mechanical motions of the feet, or by high-jumping, and that the idea which people of real taste may have of a ballet is fully answered, when inactive performers are introduced in it, who mix and jostle each other, presenting a confused heap of pictures, sketched without taste, awkwardly grouped, and totally devoid of that harmony and expression, the offspring of the soul, which alone can embellish art by giving it life.”

M. Noverre, in considering the knowledge necessary for attaining perfection in the present art, observes, that mythology, ancient poetry, and chronology, ought to be the primary studies of a ballet-master; who ought also to possess a genius for poetry and painting, since the art borrows all its charms from a perfect imitation of nature.

A slight knowledge of geometry cannot but prove very advantageous, as it will help the master to introduce his figures in due proportion, to calculate exactly, and execute with precision. By means of that erring guide, he will retrench every superfluous accessory, and thus enliven the performance. Taste will introduce elegance, genius create variety, and judgment direct the whole.

What is a ballet but a piece of more or less complicated machinery, which strikes or surprises the beholder by its various effects, only in proportion as those are diversified and sudden? That chain and connection of figures, those motions succeeding each other with rapidity, those various forms turning contrary ways, that mixture of different incidents, the ensemble and harmony which mark the steps and accompany the exertions of the dancers; do not all these give you the idea of a mechanism most ingeniously contrived?

Ballets are often built on preternatural subjects: several of them require the assistance of machinery. For instance, few of the subjects taken from *Ovid* will be fit for representation, without a change of scenery, flights through the air, metamorphoses, &c. This author therefore must never be taken for a model, unless the ballet-master himself be an expert mechanist. None are to be found out of the capital but journey-men and stage-sweepers, whom the patronage of some mighty son of the sock has preferred by degrees to that employment. The talents of those upstarts consist in, and reach not beyond, the capacity of putting up the lights which they were wont to snuff for many years, or letting down awkwardly a glory of the most wretched style. The theatres in Italy are not remarkable for their machinery; those of Germany, built upon the same plan, are not less deficient in point of that enchanting part of stage-exhibition; so that a ballet-master must, in these countries, find himself greatly embarrassed, if unskilled in the mechanical arts, he cannot convey his ideas with perspicuity, by building for that purpose small models, which are better understood by the generality of workmen than the clearest verbal explanation.

The theatres of Paris and London are the best supplied with these resources. The English are very ingenious: their stage machinery is more simplified than the French; and of course produce a quicker effect.

Amongst them all these kinds of works are most exquisitely finished; that neatness, care, and exactitude, which is remarkable throughout every part, greatly contribute to the precision of the whole. Those chefs-d'œuvres of mechanism particularly display themselves in their pantomimes; which, however, are low and trivial, devoid of taste and interest, and built upon the meanest incidents. It may be said that this kind of entertainment, which is got up at a prodigious expence, is only calculated to please those eyes which are shocked at nothing; and that it would meet with no success on the French theatres, where no other pleasantry is permitted but such as is not incompatible with decency, abounds with delicacy and wit, and is no ways levelled against morals and humanity.

A composer who wishes to rise superior to the generality of ballet-masters, should study the painters, and trace them in their various manners of drawing and composing. Both arts have the same object in view, whether it be for taking likenesses, mixing the colours, and preserving the clare-obscuré; or for grouping the figures properly, laying on the draperies, throwing the former into elegant attitudes, and giving them life and expression.

Upon the same principle, the knowledge of anatomy will serve to render more clear and intelligible the precepts which he has to lay down for his pupils. It will be an easy matter for him to distinguish properly between the natural and habitual defects in their conformation. These are the greatest obstacles that so often impede the progress of young beginners. Thus once knowing the cause, he will be able to remedy the evil; as his lesson and precepts will then be the result of strict attention, they never can fail of becoming profitable.

Drawing is too useful in the composition of ballets for the master not to pay a serious attention to that art; it will contribute to the beauty of the forms; it will give to the figures an air of novelty and elegance, animate the groups, throw the body into graceful positions, and show the attitudes in a just precision.

A ballet-master who is no proficient in music, will make a bad choice of his airs. He will not enter into the spirit or character of them. The motions of his dancers will not beat time with that precision and delicacy which are absolutely necessary, unless he is endowed with that sensibility of organ which is more commonly the gift of nature than the result of art, and is far above what may be acquired by long practice and steady application.

A good choice of music is as essential to dancing as the choice of words and the phrasing of a speech is to eloquence. It is the tune and time of the music that fix and determine the motions of the dancers. If the former be uniform and devoid of taste, the ballet will, like its model, be dull and unmeaning.

By this immediate connection between music and dancing, it clearly appears, that, from a practical knowledge of the former, the ballet-master will derive the greatest advantages. He will then be able to impart his thoughts to the composer; and if taste and knowledge combine together, he will either set the music himself, or at least furnish the composer with the principal outlines, to characterise the action of the dancer; as this will be varied and expres-

sive, the ballet cannot fail of being equally so. Music well composed should paint and speak; and the dance set to those sounds, will be, as it were, the echo to repeat the words. If on the contrary it be mute, if it speak not to the ear of the dancer, then all sentiment and expression are banished from the performance.

As nothing can appear trifling to the man of genius, nothing should seem so to the ballet-master. It is impossible for him to distinguish himself in his profession, unless he applies to study those arts which have been just mentioned. Yet to insist that he should be master of them all in that degree of perfection which is attainable only by those who give themselves entirely up to the study of each of them in particular, would be requiring a mere impossibility.

All that can be deemed strictly requisite, therefore, is a general knowledge, a slight tincture of those sciences which, by the connection they have with each other, are likely to contribute to the improvement of the art and to its reputation. From the natural union, however, that subsists between the arts, and from the harmony which reigns amongst them, that ballet-master will ennoble his composition with the most fire, spirit, liveliness, and interest, who has most genius and imagination, and whose knowledge is most extensive.

As to performers, and their personal qualifications: The first point to which it is directed to pay attention when one takes up the profession of a dancer (at least so soon as he becomes capable of reflection), is his bodily formation: If one is conscious of any natural defects which seem irremediable by art, it will be best immediately to renounce every idea that may have been formed of the advantage arising from popular approbation. But where personal defects can be reformed by application, study, or the advice and assistance of judicious masters, then it becomes an essential concern quickly to exert every effort, before the parts to be corrected have acquired strength and consistence, before nature has unalterably taken her bent, and the error becomes too habitual and inveterate.

Among other personal defects, there are two which deserve particular notice: The first is that of being *jarreté*, "knock-knee'd;" the other of being *arqué* or "bow-legg'd."

A man is said to be *jarreté* or in-knee'd when the haunches are strait, and incline inwardly, the thighs lie near, and the knees are protuberant, and so close that they touch and knock together at every step even when the feet are at a distance; so that such a person, from the knees to the feet, makes the figure of a triangle: in people of this formation, likewise, there is a clumsiness in the inside of the ankle, a great elevation in the instep, while the *tendo Achillis* is not only very slender, but much extended in the articulation.

The other defect, of being *arqué* or bow-legged, is the opposite of the former: and exists in the same parts, namely, from the haunches to the feet, which describe a sort of bow or arch; for the haunches being in this case hollow, the thighs and knees stand open, and at a distance, and produce the same effect in the lower extremities, so that they can never be brought in proper contact like those of a well-shaped person;

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their feet also are long and flat, the ankle juts out, and the *tendo Achillis* is large and closely inserted. A single view of these diametrically opposite defects, prove more forcibly than any arguments, that the instructions which might correct the errors of one of those sort of dancers, would tend only to increase the defects of the other; and that consequently their aim and study ought to be correspondently opposite.

The dancer whose defect is of the first kind, that of being *jarreté*, must use the means which art furnishes him with, to separate and widen the too closely connected parts. The first step to this end is to turn the thighs outwardly, endeavouring to move them in that position, by taking the advantage of the free rotation which the thigh-bone has in the *cotiloidal* cavity of the haunches: assisted by this exercise, the knees will follow the same direction, and return as it were to their proper position. The kneecap (which seems intended to prevent the knee from being thrown too far backward from its insertion) will stand perpendicular over the point of the foot, while the thigh and leg thus placed describe a line that will ensure firmness and stability to the whole body.

The second remedy to be used is, to keep the knees in a constant bend, and to make them appear very much stretched, without their being really so. This must be the result of long and constant practice; but when the habit is firmly contracted, it is impossible to return to the former vicious position, without causing an insupportable pain and numbness. Some dancers have been able to conceal this defect so artfully, that it was entirely undiscoverable unless in dancing strait-capers or in very quick movements. The reason of its becoming visible at such times is, that the contraction of the muscles in the effort of leaping makes them stiff about the articulation, and forces every part into its former and natural situation; the knees thus strained, turn inwardly and (for the time) regain their usual protuberance, which becomes an obstacle to the display of the *entre-chat*. The more these parts connect, to the greater distance will the lower extremities be thrown; hence the legs, neither being able to beat nor cross, remain motionless at the time of the knees rolling over each other, while the *entre-chat*, being neither cut, beat, nor crossed by the feet, is deprived of that life and brilliancy which are its chief merit.

A person thus formed, should entirely renounce the *entre-chat*, *cabrioles*, and every kind of dance that requires very quick and complicated movements, as it will infallibly render him weak and powerless; for the haunches being so strait, the muscles that are attached to them (whereon the motions of the trunk depend), have not a proper and easy play, which will be always in proportion to the dimension of these bones, because then the muscles shoot out or divide from a point more distanced from the centre of gravity: therefore the grander sort of dancing, and *terre à terre*, is the best adapted to such dancers; and we may add, that whatever they lose on the score of strength, they regain in elegance and address. They are luxuriant and shining in the simplest parts; easy, even in difficult ones, where no great efforts are required; just in their execution; elegant in their display; and their spring is always exerted with an infinity of grace, as they dexterously employ every resource which the motion of the instep

can give them. These are advantages which atone for want of personal strength; and in dancing agility and address are always preferable to the mere efforts of force.

The art of concealing or overcoming the defect of such performers as we have characterized by being *arqué* or bow-legged, is in a great measure the opposite of the former; namely, by endeavouring to bring together the parts that are too much separated, and lessening that vacancy which is particularly observable between the knees. These require no less exercise than the former in turning the thighs outwardly, and generally are less able to disguise their faults: for being more robust and vigorous, there is less pliability in their muscles, and their joints move less easily. And it must be added, if the deformity results from a natural distortion of the bone, labour will be as useless as all the aids of art will be impotent.

It was remarked, that dancers of the first class, or *jarreté*, should preserve a slight genuflexion or bend in their performance; while these, for the opposite reason, ought to keep their limbs rather extended or stretched, and to cross more closely, by that means diminishing the vacancy occasioned by the natural separation. Such dancers are nervous, lively, and brilliant in all cases which require more strength than elegance; vigour and agility may be inferred from their muscular force, and the firmness and resistance of their articular ligaments; lively in their dancing, because they cross low rather than high; and requiring on that account less space in beating time, they perform it with more liveliness: they display more brilliancy, because the light becomes visible between the limbs at the moment of crossing and recrossing; and this is precisely the *clair-obscur* of dancing; for if the time in the *entre-chat* or cross-caper is neither cut nor beat, but rolled or huddled over, there is no light to give distinction to the shadows, and the limbs, so closely joined, present an indistinct and effectless mass.

These dancers have less address than the others, as they generally depend on their strength; and indeed that strength is a constant obstacle to ease and pliancy; if it forsakes them a single moment, they appear awkward and ridiculous: nor can they conceal their situation by any trifling display; that requiring mere address, would give them time to recover, which their want of natural elasticity otherwise prevents.

Dancers who are *jarretés*, are weak, slender, and delicate; the others, strong and vigorous, large made, and nervous. It is a common opinion, that stout, squat-built men, are heavy and sluggish; which they doubtless are in respect of bodily weight: but the notion is erroneous so far as regards dancing; for activity owes its very existence to muscular strength, and every man who has not a requisite share of that will always fall heavy. The reason is evident; the weak parts, in the instant of falling, not being able to resist the stronger (that is, the weight of the body, which acquires a *momentum* in proportion to the height it falls or descends from), yield and bend; and it is at the moment of relaxation or flexion that the noise of the fall is heard; a circumstance greatly lessened, or rather entirely avoided, when the body is able to maintain itself in a perpendicular direction; and while the muscular spring is sufficient to oppose that descending force,

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I cc. force, and vigorously resist a shock which would otherwise destroy it.

Nature has not exempted the fair sex from those imperfections we have been taking notice of; but art, and the use of petticoats, come fortunately to the help of the female dancer. The hoop conceals a multitude of defects, which the critic's curious eye cannot ascend to discover. Most of them dance with their knees open, as if they were naturally *argues*; but, thanks to this bad habit, and to the petticoats, they appear more brilliant than the men; because, as they beat from the lower part of the leg, they perform the time quicker than we, who, concealing nothing from the spectator, are obliged to beat at a greater extent, and to do it originally from the haunch.

The vivacity of the sex contributes much to the brilliancy of their execution; though certainly not less is owing to the petticoats, which, by concealing the length of the limbs, catch the attention, and fix it more advantageously: thus all the fire of the beats being united in one point, appears more lively and brilliant; while the eye embraces one object only, without being hurried and confused, in proportion to the space it has to overlook.

To perfection in dancing, Mr Noverre observes, nothing is more necessary than the outward turn of the thigh; yet nothing is more natural to mankind than the contrary position: it is born with us. It will be superfluous, in establishing this truth, to cite for example the Asiatics, the Africans, or any people who dance, or rather leap and move, without art or principle. If we attend only to children, or the rustic inhabitants of the villages, we shall see that they all turn their feet inwardly. The other position is purely invention; and a proof, far from equivocal, of this fault being an imaginary one, is, that a painter would transgress as much against nature as the rules of his art, were he to place the feet of his portrait in the situation of a dancer's. It is plain, then, that to dance elegantly, walk gracefully, or address ourselves with ease and manliness, we must absolutely reverse the nature of things; and force our limbs, by artificial applications equally tedious and painful, to assume a very different situation from what they originally received.

Such a change, however necessary in this art, can only be accomplished by laying its foundation in the earliest stages of infancy, when every bone and muscle is in a state of pliability, and capable of receiving any direction which we choose to give them.

The difficulty of attaining the outward position of the limbs is owing to our ignorance of the proper arts to be employed. Most beginners persuade themselves that it is to be acquired by forcing the feet to turn outward; and though this part may readily take such a direction, from their suppleness, and being so easily moved at their articulation with the leg; yet this method is so far false, as it tends to displace the ankle-bones, and besides has not any effect upon either the knees or thighs.

Neither is it possible to throw the knees outwardly without the assistance of the thigh. The knees have only two motions, bending and extension; the one drawing the leg backward, the other throwing it forward: they have no power, therefore, of themselves to determine or assume an outward position; but must

eventually depend on the thigh, which entirely commands all the lower parts of the body, and turns them in consequence of its own rotatory motion; so that, in fact, whatever motion or position that takes, the knee, foot, and leg, are obliged to follow.

M. Noverre condemns the *tourne-haunch* as a clumsy and useless invention, which, instead of producing any good effect, serves only to lame those who use it, by giving a distortion to the waist, much more disagreeable than what it was intended to remove.

The simplest and most natural means are those which reason and good sense ought to adopt; and of these a moderate but continual exercise is indispensable: the practice of a circular motion or turning of the legs, both inwardly and outwardly, and of boldly beating at full extent from the haunch, is the only certain exercise to be preferred. It insensibly gives freedom, spring, and pliancy; while the motions acquired by using the machine have more an air of constraint, than of that liberty and ease which should shine conspicuous in them.

It has been maintained, that a strong and vigorous person ought to spring higher and better than a slender or weaker man. But experience (says M. Noverre) daily proves the contrary. We see many dancers, who cut the time very strong, who beat with much vigour and firmness, and yet cannot spring to any considerable perpendicular elevation: for an oblique elevation, or on one side, ought here to be distinguished from the former; the latter is faint, and depends entirely upon address in the dancer. There are others, again, whose slender form renders their execution less bold, and rather elegant than forcible, rather lively than nervous, but who can rise to an extraordinary height: it is to the shape and formation of the foot, and to the length and elasticity of the tendon, that this power of elevation is originally owing; the knees, the loins, and the arms, all co-operate in this action; the stronger the pressure upon the muscles, the greater is the re-action, and the spring or leap is proportionably high. The alternate motion of the knees participate with those of the instep and *tendo Achillis*, though the latter are still the most essential auxiliaries; the muscles of the trunk lend their assistance, and preserve the body in a perpendicular direction; while the arms, running imperceptibly to the mutual assistance of all the parts, serve as wings to counterbalance the machine.

Observe all those animals that have long and slender ancles, as stags, roebucks, sheep, cats, monkeys, &c. and you will perceive that they have a quickness and facility of springing and leaping, which animals differently formed in that part can never obtain.

But were a man endowed with all the other qualities essential to the perfection of the art, yet still without strength and firmness in his loins he never can be a good dancer. This strength is certainly the gift of nature; but it may be much improved by the assiduity of an able teacher. We daily see dancers who have neither perpendicularity nor firmness, and whose performance is altogether unstable and irregular: and we likewise see others, who, though they possess not so great a degree of native force, have all the appearance of finewy firmness and muscular strength, in their haunches, back, and loins. Art has furnished a substitute for nature, in the lessons of some excellent
teacher,

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teacher, who has convinced them, that when once they forego an attention to the loins, it is impossible to keep themselves in a right perpendicular line; and therefore all their exertions will be devoid of taste: that all wavering and instability in this part is inconsistent with perpendicularity and firmness, and will certainly cause distortion of the shape and waist: that the depressure and sinking of the body deprives the lower parts of that liberty which is necessary to their easy motion: that hence the body is undetermined in its positions; frequently drags the limbs; and constantly loses the centre of gravity; and therefore cannot recover an equilibrium, but after various efforts and contortions totally repugnant to the graceful and harmonious motions of good dancing.

Such is the performance of those dancers who have no strength in their loins, or at least do not exert what they possess. In order to dance well, the body should be firm and steady; it should particularly be motionless and free from wavering while the legs are in exertion; for when the body follows the actions of the feet, it displays as many grimaces and distortions as the legs execute different steps; the performance is then robbed of its ease, uniformity, harmony, exactness, firmness, perpendicularity, and equilibrium; in a word, of all those beauties and graces which are so essential to make dancing give pleasure and delight.

Many dancers are of opinion, that to be soft and luxuriant, the knees must be bent very low. But in this they are most certainly mistaken; for a more than ordinary flexion of the knees gives rather a dryness and insipidity to dancing; and a dancer may be very inelegant, and jerk, as it were, all his movements, as well in bending very low as in not bending at all. The reason will appear natural and evident, when we reflect, that the time and motions of the dancer are strictly subordinate to the time and movements of the music: pursuing this principle, it is not to be doubted, that when the flexion of the knees is greater than what the air or time of the dance requires, the measure then draws along, languishes, and is lost. To recover and catch again the time which this unnecessary flexion had destroyed, the extension of the knee must be equally quick; and it is this sudden transition which gives such a harshness and sterility to the execution, and renders it as disgusting as the opposite fault of stiffness and inflexibility.

That luxuriant softness requires more to its perfection than merely an exact flexion and extension of the knees; the spring of the instep must add its assistance, while the loins must balance the body to preserve these springs in proper bounds. It is this rare harmony of motion (says M. Noverre) which has procured the celebrated Dupré the glorious title of the *God of Dance*.

There are many dancers, and of an inferior class only, who can display a great variety of steps, badly enough chosen to be sure, and often displayed without either judgment or taste; but it is very uncommon to find among them that exactness of ear (that rare but innate talent of a dancer), which gives life to and stamps a value upon steps, and which diffuses over all their motions a spirit that animates and enlivens them.

There are some ears stupid and insensible even to the most simple, plain, and striking movements; there are

others, more cultivated or refined, that can feel and comprehend the measure, but cannot seize its intricacies; and there are others again to whom the most difficult airs and movements are easy and intelligible, and at once comprehended. It is nevertheless certain, that a dancer may have a very perfect and nice feeling, and yet not make his feelings intelligible to the audience, if he has not the art of commanding those resources which depend upon a proper exertion of the *coup d'oeil*: awkwardness becomes visible where the exactest proportion was necessary; and every step which would have been becoming, and produced the happiest effect, had it been smartly introduced at the conclusion of the measure, will now be cold and lifeless, if all the limbs are in motion at once. It requires more time to move the whole body than to exert any single member; the flexion and extension of the instep is more readily and quickly made than the reciprocal motion of all the joints. This principle allowed, that the dancer is destitute of precision, who (supposing he possesses a musical ear) knows not how to time his steps; the elasticity of the instep, and the more or less active play of the muscles, add to the natural sensibility of the ear, and stamp value and brilliancy on the dance. The joint charms of the harmony springing from the movements of the music, and the motions of the dancer, captivate even those whose ears are the most insensible and least susceptible of musical impression.

There are some countries where the inhabitants in general are endowed with this innate musical taste. The Palatinate, Wirtemberg, Saxony, Brandenburg, Austria, and Bohemia, supply the orchestres of the German princes with many excellent musicians and eminent composers. The Germans, indeed, are born with a very lively and just taste for music, and have in them the seeds of true harmony; nothing is more common than to hear concerts, both in the streets and in the shops of their mechanics, performed with the greatest skill and exactness.

Such a natural and native taste for music as we have been mentioning, is usually accompanied by, or includes in it, a similar one for dancing; they are kindred arts; the tender and harmonious accents of the one excites and produces the agreeable and expressive motions of the other, and their union entertains the eye and ear with animated pictures of sentiment; these two senses, again, convey to the heart the interesting images which affect them, while the heart, in its turn, communicates them to the mental faculty: thus the pleasure resulting from the harmony and intelligence of these two arts, enchants the spectator, and fills him with the most seducing pleasures of voluptuousness.

Dancing is probably no where varied to such a degree as in the provinces of Germany; where the well known dances of one village are strangers in the adjacent hamlet; their songs of mirth and merriment have no less different airs and movements, though they are all marked with that of gaiety. Their dances are pleasing and engaging, because the offspring of simple nature; their motions express joy and pleasure; and the exactness with which the whole is performed, gives a peculiar agreeableness to their steps, gestures, and attitudes. Do they spring?—a hundred persons, assembled round an oak, or some ancient pillar, seize the

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D. the time at one instant, bound up, and descend with the same exactness. Do they wish to mark the measure by a *coup-de-pied*?—all strike with one consent; or when they catch up their women, you see them all in the air at an equal height, nor do they descend but at the precise note that marks the time.

The counter-point, which is doubtless the touchstone of a delicate ear, is to them an object of no difficulty; hence their dance is so particularly animated, and the nicety of that organ has the effect of giving their different motions an air of gaiety and variety altogether exquisite.

A dancer whose ear is untuned to harmony, displays his steps without order or regularity, wanders from his part, and pursues the measure without being able to reach it: devoid of judgment, his dancing has neither sentiment nor expression; and the music which should direct his motions, regulate his steps, and guide his time, serves only to expose his imperfections and insufficiency. The study of music should therefore be applied to for the purpose of obviating this defect, and giving more sensibility and exactness to the organs of hearing.

It will not be expected that we should proceed to give a description of all the intricacies and combinations of steps that are or can be exerted in dancing; or enlarge on the mechanical particulars of the art. A dissertation on the latter would be insipid and disgustful; for the language of the feet and limbs is addressed to the eyes, not to the ears: and a detail of the former would be endless, since every dancer has his peculiar manner of joining or varying the time. It may be sufficient just to mention on this point, that it is in dancing as in music, and with dancers as with musicians: Dancing does not abound with more fundamental steps than music with notes; but there are octaves, breves, semibreves, minims, crotchets, double and treble crotchets; times to count, and measures to follow. This mixture, however, of a small number of steps, and a few notes, furnishes dancers with a multitude of connections and a variety of figures: taste and genius will always find a source of novelty in arranging them in different manners, and to express various ideas. Slow and lengthened, or quick and precipitate steps, and the time correspondently varied, give birth to this endless diversity.

Country-DANCE. See *COUNTRY-DANCE.*

Country-Dance, commonly so written, and hence seeming to imply a rustic way of dancing borrowed from country people or peasants, is by others supposed to be a corruption of the French *Contre-danse*, where a number of persons placing themselves opposite one to another begin a figure.

Rope-DANCER, *schœnobates*, a person who walks, leaps, dances, and performs several other feats, upon a small rope or wire.

The ancients had their rope-dancers as well as we. These had four several ways of exercising their art: The first vaulted, or turned round the rope like a wheel round its axis, and there hung by the heels or neck. The second flew or slid from above, resting on their stomach, with the arms and legs extended. The third ran along a rope stretched in a right line or up and down. Lastly, the fourth not only walked on the rope, but made surprising leaps and turns thereon.

They had likewise the *cremnobates* and *orobates*; that is, people who walked on the brinks of precipices: Nay more, Suetonius in *Galba*, c. 6. Seneca in his 85th *Epistle*, and Pliny, *lib. viii. c. 2.* make mention of elephants that were taught to walk on the rope.

St Vitus's DANCE. See *MEDICINE-Index.*

DANCETTE, in heraldry, is when the outline of any bordure, or ordinary, is indented very largely, the argenets of the indentures being the only thing that distinguishes it from indented.

DANCING. See **DANCE.**

DANCING-Girls of Egypt. See **ALME.**

Dancing-girls are employed all over the east, as affording great diversion at all public entertainments. They are all prostitutes; and by the laws of their society are bound to refuse no one for their price, which is rated according to their beauty and other accomplishments. There are even particular sets of them appropriated to the service of the Gentoo temples and the use of the bramin priests who attend them. These poor creatures say that they were first debauched by their *god*, and afterwards by him consigned over to the use of the priests who belong to his temples.

These dancing-girls, whether in a settled or unsettled condition, live in a band or community under the direction of some superannuated female of the same profession, under whom they receive a regular education, and are trained up in all the arts of love and leasing, like scholars in an academy. Thus they acquire the art of captivating the affections of the other sex to such a degree, that nothing is more common than for one of the princes or chief people of the country to take a liking to one of these girls, and waste immense sums on her, though at the same time their own haram is stocked with beauties far superior, and who are besides possessed of the natural modesty of the sex, to which the others have not the smallest pretensions. Thus some of these girls acquire immense wealth. In the neighbourhood of Goa, for instance, on a part of the continent bordering on the district of that island, the dancing girls founded a village, after being driven from Goa by the zeal of the archbishop. Here they reside in a body corporate, and attend the parties of pleasure of the noblemen and principal inhabitants, for it is not every one's purse that can afford them. Here many of them acquire considerable fortunes by this scandalous traffic, and throw it into a common stock for the sake of carrying on merchandise; being concerned in shipping and the most profitable voyages, for which they have regular factors and brokers.

The dress of these women varies according to the country they live in; but in all it is the most gorgeous imaginable. They are loaded with jewels, literally from top to toe, since even on their toes they wear rings. Their necks are adorned with carcanets, their arms with bracelets, and their ancles with chains of gold and silver, often enriched with precious stones. They also wear nose-jewels, which at first have an odd appearance, but to which the eye is soon reconciled. In Indostan, these dancing-girls, as well as the other women of the country, have a peculiar method of preserving and managing their breasts, which at the same time makes no inconsiderable part of their finery.

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They inclose them in a pair of hollow cases, exactly fitted to them; made of very light wood, linked together, and buckled at the back. These at once confine their breasts so that they cannot grow to any disgustfully exuberant size; though, from their smoothness and pliancy, they play so freely with every motion of the body, that they do not crush the tender texture of the flesh in that part, like the stiff whalebone stays in use among the Europeans. The outside of them is spread over with a thin plate of gold or silver, or set with gems, if they can afford it. Another occasional ornament the dancing-girls put on, particularly when they resort to their gallants, viz. a necklace of many loose turns, composed of flowers strung together, which they call *mogrees*, somewhat resembling Spanish double jessamy, but of a much stronger and more agreeable fragrant odour, and far preferable to any perfumes. "They have nothing (says Mr Grose) of that nauseous boldness which characterises the European prostitutes, their style of seduction being all softness and gentleness."

With regard to the performances of these women as dancers, we have various accounts. The author of *Memoirs of the late War in Asia*, acquaints us, "that their attitudes as well as movements are not ungraceful. Their persons are delicately formed, gaudily attired, and highly perfumed. By the continuation of wanton attitudes, they acquire, as they grow warm in the dance, a frantic lasciviousness themselves, and communicate, by a natural contagion, the most voluptuous desires to the beholders." Mr Ives seems to have been very cool on this subject. "I could not (says he) see any thing in their performance worthy of notice. Their movements are more like tumbling or showing postures than dancing. Their dress is thin and light; and their hair, necks, ears, arms, wrists, fingers, legs, feet, and even the toes, are covered with rings of gold and silver, made after a clumsy manner. They wear two rings in their noses; and by their staring looks and odd gesticulations, you would rather suspect them to be mad women than morris-dancers. The band of music that attends them is not less singular in its way: it is chiefly composed of three or four men, who hold two pieces of bell metal in their hands, with which they make an incessant noise; another man beats what he is pleased to call a drum; and that they may not want vocal music to complete the band, there are always two others appointed to sing. These last generally lay in their mouths a good loading of beetel nut before they begin; which, after having been well chewed, tinges the saliva with such a redness, that a stranger would judge them to bleed at the mouth by too violent an exertion of their voice. These gentry are called *ticky-taru* boys, from the two words *ticky-taru*, which they continually repeat, and chant with great vehemence. The dancing-girls are sometimes made use of in their religious ceremonies, as when the priests bring forth the images of their gods into the open fields on a car ornamented with lascivious figures, these girls dance before the images amidst a great crowd of people; and having been selected for their superior beauty, are very profitable to their masters the priests, who are said to prostitute them to all comers."

Mr Grose informs us, that "these dances would hardly at first relish with Europeans, especially as they

are accompanied with a music far from delightful, consisting of little drums called *gungums*, cymbals, and a sort of sife, which make a hideous din, and are played on by men, whose effeminacy, grimaces, and uncouth shrivelled features, all together shock the eye and torture the ear. However, by use we become reconciled to the noise, and may observe some not unpleasing airs, with which the dancers keep time: the words often express the matter of a pantomime dance, such as a lover courting his mistress; a procureur bringing a letter, and endeavouring to seduce a woman from one gallant in favour of another; a girl timorous and afraid of being caught in an intrigue. All these love-scenes the girls execute in character dances, and with no despicable expression, if they are proficient in their art; for then their gestures, air, and steps, are marking and well adapted. In some of their dances, even in public, modesty is not much respected by the lascivious attitudes into which they throw themselves, without exposing any nudity; being richly clad and bedecked with jewels after their manner. But in private parties to which they are called, as in gardens, they give themselves a greater loose, and have dances in reserve; in which, though still without any grossness in discovering their bodies, they are mistresses of such motions and lewdness of looks and gestures as are perhaps more provoking.

DANDELION, in botany. See LEONTODON.

DANDINI (Pietro), an eminent painter, was born at Florence in 1646, and received his first instruction in the art of painting from Valerio Spada, who excelled in small drawings with a pen. Whilst he was under the care of that artist, he gave such evident proofs of a ready genius, that he was then placed as a disciple with his uncle Vincentio Dandini, a master of great reputation through all Italy, who had been bred up under Pietro da Cortona. He afterwards travelled through most of the cities of Italy, studying the works of those who were most distinguished; and resided for a long time at Venice, where he copied the paintings of Titian, Tintoretto, and Paolo Veronese. He next visited Parma and Modena, to design the works of Correggio; omitting no opportunity that might contribute to improve his hand or his judgment. When he returned to Florence, the grand duke Cosmo III. the grand duchess Victoria, and the prince Ferdinand, kept him perpetually employed, in fresco painting as well as in oil; his subjects being taken not only from sacred or fabulous history, but from his own invention and fancy, which frequently furnished him with such as were odd and singular, and especially with whimsical caricatures. He died in 1712.—This master had a most extraordinary talent for imitating the style of even the most celebrated ancient painters of every school, particularly Titian, Veronese, and Tintoretto; and with a force and elegance, equal to his subjects of history, he painted portraits, landscapes, architecture, flowers, fruit, battles, animals of all kinds, and likewise sea-pieces; proving himself an universal artist, and excellent in every thing he undertook.

He had a son, Octavio, who proved not inferior to him in any branch of his profession, and was an honour to his family and his country.

DANDINI (Cesare), history painter, was born at Florence,

Danegelt Florence; and was the elder brother and first instructor of Vincentio Dandini the uncle of Pietro. This master had successively studied as a disciple with Cavalier Curradi, Passignano, and Christofano Allori; from whom he acquired a very pleasing manner of designing and colouring. He was extremely correct in his drawing, and finished his pictures highly. Several noble altar-pieces in the churches of Florence are of his hand; and one, which is in the chapel l'Annonciata, is particularly admired.

DANEGLT, an annual tax laid on the Anglo-Saxons, first of 1 s. afterwards 2 s. for every hide of land thro' the realm, for maintaining such a number of forces as were thought sufficient to clear the British seas of Danish pirates, which heretofore greatly annoyed our coasts.

DANEGLT was first imposed as a standing yearly tax on the whole nation, under king Ethelred, A. D. 991. That prince, says Cambden, *Britan.* 142. much distressed by the continual invasions of the Danes, to procure a peace, was compelled to charge his people with heavy taxes, called *danegelt*.—At first he paid 10,000 l. then 16,000 l. then 24,000 l. after that 36,000 l. and lastly 48,000 l.

Edward the Confessor remitted this tax: William I. and II. reassumed it occasionally. In the reign of Henry I. it was accounted among the king's standing revenues; but king Stephen, on his coronation-day, abrogated it for ever.

No church or church-land paid a penny to the *danegelt*; because, as is set forth in an ancient Saxon law, the people of England placed more confidence in the prayers of the church than in any military defence they could make.

DANDOLO (Henry), doge of Venice, a brave admiral and politician. With a Venetian fleet he took Constantinople in 1203, and had the moderation to refuse to be emperor. He died in 1250.

DANET (Peter), abbot of St Nicholas de Verdun, was one of the persons chosen by the duke of Montaufier to write on the classics for the use of the dauphin. He had a share in Phædrus, which he published with notes and explications in Latin. He also wrote a dictionary in Latin and French, and another in French and Latin. He died at Paris in 1709.

DANIEL, the fourth of the greater prophets, was born in Judea of the tribe of Judah, about the 25th year of the reign of Josiah. He was led captive to Babylon, with other young Hebrew lords, after the taking of Jerusalem by Nebuchadnezzar, who took them into his service. That prince gave them masters to instruct them in the language and sciences of the Chaldeans, and ordered them to be fed with the most delicate viands; but they, fearing that they should eat meat forbidden by the law of Moses, desired the king's officers to allow them only pulse. The wisdom and conduct of Daniel pleasing Nebuchadnezzar, that prince gave him several posts of honour. It is commonly believed, that this prophet, when but 12 years of age, made known the innocence of the chaste Susannah; but the learned are not agreed, that the young Daniel, who confounded the old men, was the same with this prophet. However, he explained Nebuchadnezzar's dream of the mysterious statue, which foretold the four great monarchies; on which account he was

made prefect of the province of Babylon. In the reign of Darius the king of the Medes, he refused to adore the golden statue of the king, and was cast into the lions den, when those beasts, tho' pinched with hunger, did him no manner of hurt. And he explained the characters written on the wall of the room where Belshazzar was feasting.

It is believed that Daniel died in Chaldea, and that he did not take advantage of the permission granted by Cyrus to the Jews of returning to their own country. St Epiphanius says he died at Babylon; and herein he is followed by the generality of historians.

The prophecies of Daniel concerning the coming of the Messiah, and the other great events of after-times, are so clear and explicit, that, as St Jerom tells us, Porphyry objected to them, that those which related to the kings of Syria and Egypt, chap. xi. must have been written after the times of Antiochus Epiphanes; whereas this prophecy was translated into Greek 100 years before his time, and the translation was in the hands of the Egyptians, who had no great kindness for the Jews and their religion. And those prophecies foretelling the successes of Alexander, chap. viii. 5. xi. 3. were shown to Alexander by the Jews, in consequence of which they obtained several privileges from him; (*Ant. lib. xi. c. 8.*) The style of Daniel is not so lofty and figurative as that of the other prophets; it is clear and concise, and his narrations and descriptions simple and natural: in short, he writes more like a historian than a prophet.

The Jews do not reckon Daniel among the prophets; part of his book, that is, from the fourth verse of his second chapter to the end of the seventh chapter, was originally written in the Chaldee language; the reason of which was, that in that part he treats of the Chaldean or Babylonish affairs: all the rest of the book is in Hebrew. The six first chapters of the book of Daniel are a history of the kings of Babylon, and what befel the Jews under their government. In the six last he is altogether prophetic, foretelling not only what should happen to his own church and nation, but events in which foreign princes and kingdoms were concerned.

DANIEL (Samuel), an eminent poet and historian, was born near Taunton in Somersetshire in the year 1562, and educated at Oxford: but leaving that university without a degree, he applied himself to English history and poetry under the patronage of the earl of Pembroke's family. He was afterwards tutor to the lady Ann Clifford; and, upon the death of Spencer, was created poet-laureat to queen Elizabeth. In king James's reign he was appointed gentleman extraordinary, and afterwards one of the grooms of the privy-chamber to the queen consort, who took great delight in his conversation and writings. He wrote an history of England, several dramatic pieces, and some poems; and died in 1619.

DANIEL (Gabriel), a celebrated Jesuit, and one of the best French historians, was born at Rouen in 1649. He taught polite literature, philosophy, and divinity, among the Jesuits; and was superior of their house at Paris, where he died in 1728. There are a great number of his works published in French, of which the principal are, 1. An History of France, of which he also wrote an abridgment in nine volumes 12mo.

Danmonii,
Dante.

2. An History of the French Militia, in 2 vols 4to. 3. An Answer to the Provincial Letters. 4. A Voyage to the World of Descartes. 5. Letters on the Doctrines of the Theorists, and on Probability. 6. New difficulties relating to the knowledge of Brutes: And, 7. A theological treatise on the Efficacy of Grace.

DANMONII, an ancient British nation, supposed to have inhabited that tract of country which is now called Cornwall and Devonshire, bounded on the south by the British Ocean, on the west by St George's Channel, on the north by the Severn Sea, and on the east by the country of the Durotriges. Some other British tribes were also seated within these limits; as the Coffini and Ostidamni, which were probably particular clans of the Danmonii; and, according to Mr Baxter, they were the keepers of their flocks and herds. As the several tribes of the Danmonii submitted without much resistance to the Romans, and never joined in any revolt against them, that people were under no necessity of building many forts, or keeping many garrisons in their country. This is the reason why so few Roman antiquities have been found in that country, and so little mention is made of it and its ancient inhabitants by Roman writers. Ptolemy names a few places, both on the sea-coasts and in the inland parts of this country, which were known to, and frequented by, the Romans. The most considerable of these places are the two famous promontories of Bolerium and Ocrinum, now the Landsend and the Lizard; and the towns of Isca Danmoniorum and Tamare, now Exeter and Saltash. As the Danmonii submitted so tamely to the Romans, they might perhaps permit them to live, for some time at least, under their own princes and their own laws; a privilege which we know they granted to some other British states. In the most perfect state of the Roman government in Britain, the country of the Danmonii made a part of the province called Flava Cæsariensis, and was governed by the president of that province. After the departure of the Romans, kingly government was immediately revived amongst the Danmonii in the person of Vortigern, who was perhaps descended from the race of their ancient princes, as his name signifies in the British language a chieftain or the head of a family.

DANTE (Aligheri), one of the first poets of Italy, was born at Florence in 1265, of an ancient and honourable family. Boccaccio, who lived in the same period, has left a very curious and entertaining treatise, on the life, the studies, and manners of this extraordinary poet; whom he regarded as his master, and for whose memory he professed the highest veneration. This biographer relates, that Dante, before he was nine years old, conceived a passion for the lady whom he has immortalized in his singular poem. Her age was near his own; and her name was Beatrice, the daughter of Folco Portinari, a noble citizen of Florence. The passion of Dante, however, like that of his successor Petrarch, seems to have been of the chaste and platonic kind, according to the account he has himself given of it, in one of his early productions intitled *Vita Nuova*; a mixture of mysterious poetry and prose; in which he mentions both the origin of his affection and the death of his mistress, who, according to Boccaccio, died at the age of 24. The same author asserts, that Dante fell into a deep melancholy in con-

sequence of this event, from which his friends endeavoured to raise him, by persuading him to marriage. After some time he followed their advice, and repented it; for he unfortunately made choice of a lady who bore some resemblance to the celebrated Xantippe. The poet, not possessing the patience of Socrates, separated himself from her with such vehement expressions of dislike, that he never afterwards admitted her to his presence, though she had born him several children. In the early part of his life he gained some credit in a military character; distinguishing himself by his bravery in an action where the Florentines obtained a signal victory over the citizens of Arezzo. He became still more eminent by the acquisition of civil honours; and at the age of 35 he rose to be one of the chief magistrates of Florence, when that dignity was conferred by the suffrages of the people. From this exaltation the poet himself dated his principal misfortunes, as appears from the fragment of a letter quoted by Lionardo Bruni, one of his early biographers, where Dante speaks of his political failure with that liberal frankness which integrity inspires. Italy was at that time distracted by the contending factions of the Ghibellins and the Guelphs: the latter, among whom Dante took an active part, were again divided into the Blacks and the Whites. Dante, says Gravina, exerted all his influence to unite these inferior parties; but his efforts were ineffectual, and he had the misfortune to be unjustly persecuted by those of his own faction. A powerful citizen of Florence, named Corso Donati, had taken measures to terminate these intestine broils, by introducing Charles of Valois, brother to Philip the Fair king of France. Dante, with great vehemence, opposed this disgraceful project, and obtained the banishment of Donati and his partizans. The exiles applied to the pope (Boniface VIII.), and by his assistance succeeded in their design. Charles of Valois entered Florence in triumph, and those who had opposed his admission were banished in their turn. Dante had been dispatched to Rome as the ambassador of his party; and was returning, when he received intelligence of the revolution in his native city. His enemies, availing themselves of his absence, had procured an iniquitous sentence against him, by which he was condemned to banishment, and his possessions were confiscated. His two enthusiastic biographers, Boccaccio and Manetti, express the warmest indignation against this injustice of his country. Dante, on receiving the intelligence, took refuge in Siena, and afterwards in Arezzo, where many of his party were assembled. An attempt was made to surprize the city of Florence, by a small army which Dante is supposed to have attended: the design miscarried, and our poet is conjectured to have wandered to various parts of Italy, till he found a patron in the great Candella Scala, prince of Verona, whom he has celebrated in his poem. The high spirit of Dante was ill suited to courtly dependence; and he is said to have lost the favour of his Veroneze patron by the rough frankness of his behaviour. From Verona he retired to France, according to Manetti; and Boccaccio affirms that he disputed in the theological schools of Paris with great reputation. Bayle questions his visiting Paris at this period of his life; and thinks it improbable, that a man, who had been one of the chief magistrates of Florence,

should

Dante.

nte. should condescend to engage in the public squabbles of the Parisian theologists; but the spirit both of Dante and the times in which he lived sufficiently account for this exercise of his talents; and his residence in France at this season is confirmed by Boccacio, in his life of our poet, which Bayle seems to have had no opportunity of consulting.

The election of Henry count of Luxemburgh to the empire, in November 1308, afforded Dante a prospect of being restored to his native city, as he attached himself to the interest of the new emperor, in whose service he is supposed to have written his Latin treatise *De Monarchia*, in which he asserted the rights of the empire against the encroachments of the Papacy. In the year 1311, he instigated Henry to lay siege to Florence; in which enterprise, says one of the biographers, he did not appear in person, from motives of respect towards his native city. The emperor was repulsed by the Florentines; and his death, which happened in the succeeding year, deprived Dante of all hopes concerning re-establishment in Florence. After this disappointment, he is supposed to have passed some years in roving about Italy in a state of poverty and distress, till he found an honourable establishment at Ravenna, under the protection of Guido Novello da Polenta, the lord of that city, who received this illustrious exile with the most endearing liberality, continued to protect him through the few remaining years of his life, and extended his munificence to the ashes of the poet.

Eloquence was one of the many talents which Dante possessed in an eminent degree. On this account he is said to have been employed on fourteen different embassies in the course of his life, and to have succeeded in most of them. His patron Guido had occasion to try his abilities in a service of this nature, and dispatched him as his ambassador to negotiate a peace with the Venetians, who were preparing for hostilities against Ravenna. Manetti asserts that he was unable to procure a public audience at Venice, and returned to Ravenna by land, from his apprehensions of the Venetian fleet; when the fatigue of his journey, and the mortification of failing in his attempt to preserve his generous patron from the impending danger, threw him into a fever, which terminated in death on the 14th of September 1321. He died, however, in the palace of his friend; and the affectionate Guido paid the most tender regard to his memory. This magnificent patron (says Boccacio) commanded the body to be adorned with poetical ornaments, and, after being carried on a bier through the streets of Ravenna by the most illustrious citizens, to be deposited in a marble coffin. He pronounced himself the funeral oration, and expressed his design of erecting a splendid monument in honour of the deceased: a design which his subsequent misfortunes rendered him unable to accomplish. At his request, many epitaphs were written on the poet: the best of them (says Boccacio) by Giovanni del Virgilio of Bologna, a famous author of that time, and the intimate friend of Dante. Boccacio then cites a few Latin verses, not worth transcribing, six of which are quoted by Bayle as the composition of Dante himself, on the authority of Paul Jovius. In 1483 Bernardo Bembo, the father of the celebrated cardinal,

raised a handsome monument over the neglected ashes of the poet, with the following inscription: Dante.

Exigua tumuli Danthes hic forte jacebas
 Squalenti nulli cognita pæne sicu;
 At nunc marmoreo subnixus conderis arcu,
 Omnibus et cultu splendidiora nites:
 Nimirum Bembus, Mutis incensus Etruscis.
 Hoc tibi, quem in primis hæc coluere, dedit.

Before this period the Florentines had vainly endeavoured to obtain the bones of their great poet from the city of Ravenna. In the age of Leo X. they made a second attempt, by a solemn application to the pope, for that purpose; and the great Michael Angelo, an enthusiastic admirer of Dante, very liberally offered to execute a magnificent monument to the poet. The hopes of the Florentines were again unsuccessful. The particulars of their singular petition may be found in the notes to Codivi's *Life of Michael Angelo*.

At what time, and in what place, he executed the great and singular work which has rendered him immortal, his numerous commentators seem unable to determine. Boccacio asserts, that he began it in his 35th year, and had finished seven cantos of his *Inferno* before his exile; that in the plunder of his house, on that event, the beginning of his poem was fortunately preserved, but remained for some time neglected, till its merit being accidentally discovered by an intelligent poet named Dino, it was sent to the marquis Marcello Malespina, an Italian nobleman, by whom Dante was then protected. The marquis restored these lost papers to the poet, and intreated him to proceed in a work which opened in so promising a manner. To this incident we are probably indebted for the poem of Dante, which he must have continued under all the disadvantages of an unfortunate and agitated life. It does not appear at what time he completed it; perhaps before he quitted Verona, as he dedicated the *Paradise* to his Veronese patron. The critics have variously accounted for his having called his poem *Comedia*. He gave it that title (said one of his sons), because it opens with distress and closes with felicity. The very high estimation in which this production was held by his country, appears from a singular institution. The republic of Florence, in the year 1373, assigned a public stipend to a person appointed to read lectures on the poem of Dante: Boccacio was the first person engaged in this office; but his death happening in two years after his appointment, his comment extended only to the seventeen first cantos of the *Inferno*. The critical dissertations that have been written on Dante are almost as numerous as those to which Homer has given birth; the Italian, like the Grecian, bard, has been the subject of the highest panegyric, and of the grossest invective. Voltaire has spoken of him with that precipitate vivacity, which so frequently led that lively Frenchman to insult the reputation of the noblest writers. In one of his entertaining letters, he says to an Italian abbé, "Je fais grand cas du courage, avec lequel vous avez osé dire que Dante étoit un fou, et son ouvrage un monstre.—Le Dante pourra entrer dans les bibliothèques des curieux, mais il ne fera jamais lu." But more temperate and candid critics have not been wanting to display the merits of this original poet. Mr Warton has introduced into his last volume on English poetry,

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poetry, a judicious and spirited summary of Dante's performance.

DANTE (John Baptist), a native of Perugia, an excellent mathematician, called the *new Dædalus*, for the wings he made himself, and with which he flew several times over the lake Thrasymenus. He fell in one of his enterprises; the iron work with which he managed one of his wings having failed; by which accident he broke his thigh: but it was set by the surgeons, and he was afterwards called to Venice to profess mathematics.

DANTZIC, the capital of Polish Prussia, standing on a branch of the Vistula, about four miles above where it falls into the Baltic; in E. Long. 18. 36. N. Lat. 54. 20. This city is famous in history on many accounts, particularly that of its being formerly at the head of the Hanseatic association, commonly called the *Hanse-towns*. It is large, beautiful, populous, and rich; its houses generally are five stories high; and many of its streets are planted with chestnut-trees. One of the suburbs is called *Scotland*; and the Scots have great privileges in consequence of their gallant defence of the town, under one of the family of Douglas, when it was besieged by the Poles. It is said there are upwards of 30,000 pedlars of that nation in Poland who travel on foot, and some with three, four, or five horses. In king Charles II.'s time they were about 53,000: in that reign Sir John Denham and Mr Killigrew were sent to take the number of them, and to tax them by the poll, with the king of Poland's licence; which having obtained, they brought home L. 10,000 Sterling, besides their charges in the journey. Dantzic has a fine harbour; and is still a most eminent commercial city, although it seems to be somewhat past its meridian glory, which was probably about the time that the president de Thou wrote his much esteemed *Historia sui Temporis*, wherein, under the year 1607, he so highly celebrates its commerce and grandeur. It is a republic, claiming a small adjacent territory about forty miles round it, which were under the protection of the king and the republic of Poland. Its magistracy, and the majority of its inhabitants, are Lutherans; although the Romanists and Calvinists be equally tolerated in it. It has 26 parishes, with many convents and hospitals. The inhabitants have been computed to amount to 200,000; but later computations fall very considerably short of it, as appears by its annual bill of mortality, exhibited by Dr Busching, who tells us, that in the year 1752, there died but 1846 persons. Its own shipping is numerous; but the foreign ships constantly resorting to it are more so, whereof 1014 arrived there in the year 1752; in which year also 1288 Polish vessels came down the Vistula, chiefly laden with corn, for its matchless granaries; from whence that grain is distributed to many foreign nations, Poland being justly deemed the greatest magazine of corn in all Europe, and Dantzic the greatest port for distributing it every where: besides which, Dantzic exports great quantities of naval stores, and vast variety of other articles. Dr Busching affirms, that it appears from ancient records, as early as the year 997, that Dantzic was a large commercial city, and not a village or inconsiderable town, as some pretend. The inhabitants of Dantzic have often changed their masters, and have sometimes been un-

der the protection of the English and Dutch; but generally have shown a great predilection for the kingdom and republic of Poland, as being less likely to rival them in their trade, or abridge them of their immunities, which reach even to the privilege of coining money. Though strongly fortified, and possessed of 150 large brass cannon, it could not, through its situation, stand a regular siege, being surrounded with eminences. In 1734, the inhabitants discovered a remarkable attachment and fidelity towards Stanislaus king of Poland, not only when his enemies, the Russians, were at their gates, but even in possession of the city. This city was exempted by the late king of Prussia from those claims which he made on the neighbouring countries; notwithstanding which, his Prussian majesty soon after thought proper to seize on the territories belonging to Dantzic, under pretence of their having been formerly part of Polish Prussia. He then proceeded to possess himself of the port-duties belonging to that city, and erected a custom-house in the harbour, where he laid arbitrary and insupportable duties upon goods exported or imported. To complete the system of oppression, custom-houses were erected at the very gates of Dantzic, so that no persons could go in or out of the town without being searched in the strictest manner. Such is the treatment which the city of Dantzic has received from the king of Prussia, though few cities have ever existed which have been comprehended in so many general and particular treaties, and whose rights and liberties have been so frequently secured, and guaranteed by so many great powers, and by such a long and regular succession of public acts, as that of Dantzic has been. In the year 1784, it was blockaded by his troops on various pretences; but by the interposition of the empress of Russia and of the king of Poland, they were withdrawn; and a compromise having taken place, the city was restored to its former immunities. Nevertheless, its trade has since been rather upon the decline, the merchants choosing to settle where their property may be more secure.

DANUBE, the largest and most considerable river in Europe, rising in the Black Forest, near Zunberg; and running N. E. through Swabia by Ulm, the capital of that country; then running E. through Bafaria and Austria, passes by Ratisbon, Passau, Ens, and Vienna. It then enters Hungary, and runs S. E. from Presburg to Buda, and so on to Belgrade; after which it divides Bulgaria from Molachia and Moldavia, discharging itself by several channels into the Black Sea, in the province of Bessarabia. Towards the mouth, it was called the *Ister* by the ancients; and it is now said, that four of the mouths are choaked up with sand, and that there are only two remaining. It begins to be navigable for boats at Ulm, and receives several large rivers as it passes along. It is so deep between Buda and Belgrade, that the Turks and Christians have had men of war upon it; and yet it is not navigable to the Black Sea, on account of the cataracts. The Danube was generally supposed to be the northern boundary of the Roman empire in Europe. It was worshipped as a deity by the Scythians.

DAPHNE, a daughter of the river Peneus by the goddess Terra, of whom Apollo became enamoured. This passion had been raised by Cupid; with

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whom Apollo, proud of his late conquest of the serpent Python, had disputed the power of his darts. Daphne heard with horror the addresses of the god, and endeavoured to remove herself from his importunities by flight. Apollo pursued her, and Daphne, fearful of being caught, intreated the assistance of the gods, who changed her into a laurel. Apollo crowned his head with the leaves of the laurel, and for ever ordered that that tree should be sacred to his divinity. Some say that Daphne was admired by Leucippus, son of CEnomaus king of Pifa, who to be in her company disguised his sex and attended her in the woods in the habit of a huntress. Leucippus gained Daphne's esteem and love; but Apollo, who was his powerful rival, discovered his sex, and Leucippus was killed by the companions of Diana. Daphne was also the name of a daughter of Tiresias, priestess in the temple of Delphi. She was consecrated to the service of Apollo by the Epigoni, or according to others by the goddesses Tellus. She was called *Silyl* on account of the wildness of her looks and expressions when she delivered oracles. Her oracles were generally in verse; and Homer, according to some accounts, has introduced much of her poetry in his compositions.

DAPHNE (anc. geog.), a small village near to, or in the suburbs of, Antiochia of Seleucus in Syria; with a large grove, well watered with springs: In the middle of the grove stood the temple of Apollo and Diana. Its extent was 80 stadia or 10 miles; the distance from the city five miles: A place pleasant and agreeable, from the plenty of water and the temperature of the air, and its soft breathing breezes. The grove was of bay-trees, intermixed with cypress; which last multiplied so fast, as to occupy the whole of it. Pompey gave some land for enlarging the grove. Antiochus Epiphanes built a very large temple of Daphneus Apollo. The place at length became so infamous, that people of modesty and character avoided resorting thither: so that *Daphnici mores* became proverbial.

DAPHNE (anc. geog.), a small district on the lake Samachonitis, in the Higher Galilee, very pleasant and plentifully watered with springs, which feed the Leds Jordan; whence its name seems to arise, probably in imitation of that near Antioch of Syria on the river Orontes.

DAPHNE, *Spurge-laurel*; a genus of the monogynia order, belonging to the octandria class of plants; and in the natural method ranking under the 31st order, *Veprecula*. There is no calyx; the corolla is quadrid and marcescent, inclosing the stamina. The fruit is a monospermous berry. There are 15 species; of which the following are the most remarkable.

1. Mezereum, the mezereon or spurge-olive, is a low deciduous shrub. It is a native of Germany, and has been also discovered in this country in some woods near Andover in Hampshire. Of this elegant plant there are four varieties: 1. The white; 2. The pale-red; 3. The crimson; and, 4. The purple-flowering.—Hanbury is very lavish of his praise of these shrubs. He says, "they have each every perfection to recommend them as flowering-shrubs. In the first place, they are of low growth, seldom arising to more than three or four feet in height, and therefore are proper even for the smallest gardens. In the next place, they

will be in bloom when few trees, especially of the shrubby tribe, present their honours. It will be in February, nay, sometimes in January; then will the twigs be garnished with flowers all around from one end to the other. Each twig has the appearance of a spike of flowers of the most consummate lustre; and as the leaves are not yet out, whether you behold this tree near or at a distance, it has a most enchanting appearance. But this is not all; the sense of smelling is peculiarly regaled by the flowers; their spicy sweetness is diffused around, and the air is perfumed with their odours to a considerable distance. Many flowers, deemed sweet, are not liked by all; but the agreeable inoffensive sweetness of the mezereon has ever delighted the sense of smelling, whilst the lustre of its blow has feasted the eye. Neither is this the only pleasure the tree bestows; for besides the beauty of the leaves, which come out after the flowers are fallen, and which are of a pleasant green colour and an oblong figure, it will be full of red berries in June, which will continue growing till the autumn. Of these berries the birds are very fond; so that whoever is delighted with those songsters, should have a quantity of them planted all over the outsidings of his wilderness quarters."

2. Gnidium, the flax-leaved daphne, is a low deciduous shrub; native of Italy, Spain, and about Montpellier. This species seldom grows higher than three feet. The branches are very slender, and ornamented with narrow, spear-shaped, pointed leaves, much like those of the common flax. The flowers are produced in panicles at the ends of the branches: They are small, come out in June, but are rarely succeeded by seeds in England.

3. Cneorum, the spear-leaved daphne or cneorum, is a very low deciduous shrub; native of Switzerland, Hungary, the Alps and Pyrenean mountains. This rises with a shrubby, branching stalk, to about a foot or a foot and an half high. The leaves are narrow, spear-shaped, and grow irregularly on the branches. The flowers are produced in clusters at the ends of the little twigs: They make their appearance in March, are of a purple colour, and possessed of a fragrance little inferior to that of the mezereon; but they are seldom succeeded by seeds in England.

4. Tartonraira, the oval-leaved daphne or tartonraira, a very low deciduous shrub, is a native of France and Italy. This rises with a woody stalk to the height of about two feet. The branches are numerous, irregular, tough, and covered with a light-brown-coloured bark. The leaves are oval, very small, soft to the touch, and shining. The flowers are produced in clusters from the sides of the stalks: They are white, come out in June, and are succeeded by roundish berries, which seldom ripen in England. This sort should have a dry soil and a warm situation.

5. Alpina, the alpine daphne or chamelæa, is a low deciduous shrub, native of the Alps, Geneva, Italy, and Austria. This will grow to the height of about a yard. The leaves are spear-shaped, obtuse, and hoary underneath. The flowers come out in clusters from the sides of the branches, and are very fragrant: They appear in March, and are succeeded by red berries, that ripen in September.

6. Thymelæa, the milkwort-leaved daphne or the thymelæa;

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Daphne

thymelæa; a low deciduous shrub, native of Spain and the south of France. The thymelæa will grow to the height of a yard. The stalks of this species are upright, branched, and covered with a light-brown bark. The leaves are spear-shaped, smooth, and in some respect resemble those of milk-wort. The flowers are produced in clusters from the sides of the stalks: They are of a greenish colour, have no footstalks, appear in March, and are succeeded by small yellowish berries, which will be ripe in August. This sort requires a dry soil and a warm situation.

7. Villosa, the hairy-leaved daphne, a very low deciduous shrub, native of Spain and Portugal. The stalks are ligneous, about two feet high, and send forth branches alternately from the sides. The leaves are spear-shaped, plane, hairy on both sides, and grow on very short footstalks. The flowers have very narrow tubes, are small, and make no great show: They come out in June, and are not succeeded by ripe seeds in England. This shrub, in some situations, retains its leaves all winter in such beauty as to cause it to be ranked among the low-growing evergreens; but as in others it is sometimes shattered with the first black winds, it is left to the gardener whether to place this shrub among the deciduous trees or evergreens.

8. Laureola, the spurge laurel or evergreen daphne; a low evergreen shrub, common in some parts of this kingdom, also in Switzerland and France. This shrub seldom grows more than a yard or four feet high; it sends out many branches from the bottom, and these are covered with a smooth light-brown bark that is very thick. The bark on the younger branches is smooth and green; and these are very closely garnished with leaves of a delightful strong lucid green colour. These leaves sit close to the branches, and are produced in such plenty, that they have the appearance, at a small distance, of clusters at the ends of the branches. They are spear-shaped, shining, smooth, and thick; their edges are entire. Hanbury extols this plant with a degree of enthusiasm; continuing, "and this is another excellent property of this tree, that it is thus possessed of such delightful leaves for its ornament. These leaves, when growing under the drip of trees, spread open, and exhibit their green pure and untarnished, in its natural colour; when planted singly in exposed places, they naturally turn back with a kind of twist, and the natural green of the leaf is often alloyed with a brownish tinge. This shrub is also valuable on account of its flowers; not because they make any great show, but from their fragrance, and the time they appear; for it will be in bloom the beginning of January, and will continue so until the middle or latter end of April before the flowers fall off; during which time they never fail to diffuse abroad their agreeable odours, which are refreshing and inoffensive. In the evenings especially, they are more than commonly liberal; inasmuch that a few plants will often perfume the whole end of a garden; and when this happens early, before many flowers appear, the unskilful in flowers, perceiving an uncommon fragrantcy, are at once struck with surprize, and immediately begin enquiring from whence it can proceed. Neither are its odours confined to a garden only; but, when planted near windows, they will enter parlours, and ascend even into bed-chambers, to the great com-

fort of the possessor, and surprize of every fresh visitor." These flowers make but little show; for they are small, and of a greenish-yellow. They are produced amongst the leaves from the sides of the stalks, in small clusters, and will often be so hid by them, as to be unnoticed by any but the curious. They are succeeded by oval berries, which are first green, and afterwards black when ripe. These berries will be in such plenty as to be very ornamental; but will soon be eaten up by the birds; which is another good property of this tree, as it invites the different sorts of whistling birds to flock where it is planted in great plenty.

Propagation. The mezereon ripens its seeds with us, which may at any time be easily obtained, if they are secured from birds. Previous therefore to sowing, the healthiest and most thriving trees of the white, the pale, and the deep-red sorts, should be marked out, and as soon as the berries begin to alter from green, they must be covered with nets, to secure them from the birds, which would otherwise devour them all. The berries will be ripe in July; and due observance must be had to pick them up as they fall from the trees, and to keep the sorts separate. As soon as they are all fallen, or you have enough for your purpose, they may then be sown. The best soil for these plants is a good fat black earth, such as is found in kitchen-gardens that have been well manured and managed for many years. In such soil as this they will not only come up better, but will grow to a greater height than in any other. No particular regard need be paid to the situation; for as this tree is a native of the northern parts of Europe, it will grow in a north border, and flourish there as well as in a south; nay, if there be any difference, the north border is more eligible than the south. The ground being made fine, and cleared of roots of all sorts, the seeds should be sown hardly half an inch depth. The mould being riddled over them that depth, let the beds be netted up, and they will want no other attention until the spring. These seeds will sometimes remain in the ground two years; but for the most part they come up the spring after sowing; and the seedlings will require no other care during the summer than weeding, and gentle watering in dry weather. After they have been in the seed-bed one year, the strongest may be drawn out, and planted in the nursery, to make room for the others; though, if they do not come up very close, it would be as well to let them remain in the seed-bed until the second autumn: when they should be taken up with care, and planted in beds at a foot asunder each way. This will be distance enough for these low-growing shrubs. October is the best month for planting them out finally; for although they will grow if removed any time between then and spring, yet that will certainly be a more proper season than when they are in full bloom. Such is the culture of this shrub. The other species of this genus require a different management.

The spurge laurel is propagated by seeds, in the same manner as the common mezereon. The seeds must be preserved from the birds by nets, until they are ripe. Soon after, they must be sown as is directed for the mezereon. They will often be two years before they come up; during which time, and afterwards, they may have the same management as has

Daphne

phne. been laid down for the common mezereon until they be finally set out. This shrub will grow in almost any soil or situation, but flourishes most under the shade and drip of taller plants, giving a peculiar cheerfulness to the bottoms of groves and clumps in winter.

All the other sorts are with some difficulty propagated and retained. They will by no means bear removing, even when seedlings; and if ever this is attempted, not one in an hundred must be expected to grow. They are raised by seeds, which we receive from the places where they grow naturally; and he who is desirous of having these plants, must manage them in the following manner: Let a compost be prepared of these equal divisions; one-fourth part of lime-rubbish; one-fourth part of drift or sea sand; another of splinters of rocks, some broad and others smaller; and the other part of maiden earth from a rich pasture. Let these be mixed all together, and filled into largish pots. In each of these pots put a seed or two, about half an inch deep, in the finest of the mould. We receive the seeds in the spring; so that there is little hopes of their coming up until the spring following: Let, therefore, the pots be set in the shade all the summer, and in the autumn removed into a warm situation, where they may enjoy every influence of the sun's rays all winter. In March let them be plunged into a moderate hot-bed, and the plants will soon after appear. This bed will cause them to be strong plants by the autumn; and when all danger of frost is over, they may be uncovered wholly, and permitted to enjoy the open air. In the autumn, they should be removed into the greenhouse, or set under an hot-bed frame all winter; and in spring they should be placed where they are to continue, moulding them up the height of the pot; the pots being sufficiently broken to make way for their roots as they shoot, and then left to nature.—The situation of the four tenderer sorts must be well sheltered: and if it be naturally rocky, sandy, and dry, it will be the better; for in the places where they grow naturally, they strike into the crevices of rocks, and flourish where there is hardly any appearance of soil.

This is one method of obtaining these shrubs. Another way is, by sowing the seeds in the places where they are to remain. The situation and nature of the soil should be as near that above described as possible; and the mould should be made fine in some places, and a seed or two sown in each. After this, pegs should be stuck down on each side of them, to direct to the places where they are sown. The exactest care must be observed, all summer, to pull up the weeds as often as they appear; for if they are permitted to get strong, and have great roots, they will pull up the seeds with them. In the spring following, if the seeds are good, the plants will appear. During the summer, they should be watered in dry weather; and, for the first winter or two, should have some furze-bushes pricked all round them, at a proper distance, which will break the keen edge of the frosty winds, and preserve the young plants until they are strong enough to defend themselves.

The cneorum and the alpine chamelæa are very hardy, and will grow in the coldest situation; but the other sorts should have a warm soil and a well-sheltered

site, or they will be subject to be destroyed in bad weather.

Medicinal properties. The root of the mezereon was long used in the Lisbon diet-drink for venereal complaints, particularly nodes and other symptoms resisting the use of mercury; but with the composition of this article we were unacquainted, till an account of it was published in the Edinburgh Physical Essays, by Dr Donald Monro of London. On chewing it a little, it proves very pungent, and its acrimony is accumulated about the fauces, and is very durable. It is employed chiefly under the form of decoction; and it enters the decoctum sarsaparillæ compositum of the London college; but it has also been used in powder combined with some inactive one, as that of liquorice root. It is apt to occasion vomiting and purging; so must be begun in grain-doses, and gradually increased. It is often usefully combined with mercury. The bark of the root contains most acrimony, though some prefer the woody part. Mezereon has also been used with good effects in tumors and cutaneous eruptions not venereal. The whole plant is very corrosive. Six of the berries will kill a wolf. A woman gave 12 grains of the berries to her daughter who had a quartan ague; she vomited blood, and died immediately.

DAPHNEPHORIA, a festival in honour of Apollo, celebrated every ninth year by the Bœotians. It was then usual to adorn an olive bough with garlands of laurel and other flowers, and placed on the top a brazen globe, on which were suspended smaller ones. In the middle was placed a number of crowns, and a globe of inferior size, and the bottom was adorned with a saffron-coloured garment. The globe on the top represented the sun or Apollo. That in the middle was an emblem of the moon, and the others of the stars. The crowns, which were 65 in number, represented the sun's annual revolution. This bough was carried in solemn procession by a beautiful youth of an illustrious family, and whose parents were both living. The youth was dressed in rich garments which reached to the ground, his hair hung loose and dishevelled, his head was covered with a golden crown, and he wore on his feet shoes called *Iphicratidæ*, from Iphicrates an Athenian, who first invented them. He was called *Δαφνιφόρος*, laurel-bearer; and at that time he executed the office of priest of Apollo. He was preceded by one of his nearest relations, bearing a rod adorned with garlands, and behind him followed a train of virgins with branches in their hands. In this order the procession advanced as far as the temple of Apollo, surnamed Ismenios, where supplicatory hymns were sung to the god.—This festival owes its origin to the following circumstance: When an oracle advised the Ætolians, who inhabited Arne and the adjacent country, to abandon their ancient possessions and go in quest of a settlement, they invaded the Theban territories, which at that time were pillaged by an army of Pelasgians. As the celebration of Apollo's festival was near, both nations, who religiously observed it, laid aside all hostilities, and according to custom cut down laurel boughs from mount Helicon, and in the neighbourhood of the river Melas, and walked in procession in honour of the divinity. The day that this solemnity was observed, Polematas the general of the Bœotian army saw a youth in a dream, that presented him with a complete suit of armour, and

Daphne,
Daphne-
phoria.

Dapifer
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Dardani-
um.

commanded the Bœotians to offer solemn prayers to Apollo, and walk in procession with laurel boughs in their hands every ninth year. Three days after this dream, the Bœotian general made a folly and cut off the greatest part of the besiegers, who were compelled by this blow to relinquish their enterprise. Polematas immediately instituted a novennial festival to the god, who seemed to be the patron of the Bœotians.

DAPIFER, the dignity or office of grand-master of a prince's household. This title was given by the Emperor of Constantinople to the Czar of Russia as a testimony of favour. In France the like officer was instituted by Charlemagne, under the title of *dapiferat*; and the dignity of dapifer is still subsisting in Germany, the elector of Bavaria assuming the title of *arch dapifer of the empire*, whose office is, at the coronation of the emperor, to carry the first dish of meat to table on horseback.

DAPPLE-BAY, in the manege: When bay horses have marks of a dark bay, they are called *dapple-bays*.

DAPPLE-Black: When a black horse has got spots or marks more black or shining than the rest of his skin, he is called a *dapple-black*.

DARANTASIA, (anc. geog.), called *Forum Claudii* by the Romans; a town of the Centrones in Gallia Narbonensis, situated between Lemincron and Augusta Prætoria. Now *Moustiers*, and *Moustiers en Tarantaise*, in Savoy.

DARAPTI, among logicians, one of the modes of syllogisms of the third figure, whose premises are universal affirmatives, and the conclusion is a particular affirmative: thus,

DAR- Every body is divisible;
AP- Every body is a substance;
TI, Therefore, some substance is divisible.

DARDA, a town and fort of Lower Hungary, built by the Turks in 1686, and taken by the Imperialists the next year, in whose hands it remains. It is seated on the river Draw, 10 miles from its confluence with the Danube, and at the end of the bridge of Esfeck. E. Long. 19. 10. N. Lat. 45. 45.

DARDANELLES, two ancient and strong castles of Turkey, one of which is in Romania, and the other in Natolia, on each side the canal formerly called the *Hellepont*. This keeps up a communication with the Archipelago, and the Propontis or Sea of Marmora. The mouth of the canal is four miles and a half over; and the castles were built in 1659, to secure the Turkish fleet from the insults of the Venetians. The ships that come from Constantinople are searched at the castle on the side of Natolia, to see what they have on board.

DARDANIA, (anc. geog.), a district of Moesia Superior to the south. Now the south part of Servia, towards the confines of Macedonia and Illyricum. *Dardani* was the name of the people, who seem to have been descendants of the *Dardani* of Troas. Also a small district of Troas, along the Hellepont, (Mela, Virgil.) — And the ancient name of *Samothracia*, (Pliny); from *Dardanus*, who removed thither.

DARDANIUM PROMONTORIUM, (Pliny); *Dardanis*, (Strabo): A promontory of Troas, near Abydos, running out into the Hellepont; with a cognominal town at it, called also *Dardanus* and *Dardanium*: All which give name to the *Dardanelles*.

DARDANUS, a son of Jupiter and Electra, who, after the death of his brother Jason, left Samothrace his country, and passed into Asia Minor, where he married Batia, the daughter of Teucer king of Teucra. After the death of his father-in-law he ascended the throne, and reigned 62 years. He built the city of Dardania, and was reckoned the founder of the kingdom of Troy. He was succeeded by Erichthonius. According to some, Corybas, his nephew, accompanied him to Teucra, where he introduced the worship of Cybele. Dardanus taught his subjects to worship Minerva, and he gave them two statues of the goddess, one of which is well known by the name of *Palladium*. According to Virgil, Dardanus was an Italian by origin.

DARE, in ichthyology, the same with dace. See DACE.

DARES, a Phrygian, who lived during the Trojan war, in which he was engaged, and of which he wrote the history in Greek. This history was extant in the age of Ælian; the Latin translation, now extant, is universally believed to be spurious, though it is attributed by some to Cornelius Nepos. This translation first made its appearance A. D. 1477, at Milan. Homer speaks of him, *Il. 5. v. 10. and 27.*

DARIC, in antiquity, a famous piece of gold, first coined by Darius the Mede about 538 years before Christ; probably during his stay at Babylon, out of the vast quantity of gold which had been accumulated in the treasury. From thence it was dispersed over the east, and also into Greece; so that the Persian daric, which was also called *stater*, was the gold coin best known in Athens in ancient times. According to Dr Bernard, it weighed two grains more than one of our guineas; but as it was very fine, and contained little alloy, it may be reckoned worth about 25s. of our money. Plutarch informs us, that the darics were stamped on one side with an archer clothed in a long robe, and crowned with a spiked crown, holding a bow in his left hand and an arrow in his right; and on the other side with the effigies of Darius. All the other pieces of gold of the same weight and value that were coined by the succeeding kings, both of the Persian and Macedonian race, were called *darics*, from Darius, in whose reign this coin commenced. Of these there were whole darics and half darics; and they are called in those parts of Scripture written after the Babylonish captivity, *adarkonim*; and by the Talmudists, *darkonoth*. Greaves says that the daric is still found in Persia; but it is certainly very scarce, and perhaps of doubtful antiquity.

DARIEN, or the Isthmus of Panama, is a province between South and North America, being a narrow isthmus, or neck of land, which joins them together. It is bounded on the north by the North Sea, on the south by the South Sea, on the east by the gulph or river of Darien, and on the west by another part of the South Sea and the province of Veragua. It lies in the form of a bow, or crescent, about the great bay of Panama, in the South Sea; and is 300 miles in length and 60 in breadth. This province is not the richest, but is of the greatest importance to Spain, and has been the scene of more actions than any other in America. The wealth of Peru is brought hither, and from hence exported to Europe. This has induced many enterprising people to make attempts on Pan-

Dardanus
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Darien.

I en. nama, Porto-Bello, and other towns of this province, in hopes of obtaining a rich booty.

The Scotch got possession of part of this province in 1699, and attempted to form an establishment which would have proved one of the most useful and important that ever was projected. Of the rise, progress, and catastrophe, of this well-imagined, but ill-fated, undertaking, Sir John Dalrymple, in the 2d volume of his *Memoirs of Great Britain and Ireland*, has given a very interesting account, authenticated in every particular by unquestionable documents. The projector and leader of the Darien expedition was a clergyman of the name of *Paterfon*; who having a violent propensity to see foreign countries, he made his profession the instrument of indulging it, by going to the new western world, under pretence of converting the Indians to the religion of the old. In his courses there, he became acquainted with Capt. Dampier and Mr Waver, who afterwards published, the one his *Voyages* and the other his *Travels*, in the region where the separation is narrowest between the Atlantic and the South Seas; and both of whom, particularly the first, appear by their books to have been men of considerable observation. But he got much more knowledge from men who could neither write nor read, by cultivating the acquaintance of some of the old Buccaneers, who, after surviving their glories and their crimes, still, in the extremity of age and misfortune, recounted with transport the ease with which they had passed and repassed from the one sea to the other, sometimes in hundreds together, and driving strings of mules before them loaded with the plunder of friends and of foes. Paterfon having examined the places, satisfied himself, that on the Isthmus Darien there was a tract of country running across from the Atlantic to the South Sea, which the Spaniards had never possessed, and inhabited by a people continually at war with them; that along the coast, on the Atlantic side, there lay a string of islands called the *Sambaloes*, uninhabited, and full of natural strength and forests, from which last circumstance one of them was called the *island of the Pines*; that the seas there were filled with turtle and the manatee or sea-cow; that midway between Porto-bello and Cartiagena, but near 50 leagues distant from either, at a place called *Aña*, in the mouth of the river of Darien, there was a natural harbour, capable of receiving the greatest fleets, and defended from storms by other islands which covered the mouth of it, and from enemies by a promontory which commanded the passage, and by hidden rocks in the passage itself; that on the other side of the isthmus, and in the same tract of country, there were natural harbours, equally capacious and well defended; that the two seas were connected by a ridge of hills, which, by their height, created a temperate climate in the midst of the most sultry latitudes, and were sheltered by forests, yet not rendered damp by them, because the trees grew at a distance from each other, having very little under-wood; that, contrary to the barren nature of hilly countries, the soil was of a black mould two or three feet deep, and producing spontaneously the fine tropical fruits and plants, and roots and herbs; that roads could be made with ease along the ridge, by which mules, and even carriages, might pass from the one sea to the other in the space

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of a day; and consequently this passage seemed to be pointed out by the finger of nature, as a common centre, to connect together the trade and intercourse of the universe.

Paterfon knew that ships which stretch in a straight line from one point to another, and with one wind, run less risks, and require fewer hands, than ships which pass through many latitudes, turn with many coasts, and require many winds; in evidence of which, vessels of seven or eight hundred tons burden are often to be found in the South Seas, navigated by no more than eight or ten hands, because these hands have little else to do than to set their sails when they begin their voyage, and to take them in when they end it; that as soon as ships from Britain got so far south as to reach the trade-wind, which never varies, that wind would carry them to Darien, and the same wind would carry ships from the bay of Panama, on the opposite side of the isthmus, to the East-Indies; that as soon as ships coming from the East-Indies to the bay of Panama got so far north as the latitude of 40, to reach the westerly winds, which, about that latitude, blow almost as regularly from the west as the trade winds do from the east, these winds would carry them, in the track of the Spanish Acapulco ships, to the coast of Mexico; from whence the land-wind, which blows for ever from the north to the south, would carry them along the coast of Mexico into the bay of Panama. So that in going from Britain, ships would encounter no uncertain winds, except during their passage south into the latitude of the trade wind; in coming from India to the bay of Panama no uncertain winds, except in their passage north to the latitude of the westerly winds; and in going from the other side of the isthmus to the east, no uncertain wind whatsoever.—Gold was seen by Paterfon in some places of the isthmus; and hence an island on the Atlantic side was called the *Golden Island*, and a river on the side to the South Sea was called the *Golden River*; but these were objects which he regarded not at that time, because far greater were in his eye; the removing of distances, the drawing nations nearer to each other, the preservation of the valuable lives of seamen, and the saving in freight, so important to merchants, and in time so important to them, and to an animal whose life is of so short duration as that of man.

By this obscure Scotfman, a project was formed to settle, on this neglected spot, a great and powerful colony; not as other colonies have for the most part been settled, by chance, and unprotected by the country from whence they went; but by system, upon foresight, and to receive the ample protection of those governments to whom he was to offer his project. And certainly no greater idea has been formed since the time of Columbus.

Paterfon's original intention was to offer his project to England, as the country which had most interest in it, not only from the benefit common to all nations, of shortening the length of voyages to the East Indies, but by the effect which it would have had to connect the interests of her European, West Indian, American, African, and East Indian trade. But Paterfon having few acquaintance, and no protection in London, thought of drawing the public eye upon him, and ingratiating

Darien. himself with monied men, and with great men, by assisting them to model a project, which was at that time in embryo, for erecting the Bank of England. But that happened to him which has happened to many in his situation: the persons to whom he applied made use of his ideas, took the honour of them to themselves, were civil to him for a while, and neglected him afterwards. He therefore communicated his project of a colony only to a few persons in London, and these few discouraged him.

He next made offer of his project to the Dutch, the Hamburgers, and the Elector of Brandenburg; because, by means of the passage of the Rhine and Elbe through their states, he thought, that the great additional quantities of East Indian and American goods, which his colony would bring into Europe, would be distributed through Germany. The Dutch and Hamburg merchants, who had most interest in the subject of his visit, heard him with indifference: The Elector, who had very little interest in it, received him with honour and kindness. But court-arts and false reports lost him even that prince's favour.

Paterfon, on his return to London, formed a friendship with Mr Fletcher of Salton, whose mind was inflamed with the love of public good, and all of whose ideas to procure it had a sublimity in them. Fletcher brought Paterfon down to Scotland with him, presented him to the Marquis of Tweeddale, then Minister for Scotland; and then, with that power which a vehement spirit always possesses over a diffident one, persuaded the Marquis, by arguments of public good, and the honour which would redound to his administration, to adopt the project. Lord Stair and Mr Johnston, the two secretaries of state, patronised those abilities in Paterfon which they possessed in themselves: and the Lord Advocate Sir James Stuart, the same man who had adjusted the Prince of Orange's declaration at the Revolution, whose son was married to a niece of Lord Stair, went naturally along with his connections. These persons, in June 1695, procured a statute from parliament, and afterwards a charter from the crown in terms of it, for creating a trading company to Africa and the new world, with power to plant colonies and build forts, with consent of the inhabitants, in places not possessed by other European nations.

Paterfon, now finding the ground firm under him, and that he was supported by almost all the power and talents of his country, the character of Fletcher, and the sanction of an act of parliament and royal charter, threw his project boldly upon the public, and opened a subscription for a company. The frenzy of the Scots nation to sign the solemn league and covenant never exceeded the rapidity with which they ran to subscribe to the Darien Company. The nobility, the gentry, the merchants, the people, the royal burghs without the exception of one, most of the other public bodies, subscribed. Young women threw their little fortunes into the stock, widows sold their jointures to get the command of money for the same purpose. Almost in an instant L.400,000 were subscribed in Scotland, altho' it be now known, that there was not at that time above L.800,000 of cash in the kingdom. The famous Mr Law, then a youth, afterwards confessed, that the facility with which he saw the passion of speculation com-

Darien. municate itself from all to all, satisfied him of the possibility of producing the same effect from the same cause, but upon a larger scale, when the Duke of Orleans, in the year of the Mississippi, engaged him against his will to turn his bank into a bubble. Paterfon's project, which had been received by strangers with fears when opened to them in private, filled them with hopes when it came to them upon the wings of public fame: For Colonel Erskine, son to Lord Cardross, and Mr Haldane of Gleneagles, the one a generous branch of a generous stem, and the other a country gentleman of fortune and character, having been deputed to receive subscriptions in England and on the continent, the English subscribed L.300,000, and the Dutch and Hamburgers L.200,000 more.

In the mean time the jealousy of trade (continues our author), which has done more mischief to the trade of England than all other causes put together, created an alarm in England; and the Houses of Lords and Commons, without previous inquiry or reflection, on the 13th of December 1695, concurred in a joint address to the King, against the establishment of the Darien Company, as detrimental to the interest of the East India Company. Soon after, the Commons impeached some of their own countrymen for being instrumental in erecting the company; and also some of the Scots nation, one of whom was a peer, Lord Belhaven; that is to say, they arraigned the subjects of another country for making use of the laws of their own. Among 600 legislators, not one had the happy ray of genius to propose a committee of both parliaments, to inquire into the principles and consequences of the establishment; and if these should, upon inquiry, be found, that the benefit of it should be communicated, by a participation of rights, to both nations. The King's answer was, "That he had been ill advised in Scotland." He soon after changed his Scottish ministers, and sent orders to his resident at Hamburg to present a memorial to the senate, in which he disowned the company, and warned them against all connections with it. The senate sent the memorial to the assembly of merchants, who returned it with the following spirited answer: "We look upon it as a very strange thing, that the King of Britain should offer to hinder us, who are a free people, to trade with whom we please; but are amazed to think, that he would hinder us from joining with his own subjects in Scotland, to whom he had lately given such large privileges, by so solemn an act of parliament." But merchants, though mighty prone to passion, are easily intimidated: The Dutch, Hamburg, and London merchants withdrew their subscriptions.

The Scots, not discouraged, were rather animated by this oppression; for they converted it into a proof of the envy of the English, and of their consciousness of the great advantages which were to flow to Scotland from the colony. The company proceeded to build six ships in Holland, from 36 to 60 guns, and they engaged 1200 men for the colony; among whom were younger sons of many of the noble and most ancient families of Scotland, and 60 officers who had been disbanded at the peace, who carried with them such of their private men, generally raised on their own, or the estates of their relations, as they knew to be faithful and brave; and most of these were Highlanders. The

Scots parliament, on the 5th August 1698, unanimously addressed the King to support the company. The Lord President Sir Hugh Dalrymple, brother to Lord Stair and head of the bench, and the Lord Advocate Sir James Stuart, head of the bar, jointly drew memorials to the King, able in point of argument, information, and arrangement; in which they defended the rights of the company upon the principles of constitutional and of public law. And neighbouring nations, with a mixture of surprise and respect, saw the poorest kingdoms of Europe sending forth the most gallant and the most numerous colony that had ever gone from the old to the new world.

On the 26th day of July of the year 1698, the whole city of Edinburgh poured down upon Leith, to see the colony depart, amidst the tears and prayers and praises of relations and friends and of their countrymen. Many seamen and soldiers, whose services had been refused, because more had offered themselves than were needed, were found hid in the ships, and, when ordered ashore, clung to the ropes and timbers, imploring to go without reward with their companions. Twelve hundred men failed in five stout ships, and arrived at Darien in two months, with the loss of only 15 of their people. At that time it was in their power, most of whom were well born, and all of them hardily bred, and inured to the fatigues and dangers of the late war, to have gone from the northmost part of Mexico to the southmost of Chili, and to have overturned the whole empire of Spain in the South Seas: But modest, respecting their own and their country's character, and afraid of being accused that they had plundered, and not a settlement, in view, they began with purchasing lands from the natives, and sending messages of amity to the Spanish governors within their reach: and then fixed their station at Acta, calling it *New St Andrew*, from the name of the tutelary saint of Scotland, and the country itself *New Caledonia*. One of the sides of the harbour being formed by a long narrow neck of land which ran into the sea, they cut it across so as to join the ocean and the harbour. Within this defence they erected their fort, planting upon it 50 pieces of cannon. On the other side of the harbour there was a mountain a mile high, on which they placed a watch-house, which, in the rarefied air within the tropics, so favourable for vision, gave them an immense range of prospect, to prevent all surprise. To this place, it was observed, that the Highlanders often repaired, to enjoy a cool air, and to talk of their friends they had left behind in their hills; friends whose minds were as high as their mountains. The first public act of the colony was to publish a declaration of freedom of trade and religion to all nations. This luminous idea originated with Paterfon.

But the Dutch East India Company having pressed the king, in concurrence with his English subjects, to prevent the settlement at Darien, orders had been sent from England to the governors of the West Indian and American colonies, to issue proclamations against giving assistance, or even to hold correspondence with the colony; and these were more or less harshly expressed, according to the tempers of the different governors. The Scots, trusting to far different treatment, and to the supplies which they expected from those colonies, had not brought provisions enough

with them; they fell into diseases from bad food and from want of food. But the more generous savages, by hunting and fishing for them, gave them that relief which fellow Britons refused. They lingered eight months, awaiting, but in vain, for assistance from Scotland; and almost all of them either died out or quitted the settlement. Paterfon, who had been the first that entered the ship at Leith, was the last who went on board at Darien.

During the space of two years, while the establishment of this colony had been in agitation, Spain had made no complaint to England or Scotland against it. The Darien council even averred in their papers (which are in the Advocates Library), that the right of the company was debated before the king, in presence of the Spanish ambassador, before the colony left Scotland. But now, on the 3d of May 1696, the Spanish ambassador at London presented a memorial to the king, which complained of the settlement at Darien as an encroachment on the rights of his master.

The Scots, ignorant of the misfortunes of their colony, but provoked at this memorial, sent out another colony soon after of 1300 men, to support an establishment which was now no more. But this last expedition having been more hastily prepared than the first, was unlucky in its passage. One of the ships was lost at sea, many men died on ship-board, and the rest arrived at different times, broken in their health and dispirited, when they heard the fate of those who had gone before them.—Added to the misfortunes of the first colony, the second had a misfortune peculiar to itself: The General Assembly of the Church of Scotland sent out four ministers, with orders, “to take charge of the souls of the colony, and to erect a presbytery, with a moderator, clerk, and record of proceedings; to appoint ruling elders, deacons, overseers of the manners of the people, and assistants in the exercise of church discipline and government, and to hold regular kirk-sessions.” When they arrived, the officers and gentlemen were occupied in building houses for themselves with their own hands, because there was no help to be got from others; yet the four ministers complained grievously that the council did not order houses to be immediately built for their accommodation. They had not had the precaution to bring with them letters of recommendation from the directors at home to the council abroad. On these accounts, not meeting with all the attention they expected from the higher, they paid court to the inferior ranks of the colonists, and by that means threw divisions into the colony. They exhausted the spirits of the people, by requiring their attendance at sermon four or five hours at a stretch, relieving each other by preaching alternately, but allowing no relief to their hearers. The employment of one of the days set aside for religious exercise, which was a Wednesday, they divided into three parts, thanksgiving, humiliation, and supplication, in which three ministers followed each other. And as the service of the church of Scotland consists of a lecture with a comment, a sermon, two prayers, three psalms, and a blessing, the work of that day, upon an average of the length of the service of that age, could not take up less than twelve hours: during which space of time the colony was collected, and kept close together in the guard-room, which was used as

Darien.

a church, in a tropical climate, and in a sickly season. They presented a paper to the council, and made it public, requiring them to set aside a day for a solemn fasting and humiliation, and containing their reasons for their requisition; in which, under pretence of enumerating the sins of the people, they poured abuse on their rulers. They damped the courage of the people, by continually presenting hell to them as the termination of life to most men, because most men are sinners. Carrying the presbyterian doctrine of predestination to extremes, they stopped all exertions, by showing that the consequence of them depended not on those by whom they were made. They converted the numberless accidents to which soldiers and seamen are exposed, into immediate judgments of God against their sins. And having resolved to quit the settlement, they, in excuse for their doing so, wrote bitter letters to the General Assembly against the characters of the colonists, and the advantages of the colony itself.

One of them, in a kind of history of the colony which he published, with a savage triumph exulted over the misfortunes of his countrymen in the following words:—"They were such a rude company, that I believe Sodom never declared such impudence in sinning as they. Any observant eye might see, that they were running the way they went: hell and judgment was to be seen upon them, and in them, before the time: Their cup was full; it could hold no more: They were ripe; they must be cut down with the sickle of the wrath of God."

The last party that joined the second colony at Darien, after it had been three months settled, was Captain Campbell of Finab, with a company of the people of his own estate, whom he had commanded in Flanders, and whom he carried to Darien in his own ship. On their arrival at New St Andrew, they found intelligence had been lately received, that a Spanish force of 1600 men, which had been brought from the coast of the South Sea, lay encamped at Tubucantce, waiting there till a Spanish squadron of eleven ships which was expected should arrive, when they were jointly to attack the fort. The military command was offered to Captain Campbell, in compliment to his reputation and to his birth, who was descended from the families of Breadalbane and Athole. In order to prevent a joint attack, he resolved to attack first; and therefore, on the second day after his arrival, he marched with 200 men to Tubucantce, before his arrival was known to the enemy, stormed the camp in the night-time, dissipated the Spanish force with much slaughter, and returned to the fort the fifth day: But he found the Spanish ships before the harbour, their troops landed, and almost all hopes of help or provision cut off; yet he stood a siege near six weeks, till almost all the officers were dead, the enemy by their approaches had cut off his wells, and his balls were so far expended, that he was obliged to melt the pewter dishes of the garrison into balls. The garrison then capitulated, and obtained not only the common honours of war and security for the property of the company, but, as if they had been conquerors, exacted hostages for performance of the conditions. Captain Campbell alone desired to be excepted from the capitulation, saying, he was sure the Spaniards could not forgive him the mischief which he so lately had done them. The brave, by their cou-

Darien.

rage, often escape that death which they seem to provoke: Captain Campbell made his escape in his vessel, and, stopping nowhere, arrived safely at New York, and from thence to Scotland, where the company presented him with a gold medal, in which his virtue was commemorated, to inflame his family with the love of heroic actions. And the Lord Lyon King at Arms, whose office it is in Scotland (and such offices should be every where) to confer badges of distinction according to the rules of heraldry upon honourable actions, gave him a Highlander and an Indian for supporters to his coat of arms.

A harder fate attended those whom Captain Campbell left at Darien. They were so weak in their health as not to be able to weigh up the anchors of the Rising Sun, one of their ships, which carried 60 guns: But the generous Spaniards assisted them. In going out of the harbour she ran aground: The prey was tempting; and to obtain it, the Spaniards had only to stand by and look on: but showed that mercy to the Scots in distress, which one of the countrymen of those Scots, General Elliot, returned to the posterity of the Spaniards at the end of the late conflagration at the siege of Gibraltar. The Darien ships being leaky and weakly manned, were obliged in their voyage to take shelter in different ports belonging to Spain and England. The Spaniards in the new world showed them kindness; the English governments showed them none; and in one place one of their ships was seized and detained. Of these only Captain Campbell's ship and another small one were saved: The Royal Sun was lost on the bar of Charlestown; and of the colony, not more than 30, saved from war, shipwreck, or disease, ever saw their country again.

Paterfon, who had stood the blow, could not stand the reflection of misfortune. He was seized with a lunacy in his passage home after the ruin of the first colony; but he recovered in his own country, where his spirit, still ardent and unbroke, presented a new plan to the company, founded on the idea of King William, that England should have the joint dominion of the settlement with Scotland.

He survived many years in Scotland, pitied, respected, but neglected. After the union of the two kingdoms, he claimed reparation of his losses from the equivalent-money given by England to the Darien Company, but got nothing; because a grant to him from a public fund would have been only an act of humanity, not a political job.

Thus ended the colony of Darien. Men look into the works of poets for subjects of satire; but they are more often to be found in the records of history. The application of the Dutch to King William against the Darien Company, affords the surest of all proofs, that it was the interest of the British islands to support it. England, by the imprudence of ruining that settlement, lost the opportunity of gaining and continuing to herself the greatest commercial empire that probably ever will be upon earth. Had she treated with Scotland, in the hour of the distress of the company, for a joint possession of the settlement, or adopted the union of the kingdoms, which the sovereign of both proposed to them, that possession could certainly have been obtained. Had she treated with Spain to relinquish an imaginary right, or at least to give a passage

across.

rien. across the isthmus, upon receiving duties so high as to overbalance all the chance of loss by a contraband trade, she had probably obtained either the one or the other. Had she broke with Spain for the sake of gaining by force one of those favours, she would have lost far less than she afterwards did by carrying a war into that country for many years, to force a king upon the Spaniards against their will. Even a rupture with Spain for Darien, if it had proved successful, would have knit the two nations together by the most solid of ties, their mutual interest: for the English must then have depended upon Spain for the safety of their caravans by land, and the Spaniards upon England for the safety of their fleets by sea. Spain and England would have been bound together as Portugal and England have long been; and the Spanish treasures have failed, under the wings of English navies, from the Spanish main to Cadiz, in the same manner as the treasures of Portugal have failed under the same protection, sacred and untouched, from the Brazils to Lisbon.

It has been made a question, Whether King William believed with his ordinary sincerity and steadiness, in the assurances of favour which he gave more than once to the company during their distresses. The following anecdote makes it probable, that there was a struggle in his breast between the part which he was obliged to act to please his English and Dutch at the expence of his Scots subjects and his own feelings. A provision ship of the first colony, in which were 30 gentlemen passengers, and some of them of noble birth, having been shipwrecked at Carthage, the Spaniards believing, or pretending to believe, that they were smugglers, cast them into a dungeon and threatened them with death. The company deputed Lord Basil Hamilton from Scotland to implore King William's protection for the prisoners. The king at first refused to see him, because he had not appeared at court when he was last in London. But when that difficulty was removed by explanation, an expression fell from the king which showed his sense of the generous conduct of another, although influenced by the English and Dutch East India Companies, he could not resolve to imitate it in his own. For Lord Basil's audience having been put off from time to time, but at last fixed to be in the council-chamber after a council was over, the king, who had forgot the appointment, was passing into another room, when Lord Basil placed himself in the passage, and said, "That he came commissioned by a great body of his majesty's subjects to lay their misfortunes at his feet; that he had a right to be heard, and would be heard:" The king returned, listened with patience, gave instant orders to apply to Spain for redress; and then turning to those near him, said, "This young man is too bold, if any man can be too bold in his country's cause." I had this anecdote from the present Earl of Selkirk, grandson to Lord Basil.

King William's desertion of a company erected upon the faith of his own charter, and the English oppressions of it, were the reasons why so many of the Scots, during four successive reigns, disliked the cause of the Revolution and of the Union. And that dislike, joined to English discontents, brought upon both countries two rebellions, the expence of many millions of money, and (which is a far greater loss) the downfall of many of their noblest and most ancient fami-

lies.—*Sir John Dalrymple's Memoirs of Great Britain and Ireland*, vol. ii.

DARII, in logic, one of the modes of syllogism of the first figure, wherein the major proposition is an universal affirmative, and the minor and conclusion particular affirmatives: thus,

DA- Every thing that is moved, is moved by another;

RI- Some body is moved;

I, Therefore, some body is moved by another.

DARIORIGUM (anc. geog.), a town of the Veneti in Gallia Celtica; called in the Notitia Lugdunensis, *Civitas Venetum*, after the manner of the lower age. Now *Vannes*, or *Vennes*, in Brittany. W. Long. 2. 37. Lat. 47. 40.

DARIUS, the name of several kings of Persia. See (*History of*) PERSIA.

DARKING, a market-town of Surrey in England, situated ten miles east of Guilford. The market is noted for corn and provisions, more especially for fowls. W. Long. 8. 20. N. Lat. 51. 18.

DARKNESS, the absence, privation, or want of natural light. "Darkness was upon the face of the deep" (Gen. i. 2.); that is to say, the chaos was plunged in thick darkness, because hitherto the light was not created. One of the most terrible sorts of darkness was that which Moses brought upon Egypt as a plague to the inhabitants of it. The Septuagint, our translation of the Bible, and indeed most others, in explaining Moses's account of this darkness, render it, "a darkness which may be felt:" and the Vulgate has it, "a palpable darkness;" that is, a darkness consisting of black vapours and exhalations, so condensed that they might be perceived by the organs of feeling or seeing; but some commentators think that this is carrying the sense too far, since in such a medium as this mankind could not live an hour, much less for the space of three days, as the Egyptians are said to have done, during the time this darkness lasted; and therefore they imagine, that instead of a darkness that may be felt, the Hebrew phrase may signify a darkness wherein men went groping and feeling about for every thing they wanted. Le Clerc is of this opinion, and thinks that Philo, in his life of Moses, understood the passage in its right sense. "For in this darkness (says he), whoever were in bed, durst not get up; and such as their natural occasions compelled to get up, went feeling about by the walls, or any thing they could lay hold on, as if they had been blind." What it was that occasioned this darkness, whether it was in the air or in the eyes; whether it was a suspension of light from the sun in that country, or a black thick vapour which totally intercepted it, there is reason to think that the description which the author of the book of Wisdom (xvii. 1, 2, 3, &c.) gives us of their inward terrors and consternation, is not altogether conjectural, viz. that they were not only prisoners of darkness, and fettered with the bonds of a long night, but were horribly astonished likewise, and troubled with strange apparitions; for while over them was spread an heavy night, they were to themselves more grievous than darkness.

During the last three hours that our Saviour hanged upon the cross, a darkness covered the face of the earth, to the great terror and amazement of the people present at his execution. This extraordinary alteration in the

Darii
||
Darkness.

Darlington the face of nature (says Dr Macknight, in his *Harmony of the Gospels*), was peculiarly proper, whilst the Sun of righteousness was withdrawing his beams from the land of Israel and from the world; not only because it was a miraculous testimony borne by God himself to his innocence; but also because it was a fit emblem of his departure and its effects, at least till his light shone out anew with additional splendor in the ministry of his apostles. The darkness which now covered Judea and the neighbouring countries, beginning about noon and continuing till Jesus expired, was not the effect of an ordinary eclipse of the sun: for that can never happen but at the new moon, whereas now it was full moon; not to mention, that the total darkness occasioned by eclipses of the sun never continues above twelve or fifteen minutes; wherefore it must have been produced by the divine power, in a manner we are not able to explain. Accordingly, Luke (xxiii. 44, 45.), after relating that there was darkness over all the earth, adds, "and the sun was darkened;" which perhaps may imply, that the darkness of the sun did not occasion, but proceeded from, the darkness that was over all the land. Further, the Christian writers, in their most ancient apologies to the Heathens, affirm, that as it was full moon at the passover when Christ was crucified, no such eclipse could happen by the course of nature. They observe also, that it was taken notice of as a prodigy by the Heathens themselves.

DARLINGTON, a town of the county of Durham, situated on a flat on the river Skerne, which falls into the Tees. It is a pretty large place, has several streets, and a spacious market-place. It gives title of earl to the Vane family. W. Long. 1. 15. N. Lat. 54. 30.

DARMSTADT, a town of Germany in the circle of the Upper Rhine, and capital of the landgraviate of Hesse-Darmstadt, with a handsome castle, where its own prince generally resides. It is seated on a river of the same name in E. Long. 8. 40. N. Lat. 49. 50.

DARNEL, in botany. See **LOLIUM**.

DARNLEY (Lord). See (*History of*) **SCOTLAND**.

DARTFORD, a town of the county of Kent in England, seated on the river Darent not far from its influx into the Thames. E. Long. 0. 16. N. Lat. 51. 25.

DARTMOUTH, a sea-port town in Devonshire, seated on the river Dart, near its fall into the sea. It is a well frequented and populous place, having a commodious harbour, and a considerable trade by sea. The town is large and well built; but the streets are narrow and bad, though all paved. It has the title of an earldom, and sends two members to parliament. W. Long. 4. 0. N. Lat. 50. 25.

DARTOS, in anatomy, one of the coats which form the scrotum. It is called the *dartos muscle*; but Dr Hunter says, that no such muscle can be found, and Albinus takes no notice of it in his tables.

DASYPUS, the **ARMADILLO** or *Tatou*, in zoology; a genus of quadrupeds, belonging to the order of bruta. The dasypus has neither foreteeth nor dogteeth; it is covered with a hard bony shell, intersected with distinct moveable zones or belts: this shell covers

the head, the neck, the back, the flanks, and extends even to the extremity of the tail; the only parts to which it does not extend, are the throat, the breast, and the belly, which are covered with a whitish skin of a coarse grain, resembling that of a hen after the feathers are pulled off. The shell does not consist of one entire piece, like that of the tortoise; but is divided into separate belts, connected to each other by membranes, which enable the animal to move it, and even to roll itself up like a hedge-hog. The number of these belts does not depend on the age of the animal, as some have imagined; but is uniformly the same at all times, and serves to distinguish the different species. All the species of this animal were originally natives of America: they were entirely unknown to the ancients; and modern travellers mention them as peculiar to Mexico, Brazil, and the southern parts of America; though some indeed have confounded them with two species of manis or shell-lizard, which are found in the East Indies: others report that they are natives of Africa, because some of them have been transported from Brazil to the coast of Guinea, where a few have since been propagated: but they were never heard of in Europe, Asia, or Africa, till after the discovery of America.—They are all endowed with the faculty of extending and contracting their bodies, and of rolling themselves up like a ball, but not into so complete a sphere as the hedge-hog. They are very inoffensive animals, excepting when they get into gardens, where they devour the melons, potatoes, and other roots. They walk quickly; but can hardly be said to run or leap, so that they seldom escape the pursuit either of men or dogs. But nature has not left them altogether defenceless. They dig deep holes in the earth; and seldom go very far from their subterraneous habitations: upon any alarm they immediately go into their holes; but, when at too great a distance, they require but a few moments to make one. The hunters can hardly catch them by the tail before they sink their body in the ground; where they stick so close, that the tail frequently comes away and leaves the body in the earth; which obliges the hunters, when they want to take them alive and unimpaired, to dilate the sides of the hole. When they are taken, and find that there is no resource, they instantly roll themselves up, and will not extend their bodies unless they are held near a fire. When in deep holes, there is no other method of making them come out, but by forcing in smoke or water. They keep in their holes through the day, and seldom go abroad in quest of subsistence but in the night. The hunters usually chase them with small dogs, which easily come up with them. When the dogs are near, the creatures instantly roll themselves up, and in this condition the hunters carry them off. However, if they be near a precipice they often escape both the dogs and hunters: they roll themselves up, and tumble down like a ball, without breaking their shell, or receiving any injury. The dasypus is a very fruitful animal: the female generally brings forth four young ones every month; which is the reason why the species are so numerous, notwithstanding they are so much fought after on account of the sweetness of their flesh. The Indians likewise make baskets, boxes, &c. of the shells which cover their heads.

Linnæus enumerates six species of dasypus, principally

ata pally distinguished by the number of their moveable
|| belts. See Plate CLV.

|| tive. DATA, among mathematicians, a term for such
things or quantities as are given or known, in order to
find other things thereby that are unknown. Euclid
uses the word *data* (of which he hath a particular
tract) for such spaces, lines, and angles as are given
in magnitude, or to which we can assign others equal.

From the primary use of the word *data* in mathe-
matics, it has been transplanted into other arts; as
philosophy, medicine, &c. where it expresses any quan-
tity, which, for the sake of a present calculation, is
taken for granted to be such, without requiring an
immediate proof for its certainty; called also the *given*
quantity, number, or power. And hence also such
things as are known, from whence either in natural
philosophy, the animal mechanism, or the operation
of medicines, we come to the knowledge of others un-
known, are now frequently in physical writers called
data.

DATE, an addition or appendage in writings, acts,
instruments, letters, &c. expressing the day and month
of the year when the act or letter was passed or sign-
ed; together with the place where the same was done.
The word is formed from the Latin *datum* "given,"
the participle of *do* "I give."

Our ancient deeds had no dates, but only the month
and year, to signify that they were not made in haste,
or in the space of a day, but upon longer and more
mature deliberation. The king's grants began with
these words, *Præsentibus & futuris, &c.* but the grants
of private persons with *Omnibus præsentibus literas inspec-
turis, &c.*

A deed is good, though it mentions no date or
hath a false date; or even if it hath an impossible date,
as the 30th of February; provided the real day of its
being dated or given, that is, delivered, can be proved.
Blackst. Com. vol. ii. p. 304.

DATE, the fruit of the great palm-tree. See PHOE-
NIX.

DATI (Carlo), professor of polite learning at Flo-
rence. His native country became very famous, as
well on account of his works as of the eulogies which
have been bestowed on him by learned men. The chief
work to which Dati applied himself, was *Della Pittu-
ra Antica*, of which he published an essay in the year
1667. He died in 1675, much lamented, as well for
his humanity and amiable manners as for his parts and
learning.

DATISCA, in botany: A genus of the dodecandria
order, belonging to the dioecia class of plants; and in the
natural method ranking under the 54th order, *Miscella-
neæ*. The male calyx is pentaphyllous; there is no co-
rolla; the antheræ are sessile, long, and 15 in number.
The female calyx is bidentated; no corolla; the styles
three; the capsule triangular, three-horned, unilocular,
pervious, polyspermous, inferior.

DATISI, in logic, a mode of syllogisms in the
third figure, wherein the major is an universal affirma-
tive, and the minor and conclusion particular affirma-
tive propositions. For example,

DA- All who serve God are kings;

TI- Some who serve God are poor;

SI, Therefore, some who are poor are kings.

DATIVE, in grammar, the third case in the de-

clension of nouns; expressing the state or relation of
a thing to whose profit or loss some other thing is re-
ferred. See GRAMMAR.

It is called *dative*, because usually governed by a
verb implying something to be given to some person.
As, *commodare Socrati*, "to lend to Socrates;" *utilis
reipublicæ*, "useful to the commonwealth;" *perniciosus
ecclesiæ*, "pernicious to the church."

In English, where we have properly no cases, this
relation is expressed by the sign *to*, or *for*.

DATUM, or DATUS, (anc. geog.), a town of
Thrace, situated between Neapolis and the river Nestus:
A colony of the Thracians, according to Eusta-
thius; who places it on the sea-coast, near the Stry-
mon, in a rich and fruitful soil, famous for ship-build-
ing and mines of gold; hence the proverb *Δαλος Αγαθων*,
denoting prosperity and plenty, (Strabo.) Appian de-
scribes it as seated on a steep eminence, the whole of
which it covered. It was taken by Philip of Macedon,
who changed its name to Philippi, being originally cal-
led Crenides on account of its springs. It was after-
wards famous for the defeat of Brutus and Cassius by
Augustus and Antony.

DATURA, the THORN-APPLE, in botany: A genus
of the monogynia order, belonging to the pentandria
class of plants; and in the natural method ranking
under the 28th order, *Luridæ*. The corolla is funnel-
shaped, and plaited; the calyx tubular, angulated, and
deciduous; the capsule quadrivalved. There are six
species. The stramonium, or common thorn-apple,
rises a yard high, with an erect, strong, round,
hollow, green stalk, branching luxuriantly, having the
branches widely extended on every side; large, oval,
irregularly-angulated, smooth, dark-green leaves; and
from the divisions of the branches, large white flowers
singly, succeeded by large, oval, prickly capsules,
growing erect, commonly called *thorn-apples*. At night
the upper leaves rise up and inclose the flowers. The
blossoms have sometimes a tinge of purple or violet.
The flowers consist of one large, funnel-shaped petal,
having a long tube, and spreading pentagonal limb,
succeeded by large roundish capsules of the size of
midding apples, closely beset with sharp spines. An
ointment prepared from the leaves gives ease in external
inflammations and in the hæmorrhoids. The seeds
were lately recommended by Dr Storck to be taken
internally in cases of madness; but they seem to be a
very unsafe remedy. Taken even in a small dose, they
bring on a delirium, and in a large one would certainly
prove fatal. Cows, horses, sheep, and goats, refuse
to eat this plant.

DAUCUS, the CARROT, in botany: A genus of
the digynia order, belonging to the pentandria class of
plants; and in the natural method ranking under the
45th order, *Umbellatæ*. The corolla is a little radiated,
all hermaphrodite. The fruit bristly with short hairs.
There are five species; but the only one which merits
attention is the carota or common carrot. This is so
well known as to need no description. There are sev-
eral varieties, as the white, the orange, and the purple
carrot; but of these the orange carrot is the most es-
teemed. It grows longer, larger, and is commonly
more handsome than the others, being often 15 or 18
inches long in the eatable part, and from two to four
in diameter at top. Carrots are propagated by seeds,
which

Datum

||
Daucus.

Daucus.

which are sown at different seasons of the year, in order to procure a supply of young roots for the table at all times. The season for sowing for the earliest crop is soon after Christmas. They should be sown in an open situation, but near a wall; though if they are sown close under it they will be apt to run up to seed too fast, and give no good roots: about eight inches distance is the most proper. They delight in a warm sandy soil, which should be light, and well dug to a good depth, that the roots may meet with no obstruction in running down, so as to make them forked, and shoot out lateral branches. This will happen especially when the ground has been too much dunged the same year that the seeds were sown, which will also occasion them to be worm-eaten. The hairyness of these seeds makes the sowing of them difficult, on account of their being so apt to stick together. Before sowing, therefore, they should be put through a fine chaff sieve; and a calm day should be chosen for sowing them. When sown, they should be trod in with the feet, and the ground raked level over them. When they first come up they should be cut up to four inches distance, and a month after this they are to be cleared again; and if drawn while young, they are now to be left at six inches distance every way; if they are to stand to grow large, they must be separated to ten inches distance. The second season for sowing carrots is in February. This must be done under a wall or hedge, on warm banks: but those which are to be on open large quarters should not be sown till the beginning of March. In July, carrots may be sown for an autumnal crop; and lastly, in the end of August, for those which are to stand the winter. These last will be fit for use in March, before any of the spring ones; but they are seldom so tender or well tasted. In order to preserve carrots for use all winter, they are to be dug up in the beginning of November, and laid in a dry place in sand; and these roots being again planted in February, will ripen seeds in August for succeeding crops: the longest and straightest roots are to be chosen for this purpose.

Under the article AGRICULTURE, n^o 44. we have taken notice of the good properties of carrots as a food for cattle. They have been greatly recommended as proper for fattening hogs; but from some experiments mentioned in the *Georgical Essays*, it appears, that though the bacon thus fed is of excellent quality, the feeding is considerably dearer than that fed with pease, pollard, &c. In the same essays, the following experiment is mentioned by Dr Hunter, concerning the propriety of raising carrots for the use of the distiller. "In the month of October (1773), I took 24 bushels of carrots. After being washed, topped, and tailed, I put them into a large brewing copper with four gallons of water; and covering them up with cloths to hasten the maceration, I ordered a fire to be kindled underneath, which in a short time reduced the whole into a tender pulp. They were then put into a common screw-press, and the juice taken from them; which, together with the liquor left in the copper, was run through a flannel bag. The juice was then returned into the copper; and as it was my design to make it into ale, I put to it a proportionable quantity of hops. The liquor was then boiled about an hour, when it ac-

N^o 98.

quired both the taste and colour of wort. It was next put into a cooler, and afterwards into the working vessel, where the yeast was added to it. It worked kindly, and in all respects was treated as ale. I allowed it to remain in the cask about four months, when I broached it, but found it of a thick, muddy appearance. I attempted to fine it, but in vain. The taste was by no means displeasing, as it much resembled malt liquor. My first intention being frustrated, I threw it into the still, being about 40 gallons in measure, and by two distillations obtained four gallons of a clean proof spirit. It had, however, contracted a flavour from the hop, which should be left out when the intention is to reduce the liquor into spirit. From a gross calculation, I am induced to think that a good acre of carrots manufactured in this manner, will leave a profit of L. 40. after deducting the landlord's rent, cultivation, distillation, and other incidental expences. In this calculation, I presume that the spirit is worth six shillings per gallon, and not excised. An acre of barley will by no means produce so much spirit. A rich sandy loam is the best land for carrots; which, after the crop is removed, will be in high cultivation for corn."

Attempts have also been made to prepare sugar from carrots, but without success; a thick syrupy matter like treacle being only obtainable.—Raw carrots are given to children troubled with worms. They pass through most people but little changed.—A poultice made of the roots hath been found to mitigate the pain and abate the stench of foul and cancerous ulcers.—Crickets are very fond of carrots; and are easily destroyed by making a paste of powdered arsenic, wheat-meal, and scraped carrots, which must be placed near their habitations.—By their strong antiseptic qualities, a marmalade made from carrots has also been found useful in preventing and curing the sea-scurvy.—The seeds have been reckoned carminative and diuretic; and were formerly much used as a remedy for the stone, but are at present disregarded.—Carrots were first introduced into England by the Flemings, in the reign of queen Elizabeth.

DAVENANT (Sir William), an eminent poet in the 17th century, was born at Oxford in 1606. After some stay at the university, he entered into the service of Frances first duchess of Richmond, and afterward of Fulke Grevil, lord Brook; who having an excellent taste for poetry, was much charmed with him. He got great esteem by writing poems and plays; and upon the death of Ben Johnson was created poet-laureat. He wrote his poem Goudibert at Paris. He formed a design for carrying over a considerable number of artificers, especially weavers, to Virginia, by the encouragement of Henrietta Maria, the queen-mother of England, who obtained leave for him of the king of France. But he and his company were seized by some parliament ships, and he carried prisoner first to the isle of Wight, and then to the Tower of London; but, by the mediation of Milton and others, he got his liberty as a prisoner at large. At this time tragedies and comedies being prohibited, he contrived to set up an Opera, to be performed by declamations and music. This Italian opera began in Rutland-house in Charterhouse-yard, 1656; but was afterwards removed to the Cock-

Daucus,
Davenant.

Mollucan Opossum.
Male.



Female.



Mexican Opossum.



Marine Opossum.



Nine-banded A.



Didelphis.
Kangaroo.



Virginian Opossum.



Spotted Opossum.



Flying Opossum.



Surinam Opossum.



Cayenne Opossum.



Dasyurus, or Armadillo.
Twelve-banded A.



Six-banded A.



Dephinus, the Dolphin.



Davenant Cock-Pit in Drury-Lane, and was much frequented for many years. In 1648, his *Madagascar*, with other poems, were printed. He died in 1668.

DAVENANT (Doctor Charles), an eminent civilian and writer, eldest son of the preceding, and educated in Cambridge: he wrote several political tracts; and likewise plays. He was (1685) impowered, with the master of the revels, to inspect the plays designed for the stage, that no immoralities might be presented. His *Essays on Trade* are in high esteem; and were reprinted in 5 vols. 8vo, in 1771. Doctor Davenant was inspector-general of exports and imports; and died in 1712.

DAVENTRY, or **DAINTRY**, a handsome town of Northamptonshire in England, situated on the side of a hill on the great road to Chester and Carlisle. W. Long. 1. 15. N. Lat. 52. 12.

DAUGHTER, (*filia*), a female child. See the article **CHILDREN**.

Daughters, among the ancients, were more frequently exposed than sons, as requiring greater charge to educate and settle them in the world. See *Exposing of Children*. Those who had no legitimate sons were obliged, by the Athenian laws, to leave their estates to their daughters, who were confined to marry their nearest relations, otherwise to forfeit their inheritance; as we find to have been practised likewise among the Jews, many of whose laws seem to have been transcribed by Solon.

If an heiress happened to be married before her father's death, this did not hinder the nearest relation to claim the inheritance, and even to take the woman from her husband; which is said to have been a common case.

DAVID, king of Israel, and Hebrew poet, was born at Bethlehem 1085, and died 1014 years B. C. His history is particularly recorded in the sacred writings.

St DAVID's, an episcopal town of Pembroke-shire, in S. Wales; but has neither market nor fair. It is seated in a barren soil on the river Ilen, not a mile from the sea-shore. It was once a considerable place, and had walls, which are now demolished; but it is small at present, and thinly inhabited; however, the cathedral is a pretty good structure. From the cape, near this place, there is a prospect into Ireland. W. Long. 5. 20. N. Lat. 52. 0.

St DAVID's, a town and fort of Asia, in the peninsula on this side the Ganges, and on the coast of Coromandel, 80 miles S. of Fort St George. E. Long. 79. 55. N. Lat. 11. 30. On the taking of Madras by the French in 1746, the presidency of all the English settlements on the Coromandel coast was removed to Fort St David, and continued there till about the year 1752, when it was removed back to Madras. In June 1758, the fort was taken and demolished by the French, and has never been rebuilt since.

DAVIDISTS, **DAVIDICI**, or **DAVID GEORGIANS**, a sect of heretics, the adherents of David George, a native of Delft, who, in 1525, began to preach a new doctrine; publishing himself to be the true Messiah; and that he was sent thither to fill heaven, which was quite empty for want of people to deserve it. He is likewise said to have denied the existence of angels, good and evil, of heaven and hell, and to have rejected

the doctrine of a future judgment. He rejected marriage, with the Adamites; held, with Manes, that the soul was not defiled by sin; and laughed at the denial so much recommended by Jesus Christ. Such were his principal errors. He made his escape from Delft, and retired first into Friesland and then to Basil, where he changed his name, assuming that of John Bruck, and died in 1556.

He left some disciples behind him, to whom he promised, that he would rise again at the end of three years. Nor was he altogether a false prophet herein; for the magistrates of that city, being informed, at the three years end, of what he had taught, ordered him to be dug up and burnt, together with his writings, by the common hangman.

There are still some remains of this ridiculous sect in Holstein, Friesland, and other countries; whose temper and conduct seem to discredit the exaggerated account which some writers have given of their founder. He was probably a deluded fanatic and mystic.

DAVILA (Henry Catherine), a celebrated historian, was the youngest son of Antonio Davila, grand constable of Cyprus, who on the taking of that island by the Turks in 1570, had been obliged to retire into Spain, whence this family supposed they had derived their name and origin. From Spain Antonio repaired to the court of France, and settled his son Louis and two daughters under the patronage of Catherine of Medicis; whose name he afterwards gave to the young historian, born 1576, at an ancient castle in the territories of Padua, though generally called a native of Cyprus. The little Davila was brought early into France; and at the age of 18, he signalized himself in the military scenes of that country. His last exploit there was at the siege of Amiens, where he fought under Henry IV. and received a wound in the knee, as he relates himself in his history. After peace was established in France, he withdrew into Italy, and entered into the service of the Venetians. Davila, while he was at Venice, wrote his admirable History of the Civil Wars of France, which contains every thing worth notice that passed from the death of Henry II. in 1559, to the peace of Vervins in 1598. He continued to serve the republic of Venice with great reputation, till a most unfortunate adventure put an end to his life in 1631. Passing through Verona with his wife and family, on his way to Crema, which he was appointed to defend, and demanding, according to the usual custom of persons in his station, a supply of horses and carriages for his retinue, a brutal Veronese, called *il Turco*, entered the room where he and his family were at supper, and being mildly reprimanded for his intrusion by Davila, discharged a pistol at the historian, and shot him dead on the instant. His accomplices also killed the chaplain of Davila, and wounded many of his attendants. But his eldest son Antonio, a youth of 18, revenged the death of his father, by killing the murderer on the spot. All the confederates were secured next morning, and publicly executed at Verona. It is very remarkable, that Davila passed no censure on the massacre of St Bartholomew. His character of the queen mother has that partiality, which it was natural for him to show to the patroness of his family; but his general veracity is confirmed by

Davis
||
Davit.

the great authority of the first duke of Epernon, who (to use the words of lord Bolingbroke) "had been an actor, and a principal actor too, in many of the scenes that Davila recites." Girard, secretary to this duke, and no contemptible biographer, relates, that this history came down to the place where the old man resided in Gascony, a little before his death; that he read it to him; that the duke confirmed the truth of the narrations in it; and seemed only surpris'd by what means the author could be so well informed of the most secret councils and measures of those times.

DAVIS (Sir John), an eminent lawyer and poet, born about the year 1570. He first distinguished himself by his poem *Nosce Teipsum* on the Immortality of the Soul. He became attorney-general, and speaker of the house of commons in Ireland; and afterward was appointed lord chief justice of the court of King's Bench in England, but died before his installation, in 1626. He published many law tracts; but was esteemed more of a scholar and a wit than of a lawyer.

DAVIS (John), a famous navigator in the 16th century, was born at Sandridge, near Dartmouth in Devonshire; and distinguished himself by making three voyages to the most northern parts of America, in order to discover a north-west passage to the East Indies; in which he discovered the Straits which bear his name. He afterwards performed five voyages to the East Indies; in the last of which he was slain in a desperate fight with some Japanese, near the coast of Malacca, on the 27th of December 1605. He wrote an account of his second voyage for the discovery of the north-west passage; a Voyage to the East-Indies; and other tracts.

DAVIS'S Straits. See *NEW BRITAIN*.

DAVIT, in a ship, a long beam of timber, represented by *a, a*, Plate CLXV. and used as a crane whereby to hoist the flukes of the anchor to the top of the bow, without injuring the sides of the ship as it ascends; an operation which, by mariners, is called *fishing the anchor*. The anchors being situated on both the bows, the davit may be occasionally shifted, so as to project over either side of the ship, according to the position of that anchor on which it is employed. The inner end of the davit is secured by being thrust into a square ring of iron *b*, which is bolted to the deck, and forelocked under the beams. This ring, which is called the *span-shackle*, exhibited at large by fig. 9. is fixed exactly in the middle of the deck, and close behind the foremast. Upon the outer end of the davit is hung a large block *c*, through which a strong rope traverses, called the *fish-pendent*, *d*; to whose foremost end is fitted a large iron hook *e*, and to its after-end a tackle or complication of pulleys *f*; the former of which is called the *fish-book*, and the latter the *fish-tackle*.

The davit, therefore, according to the sea-phrase, is employed to *fish the anchor*; which being previously *catted*, the fish-hook is fastened upon its flukes; and the effort of the tackle being transmitted to the hook, by means of the fish-pendent, draws up that part of the anchor sufficiently high upon the bow to fasten it, which is done by the *spank-painter*. See that article. — There is also a davit of a smaller kind occasionally

fixed in the long-boat, and employed to weigh the anchor therein.

Dauphin.

DAUPHIN is a title given to the eldest son of France, and presumptive heir of the crown; on account of the province of Dauphiné, which in 1343 was given to Philip de Valois, on this condition, by Humbert dauphin of the Viennois. The dauphin, in his letters patent, styles himself, *By the grace of God, eldest son of France, and dauphin of Viennois*.

DAUPHIN was anciently the title or appellation of the prince of Viennois in France.

Most authors who have sought the origin of the name *Dauphin* and *Dauphiné*, seem to have given too much loose to conjecture. Du-Chesne is of opinion, that it was the grandson of Guy the Fat who first bore the name of *dauphin*. Chorier observes, that William, canon of Notre Dame at Grenoble, who has written the life of Margaret, daughter of Stephen earl of Burgundy, married with Guy, son of Guy the Fat, calls the latter simply Guy the Old, and the former always count Dauphin; and adds, that no record, no monument, ever attributes the title of dauphin to Guy the Fat or any of his predecessors: so that it must necessarily have taken its rise in his son, all whose successors so constantly assumed it, that it became the proper name of the family. He died in 1142, in the flower of his youth; so that it must be about the year 1120 that the title commenced; and without doubt, adds he, on some illustrious occasion. He observes farther, that this prince was of a military disposition, and delighted in nothing but war; and again, that it was the custom of the cavaliers to deck their caps, coats of arms, and the housing of their horses, with some figure or device peculiar to themselves, whereby they were distinguished from all others engaged in the same combat or tournament. From all these circumstances he conjectures, that this Guy chose the dolphin for his signature; that this was the crest of his helmet; and that he bore it on his coat in some notable tournament or battle, wherein he distinguished himself. And this, Chorier makes no doubt, is the real origin of the appellation. Nothing was more common in those times, than to make proper names become the names of families or dignities. Witness the Ademars, Arthauds, Aynards, Atlemans, Berengers, and infinite others; who all owe their names to some one of their ancestors, from whom it has been transmitted throughout the family.

The seigneurs or lords of Auvergne have likewise borne the appellation of *dauphin*; but the dauphins of Auvergne had it not till a good while after those of the Viennois, and even received it from them. The manner was this: Guy VIII. dauphin of Viennois, had by his wife Margaret, daughter of Stephen earl of Burgundy, a son and two daughters. The son was Guy IX. his successor. Beatrix, one of the daughters, was married to the count d'Auvergne, who, according to Blondel, was William V. or rather, as Chorier and others hold, Robert VI. father of William V. This prince lost the greatest part of the county Auvergne, which was taken from him by his uncle William, assisted by Louis the Young; and was only left master of the little canton whereof Vodable is the capital. He had a son whom he called Dauphin, on account of Guy, or Guigues, his uncle by the mother's side.

From

Dauphin
||
Day.

From his time his successors, holding the same petty canton of Auvergne, styled themselves *dauphins of Auvergne*, and bore a dolphin for their arms.

DAUPHINS, or *Delphins*, in literary history, a name given to the commentators on the ancient Latin authors, who were employed by order of Louis XIV. of France, for the benefit of the prince, under the care and direction of M. de Montausier his governor, Bossuet and Huet his preceptors. They were 39 in number.

DAUPHINY, a province of France, bounded on the west by the river Rhone, on the north by the Rhone and Savoy, on the south by Provence, and on the east by the Alps. Hence the presumptive heir of France is called the **DAUPHIN**. In some places it is very fertile; and produces corn, wine, olives, woad, copperas, silk, crystal, iron, and copper. But the greatest part of this province is barren, and the inhabitants are obliged to go into other countries for subsistence. The mountains abound in simples and game of all sorts; and here are fir-trees proper for masts. The principal rivers are, the Rhone, the Durance, the Isere, and the Drone. There is a great number of mineral springs; and Grenoble is the capital town.

DAURAT (John), an eminent French poet, born in 1507. In the reign of Henry II. he was preceptor to the king's pages, and Charles IX. who took great delight in his conversation, and honoured him with the title of his poet; but his generosity and want of management placed him in that class of learned men who have been very near starving. Conformable to the taste of the age, he had so much skill in making anagrams, that several illustrious persons gave him their names to anagrammatise: he also undertook to explain the Centuries of Nostradamus. Making verses was a disease in him: for no book was printed, nor did any person of consequence die, but Daurat made some verses on the occasion; as if he had been poet in ordinary, or his muse had been a hired mourner, to the whole kingdom. Scaliger tells us, that he spent the latter part of his life in endeavouring to find all the bible in Homer. He died in 1588.

DAY, according to the most natural and obvious sense of the word, signifies that space of time during which it continues to be light; in contradistinction to night, being that partition of time wherein it is dark: but the space of time in which it is light, being somewhat vague and indeterminate, the time between the rising and the setting of the sun is usually looked on as the day; and the time which lapses from its setting to its rising again, the night.

The word *day* is often taken in a large sense, so as to include the night also; or to denote the time of a whole apparent revolution of the sun round the earth; in which sense it is called by some a natural day, and by others an artificial one: but, to avoid confusion, it is usual to call it in the former sense simply the *day*, and in the latter a *nychthemeron*; by which term that acceptance of it is aptly denoted, as it implies both day and night.

The *nychthemeron* is divided into twenty-four parts, called *hours*; which are of two sorts, equal and unequal or temporary. See the article **Hour**.

Different nations begin their day at a different hour. Thus the Egyptians begin their day at midnight; from

whom Hippocrates introduced that way of reckoning into astronomy, and Copernicus and others have followed him: But the greatest part of astronomers reckon the day to begin at noon, and so count twenty-four hours, till the noon of the next day; and not twice twelve, according to the vulgar computation. The method of beginning the day at midnight prevails also in Great Britain, France, Spain, and most parts of Europe.

The Babylonians began their day at sun-rising: reckoning the hour immediately before its rising again, the twenty-fourth hour of the day; from whence the hours reckoned in this way are called the *Babylonic*. In several parts of Germany, they begin their day at sun-setting, and reckon on till it sets next day, calling that the *twenty-fourth hour*: these are generally termed *Italian hours*. The Jews also began their *nychthemeron* at sun-setting: but then they divided it into twice twelve hours, as we do; reckoning twelve for the day, be it long or short, and twelve for the night; so that their hours continually varying with the day and night, the hours of the day were longer than those of the night for one half year, and the contrary the other; from whence their hours are called temporary: those at the time of the equinoxes became equal, because then those of the day and night are so. The Romans also reckoned their hours after this manner, as do the Turks at this day.

This kind of hours is called *planetary*, because the seven planets were anciently looked upon as presiding over the affairs of the world, and to take it by turns each of these hours, according to the following order: Saturn first, then Jupiter, Mars, the Sun, Venus, Mercury, and last of all the Moon: hence they denominated each day of the week from that planet whose turn it was to preside the first hour of the *nychthemeron*. Thus, assigning the first hour of Saturday to Saturn, the second will fall to Jupiter, the third to Mars, and so the twenty-second of the same *nychthemeron* will fall to Saturn again, and therefore the twenty-third to Jupiter, and the last to Mars: so that on the first hour of the next day, it will fall to the Sun to preside; and by the like manner of reckoning, the first hour of the next will fall to the Moon; of the next, to Mars; of the next, to Mercury; of the next, to Venus: hence the days of the week came to be distinguished by the Latin names of *Dies Saturni, Solis, Lunæ, Martis, Mercurii, Jovis, and Veneris*; and among us, by the names of Saturday, Sunday, Monday, &c.

Day-Coal, in natural history, a name given by the miners of England, and the common people who live in coal-countries, to that seam or stratum of the coal which lies uppermost in the earth. The same vein or stratum of coal usually runs a great way through the country, and dips and rises in the earth at different places; so that this upper stratum, or day-coal, is, in the various parts of the same stratum, sometimes near the surface and sometimes many fathoms deep. The subterranean fires found in some of our coal-countries feed principally on this coal; and are nearer to or farther from the surface as it rises or sinks.

Day-Fly. See **EPHEMERIS**.

Day-Net, among fowlers. See **NET**.

Days of Grace, are those granted by the court at the prayer of the defendant or plaintiff, in whose delay it is.

Day
||
Deacon.

Days of grace, in commerce, are a customary number of days allowed for the payment of a bill of exchange, &c. after the same becomes due.

Three days of grace are allowed in Britain; ten in France and Dantzic; eight at Naples; six at Venice, Amsterdam, Rotterdam, and Antwerp; four at Frankfurt; five in Leipzig; twelve at Hamburg; six in Portugal; fourteen in Spain; thirty in Genoa, &c.

In Britain the days of grace are given and taken as a matter of course, the bill being only paid on the last day: but in other countries, where the time is much longer, it would be reckoned dishonourable for a merchant to take advantage of it; bills are therefore paid on the very day they fall due.

Dar's-Man, in the north of England, an arbitrator or person chosen to determine an affair in dispute.

Intercalary Days. See *INTERCALARY DAYS*.

Dar's-Work, among seamen, the reckoning or account of the ship's course during 24 hours, or between noon and noon, according to the rules of trigonometry. See *DEAD-RECKONING*.

DAZE, in natural history, a name given by our miners to a glittering sort of stone, which often occurs in their works; and, as it is an unprofitable substance, is one of those things they call *weeds*. The word *daze* takes in with them every stone that is hard and glittering; and therefore it comprehends the whole genus of the telangia or stony nodules, which have the flakes of talk in their substance: these, according to the colour of the stony matter they are bedded in, and their own colour, give the names of *black daze*, *white*, *red*, and *yellow daze*, to these stones.

DEACON, *DIACONUS*, a person in the lowest degree of holy orders, whose business is to baptise, read in the church, and assist at the celebration of the eucharist. The word is formed from the Latin *Diaconus*, of the Greek *διακονος*, minister, servant. Deacons were instituted seven in number, by the apostles, *Acts* chap. vi. which number was retained a long time in several churches. Their office was to serve in the Agapæ, and to distribute the bread and wine to the communicants. Another part of the office of deacons, was to be a sort of monitors and directors to the people in the exercise of their public devotions in the church; for which purpose they made use of certain known forms of words, to give notice when each part of the service began. Whence they are sometimes called *eirokerukes*; "the holy cryers of the church."

Deacons had, by licence and authority from the bishop, a power to preach, to reconcile penitents and grant them absolution, and to represent their bishops in general councils. Their office out of the church was to take care of the necessitous, such as orphans, widows, prisoners, and all the poor and sick who had any title to be maintained out of the revenues of the church; to inquire into the morals and conversation of the people, and to make their report thereof to the bishop. Whence, on account of the variety of business, it was usual to have several deacons in the same church.

In the Romish church, it is the deacons office to incense the officiating priest or prelate; to lay the corporal on the altar; to receive the pattern or cup from the subdeacon, and present them to the person officiating; to incense the choir; to receive the pax from the officiating prelate, and carry it to the subdeacon; and

at the pontifical mass, when the bishop gives the blessing, to put the mitre on his head, and to take off the archbishop's pall and lay it on the altar. In England, the form of ordaining deacons, declares that it is their office to assist the priest in the distribution of the holy communion: in which, agreeably to the practice of the ancient church, they are confined to the administering the wine to the communicants. A deacon in England is not capable of any ecclesiastical promotion; yet he may be a chaplain to a family, curate to a beneficed clergyman, or lecturer to a parish-church. He may be ordained at 23 years of age, *anno currente*; but it is expressly provided, that the bishop shall not ordain the same person a priest and deacon in the same day. Deacons, according to St Paul, should be chaste, sincere, and blameless; neither great drinkers, nor given to filthy lucre: they should hold the mystery of the faith in a pure conscience; and should be well approved before they are admitted to the ministry. In the church of Scotland, the deacon's office is only to take care of the poor.

DEACONESS, a female deacon; an order of women who had their distinct offices and services in the primitive church. This office appears as ancient as the apostolical age; for St Paul calls Phebe a servant of the church of Cenchrea. The original word is *διακονος*, answerable to the Latin word *ministra*. Tertullian calls them *viduæ*, widows, because they were commonly chosen out of the widows of the church; and, for the same reason, Epiphanius, and the council of Laodicea, calls them *πρεσβυτιδας*, elderly women, because none but such were ordinarily taken into this office. For, indeed, by some ancient laws, these four qualifications were required in every one that was to be admitted into this order. 1. That she should be a widow. 2. That she should be a widow that had born children. 3. A widow that was but once married. 4. One of a considerable age, 40, 50, or 60 years old. Though all these rules admitted of exceptions. Concerning their ordination, whether it was always performed by imposition of hands, the learned are much divided in their sentiments. Baronius and Valesius think they were not, and make no other account of them than as mere lay-persons. But the author of the constitutions, speaking of their ordination, requires the bishop to use imposition of hands, with a form of prayer which is there recited. We are not, however, to imagine, that this ordination gave them any power to execute any part of the sacerdotal office. They were only to perform some inferior services of the church, and those chiefly relating to the women for whose sakes they were ordained. One part of their office was to assist the minister at the baptizing of women, to undress them for immersion, and to dress them again, that the whole ceremony might be performed with all the decency becoming so sacred an action. Another part of their office was to be private catechists to the women-catechumens who were preparing for baptism. They were likewise to attend the women that were sick and in distress; to minister to martyrs and confessors in prison; to attend the womens gate in the church; and, lastly, to assign all women their places in the church, regulate their behaviour, and preside over the rest of the widows; whence in some canons they are styled *προκαθημεναι*, "governesses." This order, which since the

Deaconess.

entry the 10th or 12th century has been wholly laid aside, was not abolished every where at once, but continued in the Greek church longer than in the Latin, and in some of the Latin churches longer than in others.

DEACONRY, DIACONATE, the order or ministry of a deacon or deaconess. See **DEACON** and **DEACONESS**.

DEACONRY, Diaconia, is also a name still reserved to the chapels and oratories in Rome, under the direction of the several deacons, in their respective regions or quarters.

To the deaconries were annexed a sort of hospitals or boards for the distribution of alms, governed by the regionary deacons, called *cardinal deacons*, of whom there were seven, answering to the seven regions, their chief being called the *archdeacon*.

The hospital adjoining to the church of the deaconry had an administrator for the temporal concerns, called the *father of the deaconry*, who was sometimes a priest and sometimes a layman.

At present there are fourteen of these deaconries or hospitals at Rome, which are reserved to the cardinals. Du-Cange gives us their names: as, the deaconry of St Maria in the Broad-way, the deaconry of St Eustachio near the Pantheon, &c.

DEAD LANGUAGES. See **PHILOLOGY**, chap. iii.

Preservation of DEAD Bodies. See **EMBALMING**.

Fest of the DEAD. See **FEAST of the Dead**.

DEAD-Lights, certain wooden ports which are made to fasten into the cabin windows, to prevent the waves from gushing into the ship in a high sea. As they are made exactly to fit the windows, and are strong enough to resist the waves, they are always fixed in on the approach of a storm, and the glass lights taken out, which must otherwise be shattered to pieces by the surges, and suffer great quantities of water to enter the vessel.

DEAD-Mens-Eyes, in the sea-language, a kind of blocks with many holes in them, but no sheevers, whereby the shrouds are fastened to the chains; the crow-feet reeve also through these holes: and, in some ships, the main-stays are set tight in them; but then they have only one hole, through which the lanyards are passed several times. See **PLATE CLXV**.

DEAD's Part. See **LAW**, N° clxxxi. 6.

DEAD-Reckoning, in navigation, the judgment or estimation which is made of the place where a ship is situated; without any observation of the heavenly bodies. It is discovered by keeping an account of the distance she has run by the log, and of her course steered by the compass; and by rectifying these data by the usual allowances for drift, lee-way, &c. according to the ship's known trim. This reckoning, however, is always to be corrected, as often as any good observation of the sun can be obtained.

DEAD-Sea, in geography, a lake of Judea, into which the river Jordan discharges itself; being about 70 miles long and 20 broad. See **ASPHALITES**.

DEAD-Tops, a disease incident to young trees, and cured by cutting off the dead parts close to the next good twig or shoot, and claying them over as in grafting.

DEAD-Water, at sea, the eddy-water just astern of a ship; so called, because it does not pass away so swift as the water running by her sides does. They say that

a ship makes much dead-water when she has a great eddy following her stern.

DEADLY-CARROT. See **THAPSIA**.

DEADLY-Feud, in English law-books, a profession of irreconcilable enmity, till a person is revenged by the death of his enemy. The word *feud* is derived from the German *Fehd*; which, as Hottoman observes, signifies *modo bellum, modo capitales inimicitias* *. Such enmity and revenge was allowed by law in the time of the Saxons, viz. If any man was killed, and a pecuniary satisfaction was not made to the kindred, it was lawful for them to take up arms and revenge themselves on the murderer: which was called *deadly feud*. And this probably was the original of an **APPEAL**.

DEAFNESS, the state of a person who wants the sense of hearing; or the disease of the ear, which prevents its due reception of sounds. See **MEDICINE-Index**.

Deafness generally arises either from an obstruction or a compression of the auditory nerve; or from some collection of matter in the cavities of the inner ear; or from the auditory passage being stopped up by some hardened excrement; or, lastly, from some excrescence, a swelling of the glands, or some foreign body introduced within it.

Those born deaf are also dumb, as not being able to learn any language, at least in the common way. However, as the eyes in some measure serve them for ears, they may understand what is said by the motion of the lips, tongue, &c. of the speaker; and even accustom themselves to move their own, as they see other people do, and by this means learn to speak.— Thus it was that Dr Wallis taught two young gentlemen born deaf to know what was said to them, and to return pertinent answers. Digby gives us another instance of the same within his own knowledge; and there was a Swiss physician lately living at Amsterdam, one John Conrad Amman, who effected the same in several children born deaf with surprising success. He has reduced the thing to a fixed art or method, which he has published in his *Surdus Loquens*, Amstelod. 1692. and *de Loquela*, ibid. 1700.

In the *Phil. Transf.* N° 312. we have an account by Mr Waller, R. S. Secr. of a man and his sister, each about 50 years old, born in the same town with Mr Waller, who had neither of them the least sense of hearing; yet both of them knew, by the motion of the lips only, whatever was said to them, and would answer pertinently to the question proposed. It seems they could both hear and speak when children, but lost their sense afterwards; whence they retained their speech, which, though uncouth, was yet intelligible.

Such another instance is that of Mr Goddy's daughter, minister of St Gervais in Geneva, related by Bishop Burnet. "At two years old they perceived she had lost her hearing; and ever since, though she hears great noises, yet hears nothing of what is said to her. But by observing the motions of the mouth and lips of others, she acquired so many words, that out of these she has formed a sort of jargon, in which she can hold conversation whole days with those that can speak her language. She knows nothing that is said to her unless she see the motion of their mouths that speak to her, so that in the night they are obliged to light candles to speak to her. One thing will appear the
strangest

Deadly-
Carrot,

||
Deafness.

* See *Feuds*.

Deal,
Dean.

strangest part of the whole narration: she has a sister, with whom she has practised her language more than with any body else; and in the night, by laying her hand on her sister's mouth, she can perceive by that what she saith, and so can discourse with her in the dark." *Burn. Let. IV. p. 248**.

* See further the article Dumbness.

It is observable, that deaf persons, and several others thick of hearing, hear better and more easily if a loud noise be raised at the time when you speak to them: which is owing, no doubt, to the greater tension of the ear-drum on that occasion. Dr Wallis mentions a deaf woman, who if a drum were beat in the room could hear any thing very clearly; so that her husband hired a drummer for a servant, that by this means he might hold conversation with his wife. The same author mentions another, who, living near a steeple, could always hear very well if there was a ringing of three or four bells, but never else.

DEAL, a thin kind of fir-planks, of great use in carpentry. They are formed by sawing the trunk of a tree into a great many longitudinal divisions, of more or less thickness according to the purposes they are intended to serve.

A very good method of seasoning planks of deal and fir is to throw them into salt water as soon as they are sawed; and keep them there three or four days, frequently turning them. In this case they will be rendered much harder, by drying afterwards in the air and sun: but neither this, nor any other method yet known, will preserve them from shrinking.

Rods of deal expand laterally, or cross the grain, in moist weather, and contract again in dry; and thence have been found to make an useful hygrometer.

DEAL, a town of Kent in England, lying between Dover and Sandwich, in E. Long. 1. 30. N. Lat. 51. 16. is supposed to be the *Dola* of Nennius, and is situated on a flat and level coast. This town, according to Dr Campbell, justifies an observation he had made in favour of situations of this kind, *viz.* that they are less liable than others to be injured by the sea. The town of Deal, as far as we are able to judge, except it may be the sea's shrinking a little from it, is in much the same condition in which it ever was, even from the earliest accounts. The learned Dr Halley has proved, *Miscellanea Curiosa*, vol. iii. p. 426, that Julius Cæsar landed here, August 26th, the year before the coming of Christ 55.—The great conveniency of landing has been of infinite service to the place; so that it is large and populous, divided into the upper and lower towns, adorned with many fair buildings, and is in effect the principal place on the Downs.

DEAN, an ecclesiastical dignity in cathedral and collegiate churches, and head of the chapter.

Rural DEAN, called also *Arch-presbyter*, originally exercised jurisdiction over ten churches in the country, and afterwards became only the bishop's substitute, to grant letters of administration, probate of wills, &c.; to convocate the clergy; and to signify to them sometimes by letters the bishop's will, and to give induction to the archdeacon. Their office is now lost in that of the archdeacons and chancellors.

DEAN of a Monastery, was a superior established under the abbot, to ease him in taking care of ten monks; whence he was called *decanus*.

DEAN and Chapter, are the council of the bishop, to

assist him with their advice in affairs of religion, and also in the temporal concerns of his see. When the rest of the clergy were settled in the several parishes of each diocese, these were reserved for the celebration of divine service in the bishop's own cathedral; and the chief of them, who presided over the rest, obtained the name of *decanus* or *dean*, being probably at first appointed to superintend ten canons or prebendaries.

All ancient deans are elected by the chapter by *conge d'eslire* from the king, and letters missive of recommendation, in the same manner as bishops; but in those chapters that were founded by Henry VIII. out of the spoils of the dissolved monasteries, the deanery is donative, and the installation merely by the king's letters patent. The chapter, consisting of canons or prebendaries, are sometimes appointed by the king, sometimes by the bishop, and sometimes elected by each other.

The dean and chapter are the nominal electors of a bishop. The bishop is their ordinary and immediate superior; and has, generally speaking, the power of visiting them, and correcting their excesses and enormities. They had also a check on the bishop at common law; for till the statute 32 Hen. VIII. c. 28. his grant or lease would not have bound his successors, unless confirmed by the dean and chapter.

DEAN of Guild. See LAW, N° clviii. II.

DEANERY, the office of a DEAN.—Deaneries and prebends may become void, like a bishopric, by death, by deprivation, or by resignation either to the king or bishop. If a dean, prebendary, or other spiritual person, be made a bishop, all the preferments of which he was before possessed are void; and the king may present to them in right of his prerogative royal. But they are not void by the election, but only by the consecration.

DEATH, is generally considered as the separation of the soul from the body; in which sense it stands opposed to life, which consists in the union thereof.

Physicians usually define death by a total stoppage of the circulation of the blood, and a cessation of the animal and vital functions consequent thereon; as respiration, sensation, &c.

An animal body, by the actions inseparable from life, undergoes a continual change. Its smallest fibres become rigid; its minute vessels grow into solid fibres no longer pervious to the fluids; its greater vessels grow hard and narrow; and every thing becomes contracted, closed, and bound up: whence the dryness, immobility, and extenuation, observed in old age. By such means the offices of the minuter vessels are destroyed; the humours stagnate, harden, and at length coalesce with the solids. Thus are the subtilist fluids in the body intercepted and lost, the concoction weakened, and the reparation prevented; only the coarser juices continue to run slowly through the greater vessels, to the preservation of life, after the animal functions are destroyed. At length, in the process of these changes, death itself becomes inevitable, as the necessary consequence of life. But it is rare that life is thus long protracted, or that death succeeds merely from the decays and impairment of old age. Diseases, a long and horrid train, cut the work short.

The signs of death are in many cases very uncertain. If we consult what Winslow or Bruchier have said on

Dean
||
Dean

th. this subject, we shall be convinced, that between life and death the shade is so very undistinguishable, that even all the powers of art can scarcely determine where the one ends and the other begins. The colour of the visage, the warmth of the body, and suppleness of the joints, are but uncertain signs of life still subsisting; while, on the contrary, the paleness of the complexion, the coldness of the body, the stiffness of the extremities, the cessation of all motion, and the total insensibility of the parts, are but uncertain marks of death begun. In the same manner also, with regard to the pulse and breathing; these motions are often so kept under, that it is impossible to perceive them. By bringing a looking-glass near to the mouth of the person supposed to be dead, people often expect to find whether he breathes or not. But this is a very uncertain experiment: the glass is frequently sullied by the vapour of the dead man's body; and often the person is still alive, though the glass is no way tarnished. In the same manner, neither burning nor scarifying, neither noises in the ears nor pungent spirits applied to the nostrils, give certain signs of the discontinuance of life; and there are many instances of persons who have endured them all, and afterwards recovered without any external assistance, to the astonishment of the spectators. This ought to be a caution against hasty burials, especially in cases of sudden death, drowning, &c.

DEATH in LAW. In law, there is a natural death and a civil death: natural, where nature itself expires; civil, where a person is not actually dead, but adjudged so by law. Thus, if any person, for whose life an estate is granted, remains beyond sea, or is otherwise absent, seven years, and no proof made of his being alive, he shall be accounted naturally dead.

Brothers of DEATH, a denomination usually given to the religious of the order of St Paul, the first hermit. They are called *brothers of death*, *fratres a morte*, on account of the figure of a death's head, which they were always to have with them, in order to keep perpetually before them the thoughts of death. This order, by its constitutions made in 1620, does not seem to have been established long before Pope Paul V. Louis XIII. in 1621, permitted them to settle in France. The order was probably suppressed by Pope Urban VIII.

LAW of DEATHBED. See LAW, N^o clxxxii. 38—41.

DEATH-Watch, in natural history, a little insect famous for a ticking noise, like the beat of a watch, which the vulgar have long taken for a presage of death in the family where it is heard: whence it is also called *pediculus, satidicus, mortifera, pulsatorius*, &c.

There are two kinds of death-watches. Of the first we have a good account in the Phil. Transf. by Mr Allen. It is a small beetle, $\frac{1}{2}$ of an inch long, of a dark-brown colour, spotted; having pellucid wings under the vagina, a large cap or helmet on the head, and two antennæ proceeding from beneath the eyes, and doing the office of proboscides. The part it beats withal, he observed, was the extreme edge of the face, which he chooses to call the upper-lip, the mouth being protracted by this bony part, and lying underneath out of view.

This account is confirmed by Dr Derham; with this difference, that instead of ticking with the upper-lip, he observed the insect to draw back its mouth, and beat with its forehead. That author had two death-

watches, a male and a female, which he kept alive in a box several months; and could bring one of them to beat whenever he pleased, by imitating its beating. By this ticking noise he could frequently invite the male to get up upon the other in the way of coition. When the male found he got up in vain, he would get off again, beat very eagerly, and then up again: Whence the ingenious author concludes those pulsations to be the way whereby these insects woo one another, and find out and invite each other to copulation.

The second kind of death-watch is an insect in appearance quite different from the first. The former only beats seven or eight strokes at a time, and quicker; the latter will beat some hours together without intermission; and his strokes are more leisurely, and like the beat of a watch. This latter is a small greyish insect, much like a louse when viewed with the naked eye.

It is very common in all parts of the house in the summer-months: it is very nimble in running to shelter, and shy of beating when disturbed; but will beat very freely before you, and also answer the beating, if you can view it without giving it disturbance, or shaking the place where it lies, &c. The author cannot say whether they beat in any other thing, but he never heard their noise except in or near paper. As to their noise, the same person is in doubt whether it be made by their heads, or rather snouts, against the paper; or whether it be not made after some such manner as grasshoppers and crickets make their noise. He inclines to the former opinion. The reason of his doubt is, that he observed the animal's body to shake and give a jerk at every beat, but could scarce perceive any part of its body to touch the paper. But its body is so small and near the paper, and its motion in ticking so quick, that he thinks it might be, yet he not perceive it. The ticking, as in the other, he judges to be a wooing act; as having observed another, after much beating, come and make offers to the beating insect, who, after some offers, left off beating, and got upon the back of the other. When they were joined, he left off again; and they continued some hours joined tail to tail, like dog and bitch in coition. Whether this insect changes its shape and becomes another animal or not, he cannot say; though he has some cause to suspect that it becomes a sort of fly. It is at first a minute white egg, much smaller than the nits of lice; though the insect is near as big as a louse. In March it is hatched, and creeps about with its shell on. When it first leaves its shell, it is even smaller than its egg; though that be scarce discernible without a microscope. In this state it is perfectly like the mites in cheese. From the mite-state they grow gradually to their mature perfect state. When they become like the old ones, they are at first very small, but run about much more swiftly than before.

DEBENTURE, a term of trade used at the custom-house for a kind of certificate signed by the officers of the customs, which intitles a merchant exporting goods to the receipt of a bounty or draw-back. All merchandises that are designed to be taken on board for that voyage being entered and shipped, and the ship being regularly cleared out, and sailed out of port on her intended voyage, debentures may be made out from the exporter's entries, in order to obtain the drawbacks, allowances, bounties, or premiums; which debentures

Death,
Debenture.

Debenture
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Decade.

debentures for foreign goods are to be paid within one month after demand. And in making out these debentures, it must be observed, that every piece of vellum, parchment, or paper, containing any debenture for drawing back customs or duties, must, before writing, be stamped, and pay a duty of 8d.

The forms of debentures vary according to the merchandize exported. In the execution of debentures for tobacco, it must be particularly observed, 1. That debentures for the same quantity may be made on one or more parchments. 2. That the exporter's oath must be printed, specifying whether he acts for himself or on commission. 3. If exported to any other foreign ports than Ireland, the word *Ireland* must be added to the oath after *Great Britain*. 4. That as no tobacco may be consumed on board of ships of war in Europe but what has paid full duties, and been manufactured in Great Britain, no drawback is to be allowed for tobacco exported in any man of war. 5. That the eight pounds *per* hoghead of 350 pounds, or more, allowed for draught at importation, must not be deducted on exportation. 6. That debentures for tobacco exported to Ireland must not be paid till a certificate be produced, testifying the landing thereof. 7. That no persons may swear to the exportation but such as are permitted to swear to debentures for other goods. In debentures for all other foreign goods, no person may be admitted to swear to the exportation but the true exporter, either as a proprietor, or who, being employed by commission, is concerned in the direction of the voyage. All kinds of debentures, before delivered or paid to the exporters, are entered into a separate book kept for that purpose by the collector and comptroller of the customs.

DEBITA FUNDI. See LAW, N^o clxvi. 1.

DEBITA Fruentium. See LAW, N^o clxx. 17.

DEBILITY, among physicians, a relaxation of the solids, occasioning oftentimes weaknesses and faintings.

DEBIR (anc. geog.), a sacerdotal city of Palestine, near Hebron; but neither distance, nor point of the compass on which it lies, can be determined. It was anciently called *Kariatb-sepher* or *Kirjath-sepher*, and *Kirjath-sanna* (Jofhua).—Another *Debir* in the tribe of Gad, beyond Jordan.

DEBRECHEN, a town of Upper Hungary, about 77 miles east of Buda. E. Long. 21. 10. N. Lat. 47. 45.

DEBRUIZED, in heraldry, a term peculiar to the English, by which is intimated the grievous restraint of any animal, debarred of its natural freedom, by any of the ordinaries being laid over it.

DEBT, in law, any thing due to another, whether it be money, goods, or services; or the action brought for recovering the same.

National DEBT. See FUNDS and NATIONAL Debt.

DEBTOR, a person who owes any thing to another; in contradistinction to creditor, which is he to whom the debt is owing.

DEBTOR, in merchants accounts. See BOOK-KEEPING.

DECAGON, in geometry, a plane figure with ten sides and ten angles.

DECADE, a word used by some old writers for the number ten, and *decades* for an enumeration by N^o 98.

The word is formed from the Latin *decas*, which is derived from a Greek word of the same import. The word has been more peculiarly appropriated to the number of books, *q. d. decades*, into which the Roman History of Titus Livius is divided. Hence also came *decadal* arithmetic, the *Decameron* of Boccaccio, &c.

DECAGYNIA (from *deka ten*, and *gynē a woman*), the name of an order, or secondary division, in the class *decandria*, of the sexual method, consisting of plants whose flowers are furnished with ten stamina and the same number of styles; which last are considered by Linnæus and the sexualists as the female organs of generation in plants. Neurada and American nightshade furnish examples.

DECALOGUE, the ten precepts or commandments delivered by God to Moses, after engraving them on two tables of stone.

The Jews, by way of excellence, call these commandments the *ten words*, from whence they had afterwards the name of *decalogue*: but it is to be observed, that they joined the first and second into one, and divided the last into two. They understand that against stealing to relate to the stealing of men, or kidnapping; alleging, that the stealing one another's goods or property is forbidden in the last commandment.

The emperor Julian objected to the decalogue, that the precepts it contained (those only excepted which concern the worship of false gods, and the observation of the sabbath) were already so familiar to all nations, and so universally received, that they were unworthy, for that very reason, to be delivered, by so great a legislator, to so peculiar a people. The church of Rome has struck the second commandment quite out of the decalogue; and to make their number complete, hath split the tenth into two: The reason of which may be easily conceived.

DECAN, a kingdom of Asia, in the peninsula on this side the Ganges, bounded on the south by the kingdom of Bijnagar, on the west by the ocean, on the north by Mogulistan, and on the east by the mountains which separate it from Golconda.

DECANDRIA (*deka ten*, and *andros a husband*), Linnæus's tenth class, comprehending those hermaphrodite plants which bear flowers with ten stamina. See BOTANY, p. 430.

DECANTATION, among chemists, &c. the gently pouring off a liquor from its fæces, by inclining the lip or canthus of the vessel; whence the name.

DECANUS, in Roman antiquity, an officer who presided over the other ten officers, and was head of the contubernium, or serjeant of a file of soldiers.

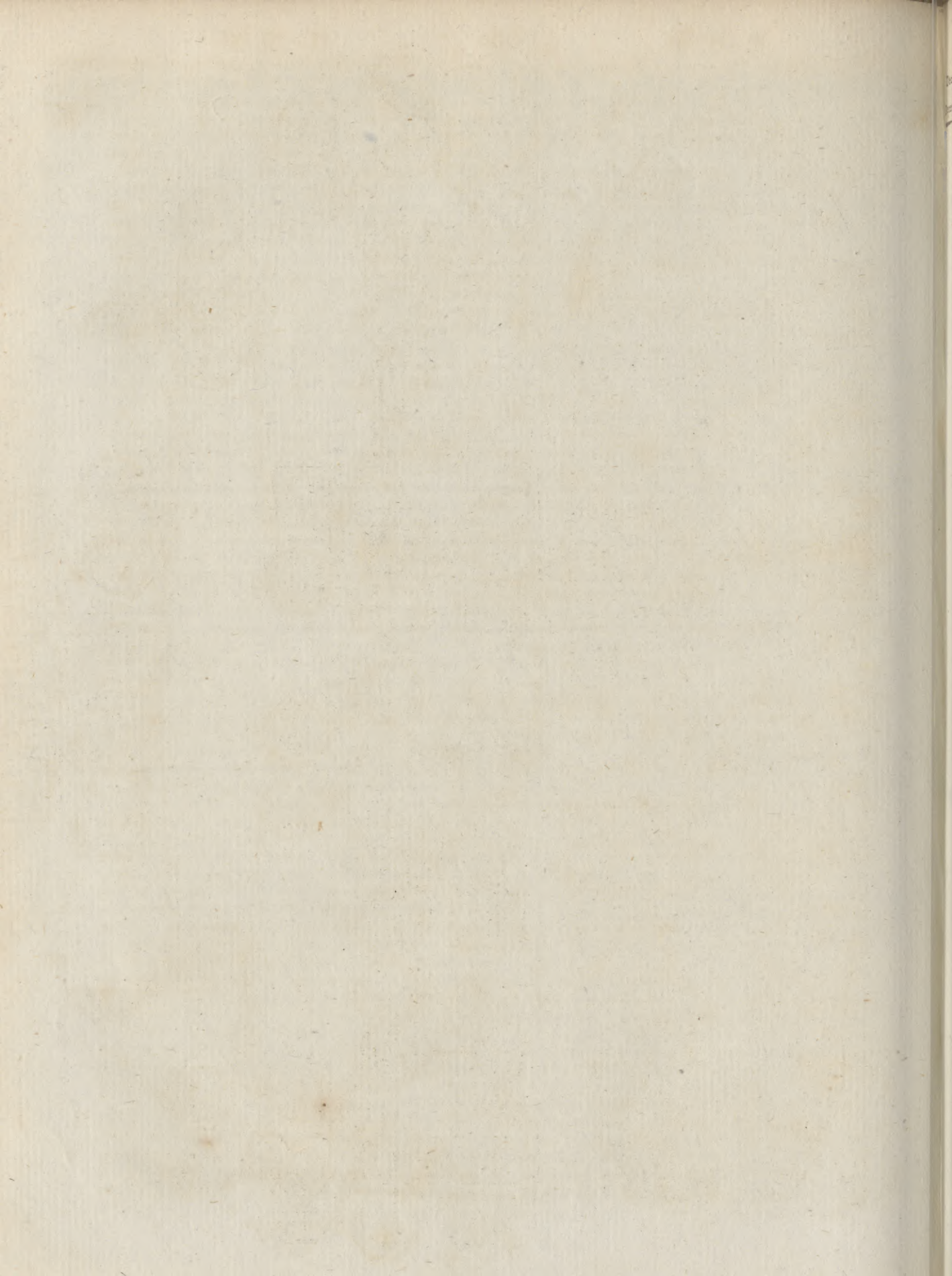
DECAPOLIS (anc. geog.), a district beyond Jordan, almost all of it belonging to the half tribe of Manasseh; before the captivity, called *Behsan*; but after occupied by heathens, who could not be driven out. It comprised, as the name denotes, ten principal cities on the other side the Jordan, if we except Scythopolis, which stood on this side, but its territory on the other.

DECAPROTI, DECEMPRIMI, in Roman antiquity, officers for gathering the tributes and taxes.

The decaproti were also obliged to pay for the dead, or to answer to the emperor for the quota parts of such as died out of their own estates.

DECASPERMUM, in botany; a genus of the monogynia order, belonging to the icofandria class of plants.

Decagynia
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Decaspermum.



Decastyle plants. The calyx is a turbinated perianthium, quinquefid at the apex. The corolla has five roundish petals. The stamina are many filiform filaments, a little shorter than the corolla. The pericarpium is a dry, globular, decemlocular berry, with solitary egg-shaped seeds.

DECASTYLE, in the ancient architecture, a building with an ordinance of ten columns in front, as the temple of Jupiter Olympius was.

DECEIT, in law, a subtle trick or device, to which may be added all manner of craft and collusion, or underhand practice, used to defraud another, by any means whatever.

DECEMBER, the last month of the year, wherein the sun enters the tropic of Capricorn, and makes the winter solstice.

In Romulus's year, December was the tenth month, whence the name, viz. from *decem* "ten:" for the Romans began their year in March.

The month of December was under the protection of Vesta. Romulus assigned it 30 days, Numa reduced it to 29, which Julius Cæsar increased to 31.

Under the reign of Commodus, this month was called, by way of flattery, *Amazonius*, in honour of a courtesan whom that prince passionately loved, and had got painted like an Amazon; but it only kept the name during that emperor's life.

At the latter end of this month they had the *juveniles ludi*; and the country people kept the feast of the goddess Vacuna in the fields, having then gathered in their fruits and sown their corn; whence seems to be derived our popular festival called *harvest-bone*.

DECEM PAGI (anc. geog.), a town of Belgica: Now *Dieuse*, in Lorrain, on the rivulet Seille or Selna, near the lake Lindre, about seven German miles to the north-east of Nancy.

DECEMPEDA, Δεκαπους, *ten-foot rod*, an instrument used by the ancients in measuring.

The decempeda was a rule or rod divided into ten feet; whence its name, from *decem* "ten," and *pes, pedis*, "foot." The foot was subdivided into twelve inches, and each inch into ten digits. The decempeda was used both in measuring of land, like the chain among us; and by architects to give the proper dimensions and proportions to the parts of their buildings, which use it still retains. Horace, lib. ii. od. 15. blaming the magnificence and delicacy of the buildings of his time, observes, that it was otherwise in the times of Romulus and Cato; that in the houses of private persons there were not then known any porticoes measured out with the decempeda, nor turned to the north to take the cool air.

DECEMVIRI, ten magistrates of absolute authority among the Romans. The privileges of the patricians raised dissatisfaction among the plebeians; who, though freed from the power of the Tarquins, still saw that the administration of justice depended upon the will and caprice of their superiors, without any written statute to direct them, and convince them that they were governed with equity and impartiality. The tribunes complained to the senate, and demanded that a code of laws might be framed for the use and benefit of the Roman people. This petition was complied with; and three ambassadors were sent to Athens and all the other Grecian states, to collect the laws of So-

lon and of all the other celebrated legislators of Greece. Upon the return of the commissioners it was universally agreed, that ten new magistrates called *Decemviri*, should be elected from the senate to put the project into execution. Their power was absolute, all other offices ceased after their election, and they presided over the city with regal authority. They were invested with the badges of the consul, in the enjoyment of which they succeeded by turns; and only one was preceded by the fasces, and had the power of assembling the senate and confirming decrees. The first decemvirs were Appius Claudius, T. Genutius, P. Sextus, Sp. Veturius, C. Julius, A. Manlius, Ser. Sulpitius, Pluratius, T. Romulus, Sp. Posthumius, in the year of Rome 302. Under them the laws which had been exposed to public view, that every citizen might speak his sentiments, were publicly approved of as constitutional, and ratified by the priests and augurs in the most solemn and religious manner. They were ten in number, and were engraved on tables of brass; two were afterwards added, and they were called the laws of the twelve tables, *leges duodecim tabularum*, and *leges decemvirales*. The decemviral power, which was beheld by all ranks of people with the greatest satisfaction, was continued; but in the third year after their creation the decemvirs became odious on account of their tyranny, and the attempt of Ap. Claudius to ravish Virginia totally abolished the office. The people were so exasperated against them, that they demanded them from the senate to burn them alive. Consuls were again appointed, and tranquillity re-established in the state.—There were other officers in Rome called decemvirs, who were originally appointed in the absence of the prætor to administer justice. Their appointment became afterwards necessary, and they generally assisted at sales called *substationes*, because a spear, *hasta*, was fixed at the door of the place where the goods were exposed to sale. They were called *decemviri litibus judicandis*. The officers whom Tarquin appointed to guard the Sibylline books were also called *decemviri*. They were originally two in number, called *duumviri*, till the year of Rome 388, when their number was increased to ten, five of which were chosen from the plebeians and five from the patricians. Sylla increased their number to fifteen, called *quindecemvirs*.

DECENNALIA, ancient Roman festivals, celebrated by the emperors every tenth year of their reign, with sacrifices, games, and largesses for the people. The emperor Augustus first instituted these solemnities, in which he was imitated by his successors. At the same time the people offered up vows for the emperor, and for the perpetuity of the empire; which were therefore called *vota decennalia*. Augustus's view in establishing the decennalia was to preserve the empire and the sovereign power without offence or restraint to the people. For during the celebration of this feast, that prince used to surrender up all his authority into the hands of the people; who, filled with joy, and charmed with the goodness of Augustus, immediately delivered it him back again.

DECHALES (Claudius Francis Miliet), an excellent mathematician, mechanic, and astronomer, descended from a noble family, and born at Chamberry in 1611. His principal performances are an edition of Euclid's elements of geometry, in which the unservice-

Decemviri
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Dechales.

Deciates
||
Decius

able propositions are rejected, and the uses of those retained, annexed; a discourse on fortification; and another on navigation. These with others have been collected first in 3 vols folio, and afterwards in 4, under the title of *Mundus Mathematicus*: being indeed a complete course of mathematics. He died in 1678, professor of mathematics in the university of Turin.

DECIATES, or *Deciati*, (anc. geog.) a people of Gallia Narbonensis, next the borders of Italy, on the Mediterranean. Now the diocese of Grace and Antibes. *Deciatum oppidum*, was a town situated between Antibes and Nice.

DECIDUOUS, an appellation chiefly used in respect of plants: thus, the calyx or cup of a flower is said to be *deciduous*, when it falls along with the flower-petals; and, on the contrary, it is called *permanent*, when it remains after they are fallen. Again, deciduous leaves are those which fall in autumn; in contradistinction to those of the ever-greens, which remain all the winter. See DEFOLIATION.

DECIL, in astronomy, an aspect or position of two planets, when they are distant from each other a tenth part of the zodiac.

DECIMAL ARITHMETIC, the art of computing by decimal fractions. See ARITHMETIC.

DECIMATION, a punishment inflicted by the Romans, on such soldiers as quitted their posts, or behaved themselves cowardly in the field. The names of the guilty were put into an urn or helmet, and as many were drawn out as made the tenth part of the whole number, and those were put to the sword, and the others saved. This was called *decimare*; a word of the ancient Roman militia, who, to punish whole legions when they had failed in their duty, made every tenth soldier draw lots, and put him to death for an example to the others.

As the Romans had their *decimatio*, they had also the *vicefimatio*, and even *centesimatio*, when only the 20th or 100th man suffered by lot.

DECIPHERING, the art of finding the alphabet of a cipher. For the art both of CIPHERING and Deciphering, see the article CIPHER.

DECIUS MVS, a celebrated Roman consul, who, after many glorious exploits, devoted himself to the gods manes for the safety of his country in a battle against the Latins, about 340 years before the Augustan age. His son Decius imitated his example, and devoted himself in like manner in his fourth consulship, when fighting against the Gauls and Samnites. His grandson also did the same in the war against Pyrrhus and the Tarentines. This action of devoting oneself was of infinite service to the state. The soldiers were animated by the example, and induced to follow with intrepidity a commander who, arrayed in an unusual dress, and addressing himself to the gods with solemn invocation, rushed into the thickest part of the enemy to meet his fate.

DECIUS (Cn. Metius, Q. Trajanus), a native of Pannonia, sent by the emperor Philip to appease a sedition in Mœsia. Instead of obeying his master's command, he assumed the imperial purple, and soon after marched against him, and at his death became the only emperor. He signalized himself against the Persians; and when he marched against the Goths, he pushed his horse into a deep marsh, from which he could not

extricate himself, and he perished with all his army by the darts of the barbarians, A. D. 251, after a reign of two years.

DECK of a SHIP, (from *decken*, Dan. to cover); the planked floors of a ship, which connect the sides together, and serve as different platforms to support the artillery and lodge the men, as also to preserve the cargo from the sea in merchant vessels. As all ships are broader at the lower deck than on the next above it, and as the cannon thereof are always heaviest, it is necessary that the frame of it should be much stronger than that of the others; and for the same reason the second or middle deck ought to be stronger than the upper deck or forecattle.

Ships of the first and second rates are furnished with three whole decks, reaching from the stem to the stern, besides a forecattle and a quarter-deck, which extends from the stern to the mainmast; between which and the forecattle a vacancy is left in the middle, opening to the upper deck, and forming what is called the *waist*. There is yet another deck above the hinder or aftmost part of the quarter-deck, called the *poop*, which also serves as a roof for the captain's cabin or couch.

The inferior ships of the line of-battle are equipped with two decks and a half; and frigates, sloops, &c. with one gun-deck and a half, with a spar-deck below to lodge the crew.

The decks are formed and sustained by the beams, the clamps, the water-ways, the carlings, the ledges, the knees, and two rows of small pillars called *flanchions*, &c. See those articles.

That the figure of a deck, together with its corresponding parts, may be more clearly understood, we have exhibited a plan of the lower-deck of a 74 gun ship in Plate CLVI. And as both sides of the deck are exactly similar, the pieces by which it is supported appear on one side, and on the other side the planks of the floor of which it is composed, as laid up on those upper pieces.

A, the principal or main hatch-way.

B, the stern-post.

C, the stem.

D, the beams, composed of three pieces, as exhibited by D, in one of which the dotted lines show the arrangement of one of the beams under the other side of the deck.

E, part of the vertical or hanging knees.

F, the horizontal or lodging knees, which fasten the beams to the sides.

G, the carlings ranging fore and aft, from one beam to another.

H, the gun-ports.

I, the pump-ways, being large wooden tubes, which return the water from the pumps into the sea.

K, the spurs of the beams, being curved pieces of timber serving as half-beams to support the decks, where a whole beam cannot be placed on account of the hatchways.

L, the wing-transom, which is bolted by the middle to the stern-post, and whose ends rest upon the fashion-pieces.

M, the bulk-head or partition, which incloses the manger, and prevents the water which enters at the hawle-holes from running aft between decks.

Deck.

NN, the fore hatch-way.

OO, the after hatch-way.

P, the drum-head of the gear capstern.

P p, the drum-head of the main capstern.

Q, The wing-transom knee.

R, one of the breast-hooks under the gun-deck.

S, the breast-hook of the gun-deck.

T T, the station of the chain-pumps.

V, the breadth and thickness of the timbers at the height of the gun-deck.

U U, scuttles leading to the gunner's store-room, and the bread-room.

W, the station of the fore-mast.

X, the station of the main-mast.

Y, the station of the mizen mast.

Z, the ring-bolts of the decks, used to retain the cannon whilst charging.

aa, The ring-bolts of the sides whereon the tackles are hooked that secure the cannon at sea.

ca a d, The water ways, through which the scupper holes are pierced, to carry the water off from the deck into the sea.

bb, Plan of the foremost and aftmost cable-bits, with their cross-pieces gg, and their standards e e.

Thus we have represented on one side all the pieces which sustain the deck with its cannon; and on the other side, the deck itself, with a tier of 32 pounders planted in battery thereon. In order also to show the use of the breeching and train-tackle, one of the guns is drawn in as ready for charging.

The number of beams by which the decks of ships are supported, is often very different, according to the practice of different countries; the strength of the timber of which the beams are framed; and the services for which the ship is calculated.

As the deck which contains the train of a fire-ship is furnished with an equipage peculiar to itself, the whole apparatus is particularly described in the article *FIRE-SHIP*.

Flash-Deck implies a continued floor laid from stem to stern, upon one line, without any stops or intervals.

Half-Deck, a space under the quarter deck of a ship of war, contained between the foremost bulk-head of the steerage and the fore-part of the quarter-deck. In the colliers of Northumberland the steerage itself is called the *half-deck*, and is usually the habitation of the crew.

DECLAMATION, a speech made in public, in the tone and manner of an oration, uniting the expression of action to the propriety of pronunciation, in order to give the sentiment its full impression upon the mind. According to the manners and customs of the present age, public harangues are made only, 1. In the pulpit. 2. In the senate, in council, or other public assembly. 4. By public professors. 5. On the theatre.

I. With regard to the declamation of the pulpit, the dignity and sanctity of the place, and the importance of the subject, require the preacher to exert the utmost powers of his voice to produce a pronunciation that is perfectly distinct and harmonious, and that he observe a deportment and action which is expressive and graceful. No man, therefore, who is destitute of a voice, should ascend the pulpit, and there act the part of a

pantomime before his audience. The preacher should not, however, roar like a common cryer, and rend the ear with the voice of thunder; for such kind of declamation is not only without meaning and without persuasion, but highly incongruous with the meek and gentle expressions of the gospel. He should likewise take particular care to avoid a monotony; his voice should rise from the beginning, as it were by degrees, and its greatest strength should be exerted in the application. Each inflexion of the voice should be adapted to the phrase, and to the meaning of the words; and each remarkable expression should have its peculiar inflexion. The dogmatic requires a plain, uniform tone of voice only; and the menaces of the gospel demand a greater force than do its promises and rewards: but the latter should not be pronounced in the soft tone of a flute, nor the former with the loud sound of a trumpet. The voice should still retain its natural tone in all its various inflexions. Happy is that preacher, to whom nature has given a voice that is at once strong, flexible, and harmonious.

An air of complacency and benevolence, as well as devotion, should be constantly visible in the countenance of the preacher. But every appearance of affectation must be carefully avoided: for nothing is so disgusting to an audience, as even the semblance of dissimulation. Eyes constantly rolling, turned towards heaven, and streaming with tears, rather denote a hypocrite, than a man possessed of the real spirit of religion, and that feels the true import of what he preaches. An air of affected devotion infallibly destroys the efficacy of all that the preacher can say, however just and important it may be. On the other hand, he must avoid every appearance of mirth or raillery, or of that cold unfeeling manner which is so apt to freeze the hearts of his hearers.

The body should be in general erect, and in a natural and easy attitude. The perpetual movement, or contortion, of the body, has a ridiculous effect in the pulpit, and makes the figure of a preacher and a harlequin much too similar. But, on the other hand, he ought not to remain constantly upright and motionless, like a speaking statue.

The motions of the hands give a strong expression to a discourse; but they should be constantly decent, grave, noble, and expressive. The preacher, who is incessantly in action, who is perpetually clasping his hands, or who menaces with a clenched fist, or counts his arguments on his fingers, will only excite mirth among his auditory. In a word, declamation is an art that the sacred orator should study with the utmost assiduity. The design of a sermon is to convince, to affect, and to persuade. The voice, the countenance, and the action, which are to produce this triple effect, are therefore the objects to which the preacher should particularly apply himself.

II. The declamation of a minister or statesman in the senate, in council, or other public assembly, is of a more unconfined nature. To persuade, to move the passions, and gain an ascendancy in a public assembly, the orator should himself feel the force of what he says, and the declamation should only express that internal sensation. But nothing should be carried to excess. A suavity in the tone of voice, a dignity of deportment, a graceful action, and a certain tranquillity of countenance,

Declamation.

Brieffield's Elements

Declama-
tion,

nance, should constantly accompany the statesman when he speaks in public, even when he is most earnestly engaged in debate, or when he is addressing his sovereign in person. A pleasing tone of voice, and a distinct pronunciation, prejudice the hearers greatly in the speaker's favour. A young man may improve these to a surprising degree. Demosthenes, who had a natural impediment in his speech, was accustomed to go to the sea-shore, and partly filling his mouth with pebbles he declaimed with a loud voice. The stones by degrees gave a volubility to his tongue, and the roaring of the waves reconciled him insensibly to the noise of the multitude.

III. The principal object of a public professor is the instruction of the studious youth: for which purpose, he is to convince and persuade. Every tone of voice, every expression of the countenance, or action of the body, which can produce this effect by enforcing the words, should therefore be employed by those who are to teach the sciences. There is, moreover, one very essential reflection which every professor ought to make, and which is, that the chair, from which he harangues, is surrounded by young students, naturally possessed with vivacity, not unfrequently ludicrous, and for the most part previously instructed in the preparatory sciences. They are therefore constantly inclined to criticise, to jest, and to ridicule: for which reason, the professor should endeavour to inspire them with respect and attention, by a grave, commanding, and venerable countenance; and carefully avoid all appearance of grimace in his action, and every kind of affectation in his discourse, that he may not afford the least opportunity for pleasantries.

IV. We are now come to *theatric declamation*.

1. This was very different among the ancients from what it is, and ought to be, with us, from the nature of the thing itself, and from the difference of circumstances. Numberless passages in Quintilian, and other ancient historians, critics, grammarians, and commentators, evidently prove, that the ancient dramatic declamation was subservient to the rules of the musical rhythmus; and by this, according to Aristides*, their action, as well as recital, was regulated. But to explain this seeming paradox, it will be necessary to make here some preliminary remarks. The ancients gave a much more extensive signification than we do to the word *music* (*musica*), which they derived from the muses, or at least from some of them. It is for this reason, that the same Aristides and Quintilian define it to be "An art that teaches all that relates to the use of the voice, and the manner of performing all the motions of the body with grace:" *Ars decoris in vocibus & motibus*. Therefore poetry, declamation, dancing, pantomimes, and many other gestures and exercises, were subservient to this art.

2. That part of general music which taught the art of declamation and gesture according to the rules of an established method (and which we perform by instinct, or at most by the aid of common sense), was distinguished by the name of *hypocritic music*: and this musical art was called by the Greeks *orchestis*; and by the Romans *saltatio*. It was, however, so far from being an advantage to the ancients to have had this art, which we have not, that it was, on the contrary, a mark of great imperfection. For, in the first place, it was an

instance of high absurdity to represent a tragedy, or comedy, before an audience of twenty thousand people, the far greatest part of whom could neither hear nor see what passed to any good purpose, unless they were possessed of organs which we have not. The theatres of London and Paris may conveniently contain about a thousand persons; and that is found sufficient in the most populous cities, where there are several places of entertainment on the same day, and where the people are reasonable enough to succeed each other in their diversions. As the features of the face could not be distinguished at so great a distance, and still less the alteration of countenance in order to represent the different passions, they were obliged to have recourse to *masks*; a wretched, childish invention, that destroyed all the strength and variety of expression. Their action became extravagant; and, at the same time, subservient to a regular mechanism, which prevented all the refinement, and all the pleasure of surprise, in the performance; and must have had an effect horribly disagreeable to those who were placed near the stage.

3. The egregious imperfection of their language likewise, which consisted of syllables long and short, whose duration was determined by a set measure of time, and their manner of tuning these syllables, after the method of the orchestis of the Greeks, was another disadvantage. For by this means they determined by notes or characters placed after the long and short syllables, not only the nature, but the duration, of each action. Now, nothing could be more affected, more constrained and disgusting, than such method of declaiming. How far superior in this respect are the moderns, who consult nature alone in their theatric declamation; who can make the audience hear each sigh; who can accompany it with a proper attitude; who can incessantly vary their action; who can seize the lucky moment, and make the countenance fully express the sensations of the mind? Nature does all here; and art, infinitely inferior to nature, did all among the ancients. Modern declamation cannot be subservient to a musical rhythmus, seeing we speak rapidly, and without affectation. Our actors learn their art without art, from nature itself, assisted by reflection; and they arrive at a degree of excellence infinitely greater than that of the ancients, by a method far more simple, and by efforts incomparably more easy.

4. We do not, moreover, precisely know what the theatric declamation of the ancients was; nor what were the musical instruments which accompanied that declamation. The title to the Eunuch of Terence says, for example, "That Flaccus, the freedman of Claudius, made the music of that piece, in which he employed the two flutes, the right and the left." These flutes, it is likely, gave the tone to the actor; which must have had a very odd effect on the audience. Most of the ancient pieces have similar titles. They who would be particularly informed of the art of declaiming among the Greeks and Romans, may read to advantage the Critical Reflections on Poetry and Painting by the Abbé du Bos. The third part of that work consists entirely of learned researches and ingenious reflections on this silly practice of the ancients. But as this art has happily no place in modern declamation, and can at best serve only to make a parade

*De Musica,
lib. i.

of erudition, we shall say no more of it, but pass to matters of real utility.

5. We think there is good reason to believe, moreover, that the most polished nations of modern Europe do not accompany their discourses, in general, with so many gesticulations, as did the Greeks, the Romans, and other inhabitants of warm climates. They appear to have found the method of animating a discourse, and giving it an expression, by the simple inflections of the voice, and by the features of the countenance; which is far more decent, more just, and rational, than all those contortions which perpetually derange the natural attitude of the body and its members, and give the speaker the air of a harlequin.

6. *Expression*, therefore, forms at once the essence and the end of declamation; and the means of producing it consists in a pronunciation that is sonorous, distinct, and pleasing, supported by an action that is decent and proper to the subject. If the best dramatic poet has need of a good declaimer or actor to make his writing produce its proper effect, the actor has likewise need of a good poet to enable him to please and affect by his action: for it is to little purpose that he endeavours to charm his auditory by uniting, with nature, all the powers of art, if the poet has not furnished him with sentiments that are rational and affecting.

7. The actor, in studying his part before a large mirror, where he can see his whole figure, in order to determine the most proper expression for every thought, should consult nature, and endeavour to imitate her. But, in this imitation, he should take care not to make too servile a copy. He has this to observe, in common with his colleagues, the masters in all the polite arts: The theatre is intended to exhibit an imitation of nature, and not nature itself. Tragedy and comedy form pictures of human life; but these pictures are also pieces of perspective, which require strokes somewhat stronger than nature, that they may be discerned at a distance. The actor is elevated to a considerable height from the ground; he is surrounded by scenery, he is separated from the audience by the orchestra, and he speaks in verse; all this is not natural: but the spectator is to accede to this necessary illusion, in order to promote his own pleasure, which would not be so great as it is were all these matters otherwise disposed. Declamation, therefore, should somewhat exceed, but never lose sight of, nature.

8. The tone of the actor's voice should be natural, but regulated by the extent of the theatre; sufficiently loud to be heard by all the audience, but not so violent as to rend their ears. A pure and graceful pronunciation, without any provincial accent, is likewise a great merit in an actor; and he should also habituate himself to speak in a manner perfectly distinct. It is a capital point in the pronouncing of verse, not to separate the two hemistichs, by resting too long on the *caesura* in the middle, or dwelling on the end of each hemistich: for, by so doing, the actor falls into a monotony, an insufferable uniformity of cadence, in a piece that consists of some thousand verses. The gradations of the voice demand also a very judicious observance. The speaker, who begins in a high tone, will find it very difficult to sustain it through the whole piece; and he, who clamours incessantly, will find his

lungs fail him in those parts where the vehemence of passion requires the strongest efforts. If we may be allowed the expression, the strongest touches, the boldest figures, will not there stand out from the picture in a striking manner.

9. The deportment of an actor should be constantly graceful, decent, and proper to the character he represents. An old man has a different position of body from a young *petit maitre*; an aged queen from a young prince; a noble gallant from a valet de chambre. A rational observance of nature, and an imitation of the best actors, are here the surest guides. The same may be said of the action of the hands, the theatrical step, &c. An inanimated figure, a body in the position of a statue, and hands immoveable, are as displeasing in the scene as a player whose incessant gesticulation resembles the action of a puppet.

10. Every actor who aspires to make his art something more than merely mechanical, will begin by enabling himself readily to repeat his part, that the defect of his memory may not embarrass his action. When he is so far a master of it, he will make it the subject of serious reflection in his closet; endeavour to seize the true sense of the author; and to find out that expression of each sentiment and passion, which is the most natural, the most striking, and best adapted to the stage; and which he will cultivate by repeated essays, till he is able to render it in its full force.

DECLARATORY ACTION. See LAW, N^o clxxxii. 21.

DECLENSION, in grammar, an inflection of nouns according to their divers cases; as nominative, genitive, dative, &c. See GRAMMAR.

DECLINATION, in astronomy, the distance of any celestial object from the equinoctial, either northward or southward. It is either true or apparent, according as the real or apparent place of the object is considered. See ASTRONOMY, n^o 409, 410.

DECLINATION of the *Sea-Compass* or *Needle*, is its variation from the true meridian of any place.

DECLINATION of a *Wall* or *Plane*, for *Dials*, is an arch of the horizon, contained either between the plane and the prime vertical circle, if you reckon it from the east or west; or else between the meridian and the plane, if you account it from the north or south. See DIAL.

DECLINATORIES, are instruments for taking the declinations, inclinations, and reclinations of planes; and they are of several kinds.

The best sort for taking the declination consists of a square piece of brass or wood, with a limb accurately divided into degrees; and every fifth minute, if possible, having a horizontal dial moving on the centre, made for the latitude of the place it is to serve in; and which has a small bit of fine brass fixed on its meridian line, like a fiducial edge, to cut the degrees of the limb: for at any time when the sun shines, by having the hour of the day, you may find the declination of any wall or plane by this instrument.

DECLINATURE of JUDGES. See LAW, N^o clvi.

12.

DECLIVITY denotes the reverse of ACCLIVITY.

DECOCTION, usually signifies either the action of boiling a substance in water, or the water itself in which the substance has been boiled. It is only applicable

Declarato-
ry
Decoction.

Decollation cable to matters containing some principles soluble in water; such particularly are animal and vegetable matters. **Decoction** ought not to be used with such substances as contain any volatile principles, as they would be dissipated in the air during the process. But it may be safely used, nay even becomes necessary, when the matters to be treated are solid, and of a close and compact texture; because then the water could not extract its principles without a boiling heat. Most soft animal matters, as flesh, skin, tendons, may be conveniently boiled in water; because they contain no principle volatile with a boiling heat. Water extracts from them nothing but a gelatinous substance, and some oily parts which float on the surface of the water. All vegetable matters which are inodorous, and particularly those which are hard, as roots, barks, &c. are generally boiled, when an extraction of their principles by water is required.—To this rule, however, there are some exceptions. Peruvian bark, for instance, gives its strength to cold water better than to such as is boiling hot. Many other vegetables also have the same property of yielding less to boiling than to cold water. And therefore a general rule may be established, that decoction ought not to be employed but when absolutely necessary; that is, when the same principles, or the same quantities of those principles, cannot be obtained by an infusion, and that without heat, if it can be so done, considering that the proximate principles of vegetables are generally so delicate, and so susceptible of change and decomposition, that frequently the most gentle heat changes much their nature and properties.

DECOLLATION, BEHEADING, a term seldom used but in the phrase *decollation* of St John Baptist; which denotes a painting, wherein is represented the Baptist's head struck off from his trunk; or the feast held in honour of that martyr.

DECOMPOSITION, in chemistry, usually signifies the division or separation of the constituent parts of bodies.—It differs from mere mechanical division, in that when a body is chemically decomposed, the parts into which it is resolved are essentially different from the body itself; but though a mechanical force is applied to it ever so long, or with ever so much violence, the minutest particles into which the body may be reduced, still retain their original nature.—Thus, for example, though we suppose nitre, or any other salt, to be reduced to ever so fine powder, each particle retains the nature of nitre, as much as the largest unpounded mass; but if oil of vitriol is applied, a decomposition takes place, and one of the component parts of the nitre rises in the form of a smoking acid spirit, which never could have been suspected to lie hid in the mild neutral salt.

DECORATION, in architecture, any thing that adorns and enriches a building, church, triumphal arch, or the like, either without side or within.

The orders of architecture contribute greatly to the decoration; but then the several parts of those orders must have their just proportions, characters, and ornaments; otherwise the finest order will bring confusion rather than richness. See **ARCHITECTURE**.

Decorations in churches, are paintings, vases, festoons, &c. occasionally applied to the walls; and with so much conduct and discretion, as not to take off any

thing from the form of the architecture: as is much practised in Italy at the solemn feasts.

DECORATION is more particularly applied to the scenes of theatres.

In operas, and other theatrical performances, the decorations must be frequently changed conformably to the subject.

The ancients had two kinds of decorations for their theatres: the first, called *versatiles*, having three sides, or faces, which were turned successively to the spectators: the other called *dutiles*, showing a new decoration by drawing or sliding another before it.—This latter sort is still used, and apparently with much greater success than among the ancients, who were obliged to draw a curtain whenever they made a change in the decoration; whereas on our stage the change is made in a moment, and almost without being perceived.

DECORUM, in architecture, is the suitableness of a building, and the several parts and ornaments thereof, to the station and occasion.

DECOUPLE, in heraldry, the same as uncoupled: thus a chevron decouple, is a chevron wanting so much of it towards the point, that the two ends stand at a distance from one another, being parted and uncoupled.

DECOY, in naval affairs, a stratagem employed by a ship of war to betray a vessel of inferior force into an uncautious pursuit, till she has drawn her within the range of her cannon, or what is called within *gunshot*. It is usually performed by painting the stern and sides in such a manner as to disguise the ship, and represent her either much smaller and of inferior force, or as a friend to the hostile vessel, which she endeavours to ensnare, by assuming the emblems and ornaments of the nation to which the stranger is supposed to belong. When she has thus provoked the adversary to chase, in hopes of acquiring a prize, she continues the decoy, by spreading a great sail, as endeavouring to escape; at the same time that her course is considerably retarded by an artful alteration of her trim till the enemy approaches. Decoying is also performed to elude the chase of a ship of a superior force in a dark night, by throwing out a lighted cask of pitch into the sea, which will burn for a considerable time and misguide the enemy. Immediately after the cask is thrown out, the ship changes her course, and may easily escape if at any tolerable distance from the foe.

DECOY, among fowlers, a place made for catching wild-fowl. A decoy is generally made where there is a large pond surrounded with wood, and beyond that a marshy and uncultivated country: if the piece of water is not thus surrounded, it will be attended with the noise and other accidents which may be expected to frighten the wild-fowl from a quiet haunt, where they mean to sleep, during the day-time, in security. If these noises or disturbances are wilful, it hath been held that an action will lie against the disturber.—As soon as the evening sets in, the decoy *rises* (as they term it), and the wild fowl feed during the night. If the evening is still, the noise of their wings, during their flight, is heard at a very great distance, and is a pleasing though rather melancholy sound. This *rising* of the decoy in the evening, is in Somersetshire called *raddling*.

The decoy-ducks are fed with hempseed, which is thrown over the skreens in small quantities, to bring them forwards into the pipes or canals, and to allure the wild fowl to follow, as this seed is so light as to float.

There are several *pipes*, as they are called, which lead up a narrow ditch that closes at last with a funnel-net. Over these pipes (which grow narrower from their first entrance) is a continued arch of netting suspended on hoops. It is necessary to have a pipe or ditch for almost every wind that can blow, as upon this circumstance it depends which pipe the fowl will take to; and the decoy-man always keeps on the leeward side of the ducks, to prevent his effluvia reaching their sagacious nostrils. All along each pipe, at certain intervals, are placed skreens made of reeds, which are so situated, that it is impossible the wild-fowl should see the decoy-man, before they have passed on towards the end of the pipe, where the purse-net is placed. The inducement to the wild-fowl to go up one of these pipes is, because the decoy-ducks trained to this lead the way, either after hearing the whistle of the decoy-man, or enticed by the hempseed; the latter will dive under water, whilst the wild-fowl fly on, and are taken in the purse.

It often happens, however, that the wild-fowl are in such a state of sleepiness and dozing, that they will not follow the decoy-ducks. Use is then generally made of a dog, who is taught his lesson: he passes backwards and forwards between the reed skreens (in which are little holes, both for the decoy-man to see, and the little dog to pass through); this attracts the eye of the wild-fowl, who, not choosing to be interrupted, advance towards the small and contemptible animal, that they may drive him away. The dog all the time, by the direction of the decoy-man, plays among the skreens of reeds, nearer and nearer the purse-net; till at last, perhaps, the decoy-man appears behind a skreen, and the wild fowl not daring to pass by him in return, nor being able to escape upwards on account of the net-covering, rush on into the purse-net. Sometimes the dog will not attract their attention, if a red handkerchief, or something very singular, is not put about him.

The general season for catching fowl in decoys, is from the latter end of October till February: the taking of them earlier is prohibited by an act 10 *Geo II.* c. 32. which forbids it from June 1st to October 1st, under the penalty of five shillings for each bird destroyed within that space.

The Lincolnshire decoys are commonly set at a certain annual rent, from 5 to 20 pounds a-year: and there is one in Somersetshire that pays 30l. The former contribute principally to supply the markets in London. Amazing numbers of ducks, wigeons, and teal, are taken: by an account sent us * of the number caught a few winters past, in one season, and in only ten decoys, in the neighbourhood of Wainfleet, it appeared to amount to 31,200, in which are included several other species of ducks: it is also to be observed, that, in the above particular, wigeon and teal are reckoned but as one, and consequently sell but at half price of the ducks. This quantity makes them so cheap on the spot, that we have been assured, several decoy-men would be content to contract for years to deliver their ducks at Boston, for 10d. per couple. The account of

the numbers here mentioned, relates only to those that were sent to the capital.

It was customary formerly to have in the fens an annual *driving* of the young ducks before they took wing. Numbers of people assembled, who beat a vast tract, and forced the birds into a net placed at the spot where the sport was to terminate. A hundred and fifty dozens have been taken at once: but this practice being supposed to be detrimental, has been abolished by act of parliament.

DECREE, an order made by a superior power for the regulation of an inferior.

DECREE, in the civil law, is a determination which the emperor pronounces upon hearing a particular cause between the plaintiff and defendant.

DECREES of Councils, are the laws made by them, to regulate the doctrine and policy of the church.

DECREES in Chancery, are the determination of the lord-chancellor, upon a full hearing of the merits of a cause.

DECREET, in the law of Scotland, a final decree or judgment of the lords of session, from which an appeal only lies to parliament.

DECREET-Arbitral, in Scots law, the sentence or judgment of one to whom parties voluntarily submit the determination of any question betwixt them *.

DECREMENT, in heraldry, signifies the wane of the moon from the full to the new. The moon in this state is called *moon decrescens*, or in *decours*; and when borne in coat-armour, faces to the left side of the escutcheon, as she does to the right side when in the increment.

DECREPITATION, in chemistry, signifies the quick separation of the parts of a body, occasioned by a strong heat, and accompanied with noise and crackling. This effect is most frequently produced by water contained betwixt the parts of the decrepitating body, when these parts have a certain degree of adhesion together. This water being quickly reduced into vapour by the heat suddenly applied to it, rarifies, and bursts with noise the parts which compress it. The bodies most subject to decrepitation are certain salts, such as common salt, vitriolated tartar, nitre of lead, &c. the decrepitation of all which proceeds from the water of their crystallization. Clays which are not perfectly dry, and flints, are also subject to decrepitation.

DECREPITUDE, in medicine, the consequence of the infirmities of old age; which by degrees leads to death. See DEATH.

DECRETAL, in the canon law, a letter of a Pope determining some point or question in the ecclesiastical law. The decretals compose the second part of the canon law. The first genuine one, acknowledged by all the learned as such, is a letter of Pope Siricius, written in the year 385, to Himerus bishop of Tarragona, in Spain, concerning some disorders which had crept into the churches of Spain. Gratian published a collection of decretals, containing all the ordinances made by the popes till the year 1150. Gregory IX. in 1227, following the example of Theodosius and Justinian, formed a constitution of his own, collecting into one body all the decisions and all the causes which served to advance the papal power; which collection of decretals was called the *pentateuch*, because it contains five books.

DECUMARIA,

Decree
||
Decretal.

* See Law,
11^o clxxx.
15.

Decumaria
||
Dedication.

DECUMARIA, in botany: A genus of the monogynia order, belonging to the dodecandria class of plants; and in the natural method ranking under those of which the order is doubtful. The calyx is decapylous, superior; the petals ten; the fruit unknown.

DECUMATES AGRĪ, tithed fields, or granted on a tithes, as appears from Tacitus, to that rabble of Gauls who succeeded the Marcomanni, that had till then proved a check to the Roman conquests up the Rhine; and hence probably their name, people living on the marches or limits of the empire. In Cicero we have *Ager Decumans*, which is of the same import with the *Ager Decumas* of Tacitus.

DECUPLE PROPORTION, that of ten to one.

DECURIO, a subaltern officer in the Roman armies. He commanded a *decuria*, which consisted of ten men, and was the third part of a *turma*, or the 30th part of a *legio* of horse which was composed of 380 men. There were certain magistrates in the provinces called *decuriones municipales*, who formed a body to represent the Roman senate in free and corporate towns. They consisted of ten; whence the name and their duty extended to watch over the interests of their fellow citizens, and to increase the revenues of the commonwealth. Their court was called *curia decurionum* and *minor senatus*; and their decrees, called *decreta decurionum*, were marked with two D. D. at the top. They generally styled themselves *civitatum patres curiales* and *honorati municipiorum senatores*. They were elected with the same ceremonies as the Roman senators; they were to be at least 25 years of age, and to be possessed of a certain sum of money. The election happened in the kalends of March.

DECURRENT LEAF. See **BOTANY**, p. 440.

DECURY, ten persons ranged under one chief or leader, called the *decurio*.

The Roman cavalry was divided into *decuries*, which were subdivisions of a century, each century containing ten *decuries*.

DECUSSATION, a term in geometry, optics, and anatomy, signifying the crossing of two lines, rays, or nerves, when they meet in a point, and then go on separately from one another.

DECUSSORIUM, a surgeon's instrument, which, by pressing gently on the *dura mater*, causes an evacuation of the *pūs* collected between the cranium and the before mentioned membrane, through the perforation made by the *trepān*.

DEDHAM, a town of Essex in England, consisting of about 400 lofty houses. The streets are not paved, but very clean, occasioned by their lying pretty high. It has one large old church, remarkable for a fine Gothic steeple, with a great deal of carved work about it, but much injured by time. E. Long. 1. 10. N. Lat. 52. 5.

DEDICATION, the act of consecrating a temple, altar, statue, palace, &c. to the honour of some deity.

The use of dedications is very ancient both among the worshippers of the true God and among the heathens: the Hebrews call it *חֲבֻלָּה* *hbanuchab*, "imitation;" which the Greek translators render *Εἰκωνισμός*, and *Εἰκωνισμός*, "renewing."

In the scripture we meet with dedications of the tabernacle, of altars, of the first and second temple, and even of the houses of private persons. There are also
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dedications of vessels, and garments of the priests and Levites, and even of the men themselves.

The heathens had also dedications of temples, altars, and images of their gods, &c. Nebuchadnezzar held a solemn dedication of his statue, *Dan. iii. 2.* Pilate dedicated gilt bucklers at Jerusalem to Tiberius, *Philo de legat.* Petronius would have dedicated a statue to the emperor in the same city, *ibid. p. 791.* Tacitus, *Hist. lib. iv. c. 53.* mentions the dedication of the capitol, upon rebuilding it by Vespasian, &c.

The Jews celebrated the anniversary of the dedication of their temple every year for eight days. This was first enjoined by Judas Maccabeus, and the whole synagogue, in the year of the Syro-Macedonian era 148, *i. e.* 164 years before Christ. The heathens had the like anniversaries, as that of the dedication of the temple of Parthenope, mentioned by Lycophron. Under Christianity, dedication is only applied to a church; and is properly the consecration thereof performed by a bishop, with a number of ceremonies prescribed by the church.

The Christians finding themselves at liberty under Constantine, in lieu of their ruinous churches, built new ones in every place; and dedicated them with a deal of solemnity. The dedication was usually performed in a synod; at least they assembled a number of bishops to assist at the service. We have the description of those of the churches at Jerusalem and Tyre in Eusebius, and many others in later writers.

DEDICATION, in literature, is an address prefixed to a book, soliciting patronage, or testifying respect for the person to whom it is made. The dedication of the fourth part of Mr Edwards's History of Birds, is curious: *To God! the ONE eternal! the incomprehensible! the omnipresent! omniscient and almighty Creator of all things that exist! from orbs immeasurably great to the minutest points of matter, this Atom is dedicated and devoted, with all possible gratitude, humiliation, and worship, and the highest adoration both of body and mind, by his most resigned, low, and humble creature, G. E.*

DEE (John), a famous mathematician and astrologer, was born (July 1527) in London, where his father was a wealthy vintner. In 1542, he was sent to St John's college, Cambridge. After five years close application to mathematical studies, particularly astronomy, he went to Holland, in order to visit several eminent mathematicians on the continent. Having continued abroad near a year, he returned to Cambridge; and was there elected one of the fellows of Trinity college, then first erected by king Henry VIII. In 1548, he took the degree of master of arts; and, in the same year, left England a second time; his stay at home being rendered uneasy to him, by the suspicions that were entertained of his being a conjuror; arising partly from his application to astronomy, but especially on account of a piece of machinery in the *Fisurn* of Aristophanes, which he exhibited to the university, and in which he represented the Scarabeus flying up to Jupiter, with a man and a basket of victuals on its back. These suspicions he could never after shake off: nor did his subsequent conduct, as we shall see, tend to clear him of the imputation; for if he was not actually a conjuror, it was not for want of endeavours.

Upon leaving England, he went to the university of Louvain; where he was much esteemed, and visited by
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Dee.

several persons of high rank. Here he resided about two years, and then set out for France; where, in the college of Rheims, he read lectures of Euclid's elements with vast applause. In 1551, he returned to England, and was introduced by the secretary Cecil to king Edward, who assigned him a pension of 100 crowns, which he afterwards relinquished for the rectory of Upton upon Severn: but soon after the accession of queen Mary, having some correspondence with the lady Elizabeth's servants, he was accused of practising against the queen's life by enchantment. On this account he suffered a tedious confinement, and was several times examined; till, in the year 1555, he obtained his liberty by an order of council.

When queen Elizabeth ascended the throne, our astrological Dee was consulted by lord Dudley, concerning a propitious day for her majesty's coronation. He was on this occasion introduced to the queen, who made him great promises, which were never performed, though she condescended to receive his instructions relative to the mystical interpretation of some of his unintelligible writings, which he published about this time. In 1564, he made another voyage to the continent; in order to present a book which he had dedicated to the emperor Maximilian. He returned to England in the same year; but in 1571, we find him in Lorraine; where, being dangerously ill, the queen sent over two physicians to his relief. Having once more returned to his native country, he settled at Mortlake in Surrey, where he continued his studies with unremitting ardor, and collected a considerable library of curious books and manuscripts, with a variety of instruments; most of which were afterwards destroyed by the mob, as belonging to one who dealt with the devil. In 1578, the queen being much indisposed, Mr Dee was sent abroad to consult with German physicians and philosophers (astrologers no doubt) on the occasion. We now behold him again in England, where he was soon after employed in a more rational service. Her majesty, desirous to be informed concerning her title to those countries which had been discovered by her subjects, commanded Mr Dee to consult the ancient records, and furnish her with proper geographical descriptions. Accordingly, in a short time he presented to the queen, in the gardens at Richmond, two large rolls, in which the discovered countries were geographically described and historically illustrated. These rolls are preserved in the Cotton library, *Augustus I.* His next employment was the reformation of the calendar, on which subject he wrote a rational and learned treatise, preserved in the Ashmolean library at Oxford.

Hitherto the extravagancies of our eccentric philosopher seem to have been counterpoised by a tolerable proportion of reason and science; but henceforward we consider him as a mere necromancer and credulous alchymist. In the year 1581, he became acquainted with one Edward Kelley, by whose assistance he performed diverse incantations, and maintained a frequent imaginary intercourse with spirits. He was particularly intimate, it seems, with the angels Raphael and Gabriel. One of them made him a present of a black speculum, in which his angels and demons appeared as often as he had occasion for them; they answered

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his questions, and Kelley's business was to record their dictates:

Kelley did all his feats upon
The devil's looking glass, a stone.

HUDIB. *part ii. canto iii. v. 631.*

In 1583, they were both introduced to a certain Polish nobleman, then in England, named *Albert Laski*, palatine of Siradia, a person equally addicted to the same ridiculous pursuits. He was so charmed with Dee and his companion, that he persuaded them to accompany him to his native country. They embarked for Holland in Sept. 1583; and travelling over land, arrived at the town of Laski in February following. Their patron, however, finding himself abused by their idle pretensions, persuaded them to pay a visit to Rodolph king of Bohemia; who, though a credulous man, was soon disgusted with their nonsense. They were afterwards introduced to the king of Poland, but with no better success. Soon after this, they were invited by a rich Bohemian nobleman to his castle of Trebona, where they continued for some time in great affluence; owing, as they asserted, to their art of transmutation by means of a certain powder in the possession of Kelley.

Dee, now quarrelling with his companion in iniquity, quitted Bohemia, and returned to England, where he was once more graciously received by the queen; who, in 1595, made him warden of Manchester college, in which town he resided several years. In 1604, he returned to his house at Mortlake, where he died in the year 1608, aged 81; leaving a large family, and many works, behind him.—The black stone into which Dee used to call his spirits, was in the collection of the earls of Peterborough, whence it came to lady Elizabeth Germaine. It was next the property of the late duke of Argyle, and is now Mr Walpole's. It appears upon examination to be nothing but a polished piece of cannel-coal.—That Dee was a man of considerable acquirements, is beyond a doubt; his mathematical knowledge is generally allowed: but, unless we suppose him a wicked impostor, which is by no means improbable, we must transmit him to posterity as one of the most foolish, superstitious, necromancers of his time. Nevertheless, the celebrated Dr Hook, many years after Dee's death, took it into his head to prove that his journal, published by Casaubon, was entirely cryptographical, concealing his political transactions, and that he was employed by queen Elizabeth as a spy.

DEE, the name of several rivers in Scotland and England; as those whereon the cities of Chester in England, and New Aberdeen in Scotland, are situated. The river Dee in Aberdeenshire abounds with salmon, so as to form one of the greatest salmon-fishings in Scotland.—Over this river there is a bridge of seven arches, built by a bishop of Aberdeen, who left for its support a revenue, which is now so large, that in order to exhaust the fund, a person has a salary to sweep the bridge once a-day.

DEED, an instrument written on paper or parchment, comprehending some contract, bargain, or agreement between the parties thereto, in relation to the matter therein contained.

DEEMSTERS, or DEMSTERS; (from the Saxon *dema*,

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Deemsters

Deeping *dema*, judge or umpire). All controversies in the Isle of Man are decided without process, writings, or any charges, by certain judges, chosen yearly from among themselves, called *deemsters*; there being two of them for each division of the island: they sit judges in all courts, either for life or property; and with the advice of 24 keys, declare what is law in uncommon emergencies.

DEEPING, a town of Lincolnshire in England, seated on the river Weland, in a fenny ground. W. Long. o. 20. N. Lat. 52. 35.

DEER, in zoology. See CERVUS.—The method of hunting deer in the island of Ceylon is very particular. The huntsmen go out in the night, and only two usually go together: the one of these carries upon his head an earthen vessel, in which there is some fire burning and flaming; the ingredients are generally small sticks cut into pieces, and common rosin. Of this the other man carries a supply about him to replenish the pot when it grows low. The person who has the fire upon his head, carries in one hand a staff, on which there are fixed eight bells; and the larger these are, the better. This man goes first into the woods, and the other follows close behind with a spear in his hand. As soon as the deer hears the noise of the bells, he turns towards the place whence the sound comes; and seeing the fire, he eagerly runs up to it, and stands gazing at a small distance: the second man has then nothing to do but to kill him with the spear; for he sees neither of them.—Not only deer, but even elks and hares, are thus taken; for they gaze at the fire, and never see the men. The profits of this sort of hunting are very large, and the danger nothing; for though there are numbers of tygers, elephants, and wild boars, in these woods, the huntsmen are in no danger from them while the fire burns, for they all run away from it.

DE FACTO, something actually in fact, or existing; in contradistinction to *de jure*, where a thing is only so in justice, but not in fact: as a king *de facto*, is a person who is actually in possession of a crown, but has no legal right to the same; and a king *de jure*, is the person who has a just right to the crown, though he is out of possession thereof.

DEFAMATION, the speaking slanderous words of another; for which the slanderer is punishable, according to the nature of his offence, either by action upon the case at common law, or by statute in the ecclesiastical court.

DEFAULT, in law, is generally taken for non-appearance in court, at a day assigned; but imports any omission of that which we ought to do, for which judgment may be given against the defaulter.

DEFEASANCE, or DEFEISANCE, in law, a condition relating to some certain deed, which being performed, the deed is defeated and rendered void, as if it had never been made. The difference between a common condition and a defeasance is, that the condition is annexed to, or inserted in, the deed; and a defeasance is a deed by itself, concluded and agreed on between the parties, and having relation to another deed.

DEFECATE, in chemistry, a term applied to a body freed and purged from feces and impurities.

DEFECTION, the act of abandoning or relinquishing a party or interest a person had been engaged in.—The word is formed of the Latin *deficio*, to fall off.

DEFECTIVE, in general, an appellation given to things which want some of the properties that naturally they ought to have. Thus,

DEFECTIVE or *Deficient Nouns*, in grammar, are such as want either a whole number, a particular case, or are totally indeclinable. See NOUN.—

The term *defective* is also applied to a verb that has not all its moods and tenses. See VERB, MOOD, &c.

DEFENCE, in fortification, all sorts of works that cover and defend the opposite posts, as flanks, casements, parapets, and faussebrays. See FORTIFICATION.

Line of DEFENCE, a supposed line drawn from the angle of the curtain, or from any other part in the curtain, to the flanked angle of the opposite bastion.

DEFEND, in general, signifies much the same with protecting, or keeping off injuries offered to any person either by enemies or otherwise.

DEFEND, in our ancient laws and statutes, signifies to prohibit or forbid: as, *Ufuarios defendit quoque rex Edwardus ne remanerent in regno*. L. L. Edw. Conf. c. 37. & 5 Rich. 2. c. 7. In which sense Chaucer also uses it in the following passage:

“Where can you say in any manner age,
“That ever God defended marriage.”

In 7 Edw. I. there is a statute intitled, “*Statutum de defensione portandi arma*,” &c. And “it is defended by law to distrain on the highway;” *Coke on Littl.* fol. 161.

DEFENDANT, in law, the person sued in an action personal; as *tenant* is he who is sued in an action real. See ACTION.

DEFENDER of the FAITH (*Fidei Defensor*), a peculiar title belonging to the king of England; as *Catholicus* to the king of Spain, and *Christianissimus* to the king of France, &c. These titles were given by the popes of Rome. That of *Fidei Defensor* was first conferred by Leo X. on king Henry VIII. for writing against Martin Luther; and the bull for it bears date *quinto idus Octob. 1521*. It was afterwards confirmed by Clement VII. But the pope, on Henry's suppressing the houses of religion at the time of the Reformation, not only deprived him of his title, but deposed him from his crown also: though in the 35th year of his reign, his title, &c. was confirmed by parliament; and hath continued to be used by all succeeding kings to this day.—Chamberlayne says, the title belonged to the kings of England before that time; and for proof hereof appeals to several charters granted to the university of Oxford. So that pope Leo's bull was only a renovation of an ancient right.

DEFENDERS, were anciently notable dignitaries both in church and state, whose business was to look to the preservation of the public weal, to protect the poor and helpless, and to maintain the interests and causes of churches and religious houses. See PROTECTOR.—The council of Chalcedon, can. 2. calls the defender of a church *Εκδίκος*. Codin, *de officiis aule Const.* makes mention of defenders of the palace. There were also a defender of the kingdom, *defensor regni*.

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regni; defenders of cities, *defensores civitatis*; defenders of the people, *defensores plebis*; of the poor, fathers, widows, &c.

About the year 420, each patriarchal church began to have its defender; which custom was afterwards introduced into other churches, and continued to later days under other names; as those of *Advocate*, and *Advocæ*.

In the year 407, we find the council of Carthage asking the emperor for defenders, of the number of *Scholastici*, i. e. advocates who were in office; and that it might be allowed them to enter and search the cabinets and papers of the judges and other civil magistrates, whenever it should be found necessary for the interest of the church.

DEFILE, in fortification, a strait narrow passage, through which a company of horse or foot can pass only in file, by making a small front.

DEFINITE, in grammar, is applied to an article that has a precise determinate signification; such as the article *the* in English, *le* and *la* in French, &c. which fix and ascertain the noun they belong to, to some particular; as *the king*, *le roy*: whereas, in the quality of *king*, *de roy*, the articles of *of* and *de* mark nothing precise, and are therefore indefinite.

DEFINITION, in general, a short description of a thing by its properties; or, in logic, the explication of the essence of a thing by its kind and difference.

DEFINITIVE, a term applied to whatever terminates a process, question, &c.; in opposition to provisional and interlocutory.

DEFLAGRATION, in chemistry, the kindling or setting fire to a salt or mineral, &c. either alone or mixed for that purpose with a sulphureous one, in order to purify it.

This short process has been often recommended to the world as of great use in trying the strength of brandies and other vinous spirits, and has been greatly improved in this respect by Mr Geoffroy.

The common way of trying spirits by deflagration, is to measure out any quantity of it, then to heat it, and set it on fire. If, after it will no longer burn, the remainder is half as much as the quantity measured out for the trial was, then the spirit tried is found to consist of half water, and half totally inflammable spirit; that is, it is somewhat below what we understand by the term *perfect proof*.—This method is much more certain than that by the crown of bubbles which arises upon shaking the spirit in a vial. Mons. Geoffroy's method is this: Take a cylindrical vessel two inches high, and as much in diameter, consisting of thin plate silver, that metal being much less liable to rust than copper; this vessel must be fitted with a little rectangular gage exactly graduated into lines, half lines, &c. then the vessel being set level upon a copper case made to contain it, a parcel of the brandy to be examined is poured in, to the height of 16 lines. This height is to be exactly hit by pouring in more than enough at first, and then sucking out the overplus with a very small tube. Then the vessel being heated a little, so as just to make the liquor fume, it is to be set on fire, and left to go out of itself; at the instant when the flame expires, the gage is plunged perpendicularly into the vessel, and the lines and quarters exactly noted

which the liquor wants of its former height: this difference gives the precise quantity of alcohol or pure spirit contained in the liquor. Thus, if eight lines of phlegm are found remaining, this being the half of the 16 lines of the original filling, it is plain, that the liquor contained one half spirit, or was something below proof. If only four lines remained, it was nearly double proof, or of a middle nature betwixt alcohol and common proof-spirit.

DEFLECTION of the RAYS of LIGHT, a property which Dr Hook observed in 1675, and read an account of before the Royal Society, March 18, the same year. He says he found it different both from reflection and refraction, and that it was made towards the surface of the opaque body, perpendicularly. This is the same property which Sir Isaac Newton calls INFLECTION.

DEFLORATION, or DEFLOWERING, the act of violating or taking away a woman's virginity. See VIRGINITY.—Death, or marriage, are decreed by the civil law in case of defloration.

The ancients had so much respect for virgins, that they would not put them to death till they had first procured them to be deflowered. It is said, the natives of the coast of Malabar pay strangers to come and deflower their brides.

In Scotland, and the northern parts of England, it was a privilege of the lords of the manor, granted them by king Ewen, that they should have the first night's lodging with their tenants wives. King Malcolm III. allowed the tenants to redeem this service at a certain rate, called *marcbeta*, consisting of a certain number of cows: Buchanan says it was redeemed with half a mark of silver. The same custom had place in Wales, Flanders, Friesland, and some parts of Germany.

DEFLUXION, in medicine, the falling of the humours from a superior to an inferior part of the body.

DE FOE (Daniel), a writer famous for politics and poetry, was bred a hosiery; which profession however he soon forsook, and became one of the most enterprising authors that any age produced. When discontents ran high at the Revolution, and king William was obliged to dismiss his Dutch guards, De Foe, who had true notions of civil liberty, ridiculed the enemies of government in his well-known poem, called *The True-born Englishman*, which had a prodigious sale. The next satire he wrote was intitled, *Reformation of Manners*; aimed at some persons of high rank, who rendered themselves a disgrace to their country. When the ecclesiastics in power breathed too much of a spirit of persecution, De Foe wrote a tract called *The Shortest Way with the Dissenters*; for which he was called to account, and explained himself with great firmness. He was afterward sentenced to the pillory for attacking some public measures; which so little intimidated him, that, in defiance of their usage, he wrote *A Hymn to the Pillory*. It would be endless to enumerate all his publications; but the following are the principal: *The History of the Plague in 1665*; a novel intitled *The History of Colonel Jack*; *A new Voyage round the World by a Company of Merchants*, printed for Bettefworth, 1725; *The History of Roxana*; *Memoirs of a Cavalier*; *The History of Moll Flanders*; a book intitled *Religious Courtship*, which has undergone upwards of 20 editions; and the *Life and Adventures of Robinson Crusoe*,

Deflection
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De Foe.

Defoliation. an admirable performance, of which there have been editions without number, but concerning which there is an anecdote that does the author of it no credit as to the better part of a writer's character, honesty. When captain Woods Rogers touched at the island of Juan Fernandez, in the South Sea, he brought away Alexander Selkirk, a Scots sailor, who had been left ashore there, and had lived on that desolate place above four years. When Selkirk came back to England, he wrote a narrative of his adventures, and put the papers into the hands of De Foe, to digest for publication; who ungenerously converted the materials into the History of Robinson Crusoe, and returned Selkirk his papers again! A fraud for which, in a humane view, the distinguished merit of that romance can never atone. Daniel de Foe died at Illington, in 1731. All his productions of the romantic species, but especially the two last mentioned, are much in vogue amongst country readers; and, on account of their moral and religious tendency, may very probably in some measure counteract the pernicious effects produced by the too general circulation of modern novels, those occasional vehicles of impiety and infidelity.

DEFOLIATION, (from *de*, and *folium* a leaf); the fall of the leaves. A term opposed to *frondescentia*, the annual renovation of the leaves, produced by the unfolding of the buds in spring. See **FRONDESCENTIA**.

Most plants in cold and temperate climates shed their leaves every year: this happens in autumn, and is generally announced by the flowering of the common meadow saffron. The term is only applied to trees and shrubs; for herbs perish down to the root every year, losing stem, leaves, and all.

All plants do not drop their leaves at the same time. Among large trees, the ash and walnut, although latest in unfolding, are soonest divested of them: the latter seldom carries its leaves above five months.

On the oak and horn-beam, the leaves die and wither as soon as the colds commence; but remain attached to the branches till they are pushed off by the new ones, which unfold themselves the following spring. These trees are doubtless a kind of ever-greens: the leaves are probably destroyed only by cold; and perhaps would continue longer on the plant, but for the force of the spring-sap, joined to the moisture.

In mild and dry seasons, the lilac, privet, yellow jessamine of the woods, and maple of Crete, preserve their leaves green until spring, and do not drop them till the new leaves are beginning to appear. The fig-tree, and many other trees that grow between the tropics, are of this particular class of ever-greens. The trees in Egypt, says Doctor Hasselquist, cast their leaves in the latter end of December and beginning of January, having young leaves ready before all the old ones are fallen off; and, to forward this operation of nature, few of the trees have buds: the fycamore and willow, indeed, have some, but with few and quite loose *stipulae* or scales. Nature did not imagine buds so necessary in the southern as in the northern countries; this occasions a great difference between them.

Lately, some trees and shrubs preserve their leaves

constantly through the whole year: and are not in the least influenced by the clemency or inclemency of seasons. Such are the firs, juniper, yew, cedar, cypresses, and many other trees, hence denominated *ever-greens*. These preserve their old leaves a long time after the formation of the new, and do not drop them at any determinate time. In general, the leaves of ever-greens are harder, and less succulent, than those which are renewed annually. The trees are generally natives of warm climates; as the alaternuses of France and Italy, the ever-green oak of Portugal and Suabia.

Some herbaceous perennials, as the house-leeks and navel-worts, enjoy the same privilege with the ever-green trees, and resist the severities of winter: some even can dispense with the earth for some time; being replete with juices, which the leaves imbibe from the humidity of the atmosphere, and which, in such plants, are, of themselves, sufficient for effecting the purposes of vegetation. It is for this reason, that, unless in excessive hot weather, gardeners are seldom wont to water fat succulent plants, as the aloes, which rot when they are moistened, if the sun does not quickly dry them up.

The leaves of all the ever-green shrubs and trees, have a thin compact skin or cover over their surface; as is easily discovered by macerating them in water, in order to separate the parenchyma, or pulp, from the vessels of the leaves; which cannot be effected in any of these ever-greens till a thin parchment-like cover is taken off. These trees and shrubs are found by experiment to perspire but little, when compared with others which shed their leaves; and it is, perhaps, principally owing to this close covering, as also to the small proportion of moisture contained in their vessels, that they retain their verdure, and continue through the winter on the trees. The nutritive juices of these plants always abound, more or less, with an oily quality, which secures them from being injured by severe frosts; so that many of these ever-green trees are adapted to grow in the coldest parts of the habitable world.

With respect to deciduous trees, the falling off of the leaves seems principally to depend on the temperature of the atmosphere, which likewise serves to hasten or retard the appearance in question. An ardent sun contributes to hasten the dropping of the leaves. Hence in hot and dry summers, the leaves of the lime-tree and horse-chestnut turn yellow about the first of September; whilst in other years, the yellowness does not appear till the beginning of October. Nothing, however, contributes more to hasten the fall of the leaves, than immoderate cold or moist weather in autumn; moderate droughts, on the other hand, serve to retard it. As a proof of this position, Mr Adanson relates, that in the year 1759, the leaves of the elm-tree, which generally fall off about the 25th of November, continued in verdure and vigour at Paris, where the autumn was remarkably dry, till the 10th of the following month.

The following table, respecting the mean times in which different trees shed their leaves, is founded upon observations.

 	foliation	Gooseberry-tree and bladder-	} Generally quit their leaves about	October 1st.
	formity	Waldnut and ash,		----- 15th.
	Almond-tree, horse-chefnut,	----- 20th.		
	and lime-tree,			
	Maple, hazle-nut, black pop-	----- 25th.		
	lar, and aspen-tree,			
	Birch, plane-tree, mountain-			
	ofier, false-acacia, pear, and			
	apple-tree,	November 1st.		
	Vine, mulberry, fig, fumac,	----- 10th.		
	and angelica-tree,	----- 15th.		
	Elm-tree and willow,	----- 20th.		
	Apricot and elder trees,			

It deserves to be remarked, that an ever-green tree grafted upon a deciduous, determines the latter to retain its leaves. This observation is confirmed by repeated experiments; particularly by grafting the laurel, or cherry-bay, an evergreen, on the common cherry; and the ilex, or ever-green oak, on the oak.

DEFORCEMENT, in law, the casting any one out of his land, or with holding of lands and tenements by force from the right owner.

DEFORCEMENT, in Scots law, the opposing or resisting of the officers of the law in the execution of their office. See **LAW**, N^o clxxxvi. 15.

DEFORMITY, the want of that uniformity necessary to constitute the beauty of an object. See **BEAUTY**.

Deformity is either natural or moral. These are both referred by Mr Hutcheson to an internal sense; and our perceptions of them, as he supposes, arises from an original arbitrary structure of our own minds, by which certain objects, when observed, are rendered the occasions of certain sensations and affections.

That many objects give no pleasure to our sense is obvious. Many are certainly void of beauty; but then, says this author, there is no form which seems necessarily disagreeable of itself, when we dread no other evil from it, and compare it with nothing better of the kind. Many objects are naturally displeasing and distasteful to our external senses, as well as others pleasing and agreeable; as smells, tastes, and some separate sounds: but with regard to our sense of beauty, no composition of objects which give not unpleasant simple ideas, seems positively unpleasant or painful of itself, had we never observed any thing better of the same kind.

Had there been a species of the form which we now denominate *ugly* or *deformed*, and had we never seen or expected greater beauty, we should have received no disgust from it; though the pleasure would not have been so great in this form as in those we now admire. Our sense of beauty seems designed to give us positive pleasure; but not positive pain or disgust, any farther than what arises from disappointment.

There are indeed many faces which at first view are apt to raise dislike. But this is generally not from any positive deformity; but either from want of expected beauty, or from the carrying some natural indications of morally bad dispositions, which we all acquire a faculty of discerning in countenances, airs, and gestures. That this is not occasioned by any form positively disgusting, appears hence, that if, upon long acquaintance, we are sure of finding sweetness of tem-

per, humanity, and cheerfulness, though the bodily form continues, it shall give us no disgust. There are horrors raised by some objects, which are only the effect of fear for ourselves, or compassion towards others, when either reason, or some foolish association of ideas, makes us apprehend danger; and not the effect of any thing in the form itself. For we find, that most of those objects which excite horror at first, when experience or reason has removed the fear, may become the occasion of pleasure.

The casual conjunction of ideas gives us disgust, where there is nothing disagreeable in the form itself. And this, in effect, is the cause of most of our fantastic aversions to the figures of divers animals, &c. Thus serpents of all kinds, and many insects, really beautiful enough, are beheld with aversion by many people, who have got some accidental ideas of mischief associated to them. A similar reasoning is applied to our perception of moral beauty and deformity. *Inquiry into the Original of our Ideas of Beauty and Virtue*, passim.

But it is more just to distinguish between the sentiments of delight or disgust, excited in us by beautiful or deformed objects, which are effects of some causes, and the natural and real qualities of the perceived objects by which they are produced. There are objects, says an excellent writer, which have a natural aptitude to please or offend, or between which and the contemplating mind there is a necessary congruity or incongruity; and though the actual perception of the understanding, and consequent feeling of the heart, in contemplating the actions and affections of moral agents, may exist in very different degrees, on account of the incidental obstructions arising from bodily indisposition, mental prejudices and biases, and the association of ideas; yet, to every rational mind properly disposed, morally good actions must for ever be acceptable, and can never of themselves offend; and morally evil actions must for ever be disagreeable, and can never of themselves please. What is right in actions and characters is beautiful and amiable, and gives pleasure; what is wrong is deformed and odious, and excites disgust: right and pleasure, wrong and pain, are as distinct as cause and effect. It is no less absurd to maintain, that the perception of virtue is nothing distinct from the reception of the pleasure resulting from it, than to infer, with some metaphysicians, that solidity, extension, and figure, are only particular modes of sensation, because attended, whenever they are perceived, with some sensations of sight or touch. Thus does this author show, that moral beauty and deformity are real qualities of certain actions; in which consists their aptitude to please or disgust. With respect to natural beauty, he observes, that uniformity amidst variety pleases, because of the natures of variety and uniformity, which are such, that whenever united, they are adapted to please every free unbiassed mind that discerns them. He accounts for the pleasure they afford, without referring them to an arbitrary internal sense, by the following circumstances that attend them. They are more easily comprehended by the mind: order and symmetry give things their stability and strength, and subserviency to any valuable purpose; regularity and order evidence art and design. Disorder and confusion, whence deformity arises, denote only the negation of regularity and

Deformity and order; or any arrangement and disposition of things, which are not according to a law, rule, or plan, and prove not design. These are not positively displeasing; except where we previously expected order, or where impotence or want of skill appear, and the contriver has either failed of his design or executed it ill.

In the Fugitive Pieces, is preserved an excellent essay on Bodily Deformity by the late William Hay, Esq; who was himself what he describes, and 'who, while he rallies his own figure with great pleasantry, discusses the general subject in a manner equally instructive and agreeable. He considers, 1. The natural consequences of bodily deformity; 2. How it affects the outward circumstances; and, 3. What turn it gives to the mind.

1. It is certain, that the human frame, being warped and disproportioned, is lessened in strength and activity, and rendered less fit for its functions. Scarron had invented an engine to take off his hat; "and I wish (says our author) I could invent one to buckle my shoe, or to take up a thing from the ground, which I can scarce do without kneeling, for I can bend my body no farther than it is bent by nature. For this reason, when ladies drop a fan or glove, I am not the first to take it up; and often restrain my inclination to perform those little services, rather than expose my spider-like shape. And I hope it will not be construed as pride, if I do not always rise from my seat when I ought: for if it is low, I find some trouble in it; and my centre of gravity is so ill placed, that I am often like to fall back. Things hanging within the reach of others are out of mine; and what they can execute with ease, I want strength to perform. I am in danger of being trampled upon or stifled in a crowd, where my back is a convenient lodgment for the elbow of any tall person that is near. I can see nothing, and my whole employment is to guard my person. I have forborne to attend his Majesty in the house of peers since I was like to be squeezed to death there against the wall. I would willingly come thither when his majesty commands, but he is too gracious to expect impossibilities. Besides, when I get in, I can never have the pleasure of seeing on the throne one of the best princes who ever sat on it. These, and many others, are the inconveniences continually attending a figure like mine. They may appear grievous to persons not used to them, but they grow easier by habit; and though they may a little disturb, they are not sufficient to destroy the happiness of life; of which, at an average, I have enjoyed as great a share as most men. And perhaps one proof of it may be my writing this Essay; not intended as a complaint against Providence for my lot, but as an innocent amusement to myself and others."

As to what effect deformity may have on the health, it appears natural to imagine, that as the inward parts of the body must in some measure comply with the outward mould, so the form of the latter being irregular, the first cannot be so well placed and disposed to perform their functions; and that generally deformed persons would not be healthy or long-lived. But this is a question best determined by facts; and in this case the instances are too few or unobserved, to draw a general conclusion from them: and health is more than

is commonly thought in a man's own power, and the reward of temperance more than the effect of constitution; which makes it still more difficult to pass a judgment. Æsop could not be young when he died; and might have lived longer, if he had not been murdered at Delphi. The Prince of Orange scarce passed the meridian of life, and the Duke of Luxemburg died about the age of 67. The Lord Treasurer Burleigh lived to 78; but his son the Earl of Salisbury, who died about 15 years after him, could not reach near that age. It is said that Mr Pope's father was deformed, and he lived to 75; whereas the son died in middle age, if he may be said to die whose works are immortal. "My father (adds our author) was not deformed, but active, and my mother a celebrated beauty; and I, that am so unlike them, have lived to a greater age, and daily see my acquaintance, of a stronger frame, quitting the stage before me."

But whether deformity, abstractedly considered, be really prejudicial to health, in its consequences it appears to be most commonly an advantage. Deformed persons have a less share of strength than others, and therefore should naturally be more careful to preserve it; and as temperance is the great preservative of health, it may incline them to be more temperate. Another great preservative of health is moderate exercise, which few deformed persons can want strength to perform. As a deformed person is not formed for violent exercise, he is less liable to such disorders as are the natural consequence of it. He will also escape many accidents, to which men of athletic make, and who glory in their strength, are always exposing themselves to make trial and proof of it. If he cannot carry an ox, like Milo, he will not, like Milo, be handcuffed in the oak by attempting to rend it. He will not be the man that shall ride from London to York in a day, or to Windfor in an hour, for a wager; or that shall be perpetually performing surprising long journeys in a surprising short time, for no earthly business but the pleasure of relating them. Conscious of his own weakness, he will be cautious of running into places or occasions of danger. Nature, too, warns deformed persons to be careful not to offer such affronts as may call them forth into the field of false honour, where they cannot acquit themselves well for want of strength and agility; and they are securer from such affronts themselves, since others will consider the little credit they will gain by compelling them to appear on that scene. On the whole, therefore, it may be concluded, that deformity is a protection to a man's health and person; which (strange as it may appear) are better defended by feebleness than strength.

2. The influence of bodily deformity on a man's fortune may next be considered. Among the lower class, he is cut off from many professions and employments. He cannot be a soldier, he is under standard; he cannot be a sailor, he wants activity to climb the rigging; he cannot be a chairman or porter, he wants strength to bear the burden. In higher life, he is ill qualified for a lawyer, he can scarce be seen over the bar; for a divine, he may drop from his hassock out of sight in his pulpit. The improvement of his mind is his proper province, and his business only such as depends on ingenuity. If he cannot be a dancing-master to adjust the heels, he may be a schoolmaster to instruct

Deformity instruct the head: he cannot be a graceful actor on the stage; but he may produce a good play: he would appear ill as a herald in a procession; but may pass as a merchant on the exchange: he cannot undergo the fatigue of the campaign; but he may advise the operations of it: he is designed by nature rather to sleep on Parnassus, than to descend on the plains of Eolis: he cannot be crowned at the Olympic games; but may be the Pindar to celebrate them: he can acquire no glory by the sword; but he may by the pen, and may grow famous by only relating those exploits which are beyond his power to imitate.

Lord Bacon (that extensive and penetrating genius, who pointed out every part of nature for examination), in his Essay on Deformity, says, "that in their superiors it quencheth jealousy towards them, as persons that they think they may at pleasure despise; and it layeth their competitors and emulators asleep, as never believing they should be in a possibility of advancement till they see them in possession." But it is much to be doubted whether this is not more than counterbalanced by the contempt of the world which it requires no mean parts to conquer; for if (as has been said) a good person is a letter of recommendation, deformity must be an obstruction in the way to favour. In this respect, therefore, deformed persons set out in the world to a disadvantage; and they must first surmount the prejudices of mankind before they can be upon a par with others, and must obtain by a course of behaviour that regard which is paid to beauty at first sight. When this point is once gained, the tables are turned, and then the game goes in their favour: for others, sensible of their injustice to them, no sooner find them better than they expected, than they believe them better than they are; whereas in the beautiful person they sometimes find themselves imposed upon, and are angry that they have worshipped only a painted idol. For (again take Lord Bacon's words) "neither is it almost seen, that very beautiful persons are otherwise of great virtue: they prove accomplished, but not of great spirit; and study rather behaviour than virtue. Whereas deformed persons, if they be of spirit, will free themselves from scorn, which must be either by virtue or malice; and therefore let it not be marvelled if they sometimes prove excellent persons, as was Agestilaus, Zanger the son of Solomon, Æsop, Gasca president of Peru; and Socrates may likewise go amongst them, with others." Nay, he says, "in a great wit deformity is an advantage to rising." And in another part of his works, "that they who by accident have some inevitable and indelible mark on their persons or fortunes, as deformed people, bastards, &c. if they want not virtue, generally prove fortunate."

Osborn, in his Historical Memoirs of Queen Elizabeth, informs us, that "she chose the goodliest persons for her household servants: but in her counsellors did not put by sufficiency, though accompanied with a crooked person; as it chanced in a father and a son of the Cecils, both incomparable for prudence." It is well known the Queen would make the father

(Burleigh) fit in her presence; telling him, that she did not use him for his legs, but his head. But the son (afterwards lord treasurer and Earl of Salisbury) was not so civilly treated by the populace; and is an instance, not only that envy pursues a great man, but that the highest post cannot redeem a deformed one from contempt: it attends him like his shadow, and like that too is ever reminding him of his ill figure, which is often objected for want of real crimes. For the same writer says of the same great man, "that the misfortunes accompanying him from his birth did not a little add to that cloud of detraction that fell upon all that he said or did; a mulct in nature, like an optic spectacle, multiplying much in the sight of the people the apparitions of ill." Nor was this contempt buried with him: it trampled on his ashes, and insulted his grave; as appears by an epitaph, which Osborn cites, as void of wit as it is full of scurrility; in one line of which there is an epithet, not so elegant, as descriptive of his person, viz. "Little Bossive Robin, that was so great."

Such contempt in general, joined with the ridicule of the vulgar, is another certain consequence of bodily deformity; for men naturally despise what appears less beautiful or useful, and their pride is gratified when they see such foils to their own persons. It is this sense of superiority which is testified by laughter in the lower sort; while their betters, who know how little any man whatsoever hath to boast of, are restrained by good sense and good breeding from such an insult. But it is not easy to say why one species of deformity should be more ridiculous than another, or why the mob should be more merry with a crooked man, than with one that is deaf, lame, squinting, or purblind. It is a back in alto relievo that bears all the ridicule; tho' one would think a prominent belly a more reasonable object of it, since the last is generally the effect of intemperance and of a man's own creation. Socrates was ugly, but not contemned; and Philopœmen (A) of very mean appearance, and though contemned on that account, not ridiculed: for Montaigne says, "Ill features are but a superficial ugliness, and of little certainty in the opinion of men; but a deformity of limbs is more substantial, and strikes deeper in." As it is more uncommon, it is more remarkable; and that perhaps is the true reason why it is more ridiculed by the vulgar.

3. The last consideration on this subject relates to those passions and affections which most naturally result from deformity. Lord Bacon observes, that 'deformed persons are commonly even with nature; for as nature hath done ill by them, so do they by nature, being for the most part (as the scripture saith) *void of natural affection.*' But (says Mr Hay) "I can neither find out this passage in scripture, nor the reason of it; nor can I give my assent or negative to a proposition, till I am well acquainted with the terms of it. If by natural affection is here meant universal benevolence, and deformity necessarily implies a want of it, a deformed person must then be a complete monster. But
however

(A) Coming to an inn, where he was expected, before his attendants, the mistress of the house seeing a plain person of very mean aspect, ordered him to assist in getting things ready for Philopœmen. His attendants finding him so employed, he told them that he was then paying the tribute of his ugliness. *Plutarch.*

Deformity. however common the case may be, my own sensations inform me that it is not universally true. If by natural affection is meant a partial regard for individuals, I believe the remark is judicious, and founded in human nature. Deformed persons are despised, ridiculed, and ill-treated by others; are seldom favourites, and commonly most neglected by parents, guardians, and relations; and therefore, as they are not indebted for much fondness, it is no wonder if they repay but little. It is the command of scripture, *Not to set our affections on things below*; and it is the voice of reason, not to overvalue what we must soon part with: therefore, to be so fond of others as not to be able to bear their absence, or to survive them, is neither a religious nor moral duty, but a childish and womanish weakness; and I must congratulate deformed persons, who, by example, are early taught another lesson. And I will now lay open my own heart to the reader, that he may judge if Lord Bacon's position is verified in me.

"I hope it proceeds not from a malignity of heart; but I never am much affected with the common accidents of life, whether they befall myself or others. I am little moved when I hear of death, loss, or misfortune; I think the case is common.

(*Tritus, & e medio fortuna ductus aceruo:*)

Juv. Sat. xiii.

And as it is always likely to happen, I am not surpris'd when it does. If I see a person cry or beat his breast on any such occasion, I cannot bear him company; but am not a Democritus to laugh at his folly. I read of battles and fields covered with slain; of cities destroyed by sword, famine, pestilence, and earthquake; I do not shed a tear: I suppose it is, because they are the usual storms, to which the human species are exposed, proceeding from the just judgments of God, or the mistaken and false principles of rulers. I read of persecutions, tortures, murders, massacres; my compassion for the sufferers are great, but my tears are stopp'd by resentment and indignation against the contrivers and perpetrators of such horrid actions. But there are many things that bring tears into my eyes whether I will or no; and when I reflect, I am often at a loss in searching out the secret source from whence they flow. What makes me weep (for weep I do) when I read of virtue or innocence in distress; of a good man helpless and forsaken, unmoved by the greatest insults and cruelties, or courageously supporting himself against oppression in the article of death? I suppose it is, to see vice triumphant, and virtue so ill rewarded in this life. May I judge by myself, I should imagine that few sincere Christians could read the sufferings of their Saviour, or Englishmen those of a Cranmer, Ridley, or Latimer, without tears; the first dying to establish his religion, the last to rescue it from corruption. When I read of Regulus returning to torment, and John of France to imprisonment, against the persuasion of friends, to keep faith with their enemies, I weep to think there is scarce another instance of such exalted virtue. Those who often hear me read, know that my voice changes, and my eyes are full, when I meet with a generous and heroic saying, action, or character, especially of persons whose example or command may influence mankind. I weep when I hear a Titus say, that he had lost the day in which he did no good; when Adrian tells his enemy, that he had escaped by

N^o 98.

his being emperor; or Louis XII. that he is not to revenge the affront of the duke of Orleans. These are the first instances that happen to occur to me: I might recollect many, too many to insert in this essay; yet all are but few, compared to instances of cruelty and revenge: perhaps I am concerned that they are so rare; perhaps too I inwardly grieve that I am not in a situation to do the like. I am entertained, but not moved, when I read Voltaire's History of Charles XII.; but I melt into tears on reading Hanway's character of his antagonist Peter the Great. The first is a story of a madman; the other of a father, friend, and benefactor of his people; whose character (as the author observes in the conclusion of it) will command the admiration of all succeeding generations; and I suppose I lament, that God is pleas'd to advance to royalty so few such instruments of good to mankind.

Again: "I am uneasy when I see a dog, a horse, or any other animal ill treated: for I consider them as endued with quick sense, and no contemptible share of reason; and that God gave man dominion over them, not to play the tyrant, but to be a good prince, and promote the happiness of his subjects. But I am much more uneasy at any cruelty to my own species; and heartily wish Procrustes disciplined in his own bed, and Phalaris in his bull. A man bruised all over in a boxing match, or cut to pieces in fighting a prize, is a shocking spectacle; and I think I could with less horror see a thousand fall in battle, than human nature thus depreciated and disgraced. Violence, when exerted in wantonness or passion, is brutality; and can be termed bravery only when it is sanctioned by justice and necessity.

"I have been in a situation to see not a little of the pomp and vanity, as well as of the necessity and misery, of mankind: but the last only affect me; and if, as a magistrate, I am ever guilty of partiality, it is in favour of the poor. When I am at church among my poor but honest neighbours in the country; and see them serious in performing the ceremonies prescribed; tears sometimes steal down my cheek, on reflecting, that they are doing and hearing many things they do not understand, while those who understand them better neglect them: that they, who labour and live hard, are more thankful to heaven than those who fare luxuriously on the fruits of their labour; and are keeping and repeating the fourth commandment at the very instant the others are breaking it.

"These are some of the sensations I feel; which I have freely and fairly disclosed, that the reader may judge, how far I am an instance of a deformed person wanting natural affection. And I am a good subject of speculation; because all in me is nature: for to own the truth, I have taken but little pains (though I ought to have taken a great deal), to correct my natural defects.

"Lord Bacon's next position is, 'That deformed persons are extremely bold: first in their own defence, as being exposed to scorn; but in process of time by a general habit.' This, probably, is so among the inferior sort, who are in the way of continual insults: for a return of abuse is a natural weapon of self-defence, and in some measure justified by the law of retaliation: To upbraid a man with a personal defect, which he cannot help, is also an immoral act; and he who does it, has reason to expect no better quarter than to hear

Deformity. of faults, which it was in his own power not to commit. But I find this observation far from being verified in myself: an unbecoming bashfulness has been the consequence of my ill figure, and of the worse management of me in my childhood. I am always uneasy, when any one looks stedfastly on so bad a picture; and cannot look with a proper confidence in the face of another. I have ever reproached myself with this weakness, but am not able to correct it. And it may be a disadvantage to a man in the opinion of those he converses with; for though true modesty is amiable, the false is liable to misconstruction: and when a man is out of countenance for no reason, it may be imagined, that he has some bad reason for being so. In point of assurance, I am indeed a perfect riddle to myself; for I, who feel a reluctance in crossing a drawing room, or in opening my mouth in private company before persons with whom I am not well acquainted, find little in delivering my sentiments in public, and exposing my discourse, often as trifling as my person, to the ears of a thousand. From what cause this proceeds, I know not: it may be partly from hopes of wiping off any ill impressions from my person by my discourse, partly from a sense of doing my duty, and partly from a security in public assemblies from any gross personal reflections.

“Lord Bacon compares the case of deformed persons to that of eunuchs; ‘in whom kings were wont to put great trust as good spies and whisperers; for they that are envious towards all, are more obnoxious and officious towards one.’ But, with submission to so good a judge of human nature, I own I can discover no uncommon qualification in them for spies; and very few motives to envy peculiar to themselves. Spies submit to that base and ungenerous office, either for the sake of interest or power: if for interest, it is to gratify their covetousness; if for power, their ambition or revenge; which passions are not confined to the eunuch or deformed, but indiscriminately seize all classes of men. Envy too may prompt a man to mean actions, in order to bring down the person envied to his own level; but if it is on account of superiority of fortune, it will operate alike on men of all shapes. Eunuchs have but one peculiar motive to envy: but that (as Lord Bacon expresses it) makes them envious towards all; because it is for a pleasure which all but themselves may enjoy. Deformed persons are deprived only of beauty and strength, and therefore those alone are to be deemed the extraordinary motives to their envy; for they can no more be beautiful or strong than eunuchs be successful lovers. As to myself, whatever sparks of envy might be in my constitution, they are now entirely extinguished; for, by frequent and serious reflection, I have long been convinced of the small value of most things which men value the most.

“There is another passion to which deformed persons seem to be more exposed than to envy; which is jealousy: for being conscious that they are less amiable than others, they may naturally suspect that they are less beloved. I have the happiness to speak this from conjecture, and not from experience; for it was my lot, many years ago, to marry a young lady, very piously educated, and of a very distinguished family, and whose virtues are an honour to her family and her sex: so that I had never any trial of my temper, and can only guess at it by emotions I have felt in my younger days; when ladies have been more liberal of their smiles to those whom I thought in every respect, but person, my inferiors.”

The most useful inference from all this to a deformed person is, to be upon his guard against those frailties to which he is more particularly exposed; and to be careful, that the outward frame do not distort the soul. *Orandum est* (says Juvenal), *ut sit mens sana in corpore sano*; “Let us pray for a sound mind in a healthy body:” and every deformed person should add this petition, *ut sit mens recta in corpore curvo*, for “an upright mind in a crooked one.” And let him frequently apply to himself this article of self-examination, *Levior et melior sis, accedente senectâ?* “As age approaches, do your temper and morals improve?” It is a duty peculiarly incumbent; for if beauty adds grace to virtue itself, vice must be doubly hideous in deformity.

Ridicule and contempt are a certain consequence of deformity; and therefore what a person cannot avoid, he should learn not to regard. He should bear it like a man; forgive it as a Christian; and consider it as a philosopher. And his triumph will be complete, if he can exceed others in pleasantry on himself. Wit will give over when it sees itself outdone; and so will malice when it finds it has no effect: And if a man’s behaviour afford no cause of contempt, it will fall upon those who condemn him without cause.

Instead of repining, therefore, a deformed person ought to be thankful to Providence for giving him such a guard to his virtue and repose. Thousands are daily ruined by a handsome person; for beauty is a flower that every one wants to gather in its bloom, and spares no pains or stratagem to reach it. All the poetical stories concerning it have their moral. A Helen occasions war and confusion; the Hyacinths and Ganymedes are seized on for Catamites; the Eudymions and Adonises for gallants; Narcissus can admire nobody but himself, and grows old before he is cured of that passion. Who is a stranger to the story of Lucretia killing herself for her violated chastity? or of Virginia killed by her father to preserve it? In those circumstances, says Juvenal, she might wish to change persons with Rutila; the only lady we know among the ancients celebrated for a hump-back. The handiomest men are chosen for eunuchs and gallants; and when they are caught in exercising the last function, both (A) Horace and Juvenal inform you of the

4 X

penalties

(A) Hic se præcipitem tecto dedit: ille flagellis
Ad mortem cæsus: fugiens hic decedit acrem
Prædonum in turbam: dedit hic pro corpore nummos:
Hunc perminxerunt calones: quietiam illud

Accidit, ut cuidam testes caudamque salacem
Demeteret ferrum ———— Hor. Sat. ii. l. i.
——— Quosdam mœchos et mugilis intrat. Juv. ib.

Deformity. penalties and indignities they undergo. Silius (b) was converted by the insatiable Messalina into a husband; and Sporus, by the monster Nero, into a wife. The last mentioned poet shows, that praying for beauty is praying for a curse; and (c) Persius refuses to join in such a prayer: And has not the deformed person reason to thank his stars, which have placed him more out of danger than even virtue could? for that could not guard a Joseph, an (d) Hippolytus, a Bellerophon, and others, against the revenge of slighted love.

Another great advantage of deformity is, that it tends to the improvement of the mind. A man that cannot shine in his person, will have recourse to his understanding; and attempt to adorn that part of him, which alone is capable of ornament. When his ambition prompts him to begin, with Cowley, to ask himself this question,

What shall I do to be for ever known,
And make the age to come my own?

on looking about him, he will find many avenues to the temple of fame barred against him; but some are still open through that of virtue; and those, if he has a right ambition, he will most probably attempt to pass. The more a man is inactive in his person, the more his mind will be at work; and the time which others spend in action, he will pass in study and contemplation: by these he may acquire wisdom; and by wisdom, fame. The name of Socrates is as much founded as those of Alexander and Cæsar; and is recorded in much fairer characters. He gained renown by wisdom and goodness; they by tyranny and oppression: he by instructing, they by destroying, mankind: and happy it is, that their evil deeds were confined to their lives; while he continues to instruct us to this day. A deformed person will naturally consider where his strength and his foible lie: and as he is well acquainted with the last, he will easily find out the first; and must know, that (if it is any where) it is not, like Samson's, in the hair; but must be in the lining of the head. He will say to himself, "I am weak in person: unable to serve my country in the field, I can acquire no military glory; but I may, like Socrates, acquire reputation by wisdom and probity; let me therefore be wise and honest. My figure is very bad; and I should appear but ill as an orator either in the pulpit or at the bar: let me therefore pass my time in my study, either in reading what may improve myself, or in writing what may entertain or instruct others. I have not the strength of Hercules, nor can I rid the world of so many monsters; but perhaps I may get rid of some that infest myself. If I cannot draw out Cacus from his den, I may pluck the villain from my own breast. I cannot cleanse the stable of Augeas: but I may cleanse my own heart from filth and impurity: I may demolish the hydra of vices

within me; and should be careful too, that while I lop off one, I do not suffer more to grow up in its stead. Let me be serviceable in any way that I can; and if I am so, it may, in some measure, be owing to my deformity; which at least should be a restraint on my conduct, lest my conduct make me more deformed."

Few persons have a house entirely to their mind; or the apartments in it disposed as they could wish. And there is no deformed person, who does not wish that his soul had a better habitation; which is sometimes not lodged according to its quality. Lord Clarendon says of Sir Charles Cavendish (brother to the marquis of Newcastle), that he was a man of the noblest and largest mind, though of the least and most inconvenient body that lived. And every body knows, that the late prince of Orange had many amiable qualities. Therefore, in justice to such persons, we must suppose that they did not repine that their tenements were not in a more regular style of architecture. And let every deformed person comfort himself with reflecting, that though his soul hath not the most convenient and beautiful apartment, yet that it is habitable; that the accommodation will serve as an inn upon the road; that he is but tenant for life, or (more properly) at will; and that, while he remains in it, he is in a state to be envied by the deaf, the dumb, the lame, and the blind.

DEFOSSION, (DEFOSSIO), the punishment of burying alive, inflicted among the Romans on vestal virgins guilty of incontinency. It is also a custom among the Hungarians to inflict this punishment on women convicted of adultery. Heretics were also punished in this manner. See *BURRING-Alive*.

DEGENERATION, OR DEGENERATING, in general, denotes the growing worse, or losing some valuable qualities whereof a thing was formerly possessed. Some naturalists have been of opinion, that things are capable of degenerating into quite a distinct species; but this is a mere chimera. All that happens in the degeneration of a plant, for instance, is the losing its usual beauty, colour, smell, &c. a circumstance entirely owing to its being planted in an improper soil, climate, &c.

DEGLUTITION, the action of swallowing. See *ANATOMY, n° 104*.

DEGRADATION, in our law-books called *disgradation* and *deposition*, the act of depriving or stripping a person for ever of a dignity or degree of honour, and taking away the title, badge, and privileges thereof.

The degradations of a peer, a priest, a knight, a gentleman, an officer, &c. are performed with divers ceremonies. That which anciently obtained in degrading a person from his nobility is very curious. It was practised in the time of Francis I. upon Captain Fangel,

(b) — Optimus hic et formosissimus idem
Gentis Patriciæ rapitur miser extinguendus
Messalinæ oculis. — — — *Juv. Sat. x.*

(c) Hunc optent generum Rex et Regina: puellæ
Hunc rapiant: quicquid calcaverit hic, rosa fiat:
AÏ ego nutrici non mando vota; negato

Jupiter hæc illi — — — — — *Perf. Sat. ii.*

(d) — — — — — Quid profuit olim
Hippolyto grave propositum? Quid Bellerophonti
Erubuit nempe hæc, seu fastidita repulsâ:
Nec Sthenobœa minus quam Cressa excaudit, et se
Concussere ambæ. — — — — — *Juv. Sat. x.*

Dada- Fangel, who had in a cowardly manner given up Fontarabia, whereof he was governor. On this occasion, 20 or 30 cavaliers, without blemish or reproach, were assembled; before whom the gentleman was accused of treason and breach of faith by a king at arms. Two scaffolds were erected; the one for the judges, heralds, and pursuivants; and the other for the guilty cavalier, who was armed at all points, and his shield placed on a stake before him, reversed with the point upwards. On one side assisted 12 priests in surplices, who sung the vigils of the dead. At the close of each psalm they made a pause, during which the officers of arms stripped the condemned of some piece of his armour, beginning with the helmet, and proceeding thus till he was quite disarmed; which done, they broke his shield in three pieces with a hammer. Then the king at arms emptied a basin of hot water on the criminal's head; and the judges, putting on mourning habits, went to the church. This done, the degraded was drawn from off the scaffold with a rope tied under his arm-pits, laid on a bier, and covered with mortuary clothes; the priest singing some of the prayers for the dead; and then he was delivered to the civil judge and the executioner of justice.

For a more domestic instance: Sir Andrew Harcla, earl of Carlisle, being attainted and convicted of treason, 18 Edw. II. *coram rege*; after judgment was pronounced on him, his sword was broken over his head, and his spurs hewn off his heels; Sir Anthony Lucy the judge saying to him, "Andrew, now thou art no knight, but a knave" By stat. 13 Car. II. William Lord Monson, Sir Henry Mildmay, and others, were degraded from all titles of honour, dignities, and pre-eminences, and prohibited to bear or use the title of lord, knight, esquire, or gentleman, or any coat of arms, for ever afterwards. It has been maintained that the king may degrade a peer; but it appears from later authorities, that he cannot be degraded but by act of parliament.

As to ecclesiastics, we have an instance of degradation before condemnation to death, in the eighth century, at Constantinople. It is in the person of the patriarch Constantine, whom Constantine Copronymus caused to be executed. He was made to ascend the ambo; and the patriarch Nicetas sent some of his bishops to strip him of the pallium, and anathematized him: then they made him go out of the church backwards.

But we have a much later instance in our own history: When Cranmer, archbishop of Canterbury, was degraded by order of Queen Mary, they dressed him in episcopal robes, made only of canvas, put the mitre on his head and the pastoral staff in his hand; and in this attire showed him to the people. Which done, they stripped him again piece by piece. At present they do not stand so much on the ceremony of degradation in order to the putting a priest to death; by reason of the delays and difficulties that it would occasion. Pope Boniface pronounced that six bishops were required to degrade a priest; but the difficulty of assembling so many bishops rendered the punishment frequently impracticable. In England, a priest, after having been delivered to his ordinary, if he cannot purge himself of the crime laid at his door, his gown and other robes are stripped over his ears by the common

hangman; by which he is declared divested of his orders.

It is decided, however, that degradation does not efface the priestly character. Degradation only seems to differ from deposition in a few ignominious ceremonies which custom has added thereto. Accordingly, in the business of Arnoul archbishop of Rheims, sentenced in the council of Orleans in 991, it was deliberated what form they should follow in the deposition; whether that of the canons, that is, simple deposition; or that of custom, viz. degradation. And it was declared, that he should surrender the ring, pastoral staff, and pallium; but that his robes should not be torn off. In effect, the canons prescribe no more than a mere reading of the sentence. It is the rest, therefore, added thereto by custom, viz. the stripping off the ornaments and the tearing the pontifical vestments, that properly constitutes degradation.

DEGRADATION, in painting, expresses the lessening the appearance of distant objects in a landscape, in the same manner as they would appear to an eye placed at that distance from them.

DEGREE, in geometry, a division of a circle, including a three hundred and sixtieth part of its circumference.

DEGREE of Latitude. See LATITUDE.

DEGREE of Longitude. See LONGITUDE.

A degree of the meridian on the surface of the globe is variously determined by various observers. Mr Picart measured a degree in the latitude of $49^{\circ} 21'$, and found it equal to 57060 French toises. But the French mathematicians, who have lately examined Mr Picart's operations, assure us, that the degree in that latitude is 57183 toises. Our countryman, Mr Norwood, measured the distance between London and York, and found it 905751 English feet; and finding the difference of latitudes $2^{\circ} 28'$, determined the quantity of one degree to be 367196 English feet, or 69 English miles and 288 yards. Mr Maupertuis measured a degree in Lapland, in the latitude of $66^{\circ} 20'$, and found it 57438 toises. A degree was likewise measured at the equator by other French mathematicians, and found to contain 56767.8 toises. Whence it appears, that the earth is not a sphere, but an oblate spheroid.

DEGREE, in the civil and canon law, denotes an interval in kinship, by which proximity and remoteness of blood are computed. See CONSANGUINITY and DESCENT.

DEGREES, in music, are the little intervals whereof the concords or harmonical intervals are composed.

DEGREE, in universities, denotes a quality conferred on the students or members thereof, as a testimony of their proficiency in the arts or sciences, and intitling them to certain privileges.

DEJANIRA, in fabulous history, daughter of Oeneus king of Aetolia, and wife to Hercules. The centaur Nessus endeavouring to ravish her, was slain by Hercules with a poisoned arrow. Nessus, when dying, gave his bloody shirt to Dejanira; assuring her, that it was a sovereign remedy to cure her husband if ever he proved unfaithful. Some time after, Dejanira thinking she had reason to suspect his fidelity, sent him the shirt; which he had no sooner put on, than he was seized with the most execrating torments. Being unable to support his pains, he retired to mount

Degrada-
tion
||
Dejanira.

Dejection
||
Deism.

Oeta, and erecting a pile of wood set fire to it, and threw himself into the flames; upon which Dejanira killed herself in despair.

DEJECTION, in medicine, the act of voiding the excrements by the anus. See ANATOMY, n^o 93.

DEIFICATION, in antiquity. See APOTHEOSIS.

DEIPHON, in fabulous history, a brother of Triptolemus son of Celeus and Metanira. When Ceres travelled over the world, she stopped at his father's court and undertook to nurse him and bring him up. To reward the hospitality of Celeus, the goddess began to make his son immortal, and every evening she placed him on burning coals to purify him from whatever mortal particles he still possessed. The uncommon growth of Deiphon astonished Metanira, who wished to see what Ceres did to make him so vigorous. She was frightened to see her son on burning coals; and the shrieks that she uttered disturbed the mysterious operations of the goddess, and Deiphon perished in the flames.

DEISCAL, in the ancient British customs, the name of a ceremony originally used in the druidical worship, and retained in many places down to a very late period as a civil ceremony towards persons of particular distinction. The temples of the ancient Britons were all circular; and the druids, in performing the public offices of their religion, never neglected to make three turns round the altar, accompanied by all the worshippers. This practice was so habitual to the ancient Britons, that it continued in some places many ages after the druids and their religion were both destroyed. In the Scottish isles, the vulgar never come to the ancient sacrificing and fire-hallowing cairns, but they walk three times round them, from east to west, according to the course of the sun. This sanctified tour, or round by the south, is called *deiscal*, from *deas* or *deis*, "the right-hand," and *soil* or *sul*, "the sun;" the right-hand being ever next the heap or cairn. In the same isles it is the custom and fashion of the people to testify their respect for their chieftains, the proprietors of their several isles, and other persons of distinction, by performing the deiscal round them in the same manner. A gentleman giving an account of his reception in one of the western islands, of which he was proprietor, describes the ceremony of the deiscal in this manner: "One of the natives would needs express his high esteem for my person, by making a turn round about me sun-ways, and at the same time blessing me, and wishing me all happiness. But I bid him let alone that piece of homage, telling him I was sensible of his good meaning towards me. But this poor man was very much disappointed, as were also his neighbours; for they doubted not but this ancient ceremony would have been very acceptable to me; and one of them told me that this was a thing due to my character from them, as to their chief and patron; and that they could not, and would not, fail to perform it."

DEISM, the doctrine or belief of the deists. Deism, from *Deos*, *God*, may properly be used to denote natural religion, as comprehending those truths which have a real foundation in reason and nature; and in this sense it is so far from being opposite to Christianity, that it is one great design of the gospel to illu-

strate and enforce it. Thus some of the deistical writers have affected to use it. But deism more precisely signifies that system of religion, relating both to doctrine and practice, which every man is to discover for himself by the mere force of natural reason, independent of all revelation, and exclusive of it; and this religion Dr Tindal and others pretend is so perfect, as to be incapable of receiving any addition or improvement even from divine revelation.

DEISTS, a class of people, known also under the denomination of *Free-thinkers*, whose distinguishing character it is, not to profess any particular form or system of religion; but only to acknowledge the existence of a God, and to follow the light and law of nature, rejecting revelation, and opposing Christianity.

This name seems to have been first assumed as the denomination of a party about the middle of the 16th century, by some gentlemen in France and Italy, who were desirous of thus disguising their opposition to Christianity by a more honourable appellation than that of atheists. Viret, an eminent reformer, mentions certain persons in his epistle dedicatory prefixed to the second tome of his *Instruction Chretienne*, published in 1563, who called themselves by a new name, that of *Deists*. These, he tells us, professed to believe in God, but showed no regard to Jesus Christ, and considered the doctrine of the apostles and evangelists as fables and dreams. He adds, that they laughed at all religion, though they outwardly conformed to the religion of those with whom they lived, or whom they wished to please, or feared to offend. Some, he observes, professed to believe the immortality of the soul; others denied both this doctrine and that of providence. Many of them were considered as persons of acute and subtil genius, and took pains in disseminating their notions.

The deists hold, that, considering the multiplicity of religions, the numerous pretences to revelation, and the precarious arguments generally advanced in proof thereof, the best and surest way is to return to the simplicity of nature and the belief of one God; which is the only truth agreed to by all nations. They complain, that the freedom of thinking and reasoning is oppressed under the yoke of religion; and that the minds of men are ridden and tyrannized by the necessity imposed on them of believing inconceivable mysteries; and contend that nothing should be required to be assented to or believed but what their reason clearly conceives.

The distinguishing character of modern deists is, that they reject all revealed religion, and discard all pretences to it as the effects of imposture or enthusiasm. They profess a regard for natural religion, though they are far from being agreed in their notions concerning it. They are classed by some of their own writers into mortal and immortal deists: the latter acknowledging a future state; and the former denying it, or representing it as very uncertain.

Dr Clarke distinguishes four sorts of deists. 1. Those who pretend to believe the existence of an eternal, infinite, independent, intelligent Being, who made the world, without concerning himself in the government of it. 2. Those who believe the being and natural providence

Deist.

providence of God, but deny the difference of actions as morally good or evil, resolving it into the arbitrary constitution of human laws; and therefore they suppose that God takes no notice of them. With respect to both these classes, he observes that their opinions can consistently terminate in nothing but downright atheism. 3. Those who having right apprehensions concerning the nature, attributes, and all-governing providence of God, seem also to have some notion of his moral perfections; though they consider them as transcendent, and such in nature and degree, that we can form no true judgment, nor argue with any certainty concerning them: but they deny the immortality of human souls; alleging that men perish at death, and that the present life is the whole of human existence. 4. Those who believe the existence, perfections, and providence of God, the obligations of natural religion, and a state of future retribution, on the evidence of the light of nature, without a divine revelation: such as these, he says, are the only true deists; but their principles, he apprehends, should lead them to embrace Christianity; and therefore he concludes that there is now no consistent scheme of deism in the world.

The first deistical writer of any note that appeared in this country was Herbert baron of Cherbury. He lived and wrote in the last century. His book *De Veritate* was first published at Paris in 1624. This, together with his book *De Causis Errorum*, and his treatise *De Religione Laici*, were afterwards published in London. His celebrated work *De Religione Gentilium* was published at Amsterdam in 1663 in 4to, and in 1700 in 8vo, and an English translation of it was published at London in 1705. As he was one of the first that formed deism into a system, and asserted the sufficiency, universality, and absolute perfection, of natural religion, with a view to discard all extraordinary revelation as useless and needless, we shall subjoin the five fundamental articles of this universal religion. They are these: 1. That there is one supreme God. 2. That he is chiefly to be worshipped. 3. That piety and virtue are the principal part of his worship. 4. That we must repent of our sins; and if we do so, God will pardon them. 5. That there are rewards for good men and punishments for bad men, both here and hereafter. Our own age has produced a number of advocates in the same cause; and however they may have differed among themselves, they have been agreed in their attempts of invalidating the evidence and authority of divine revelation. We might mention Hobbes, Blount, Toland, Collins, Woolston, Tindal, Morgan, Chubb, Lord Bolingbroke, Hume, &c. Some have also added Lord Shaftesbury to the number.

But the friends of Christianity have no reason to regret the free and unreserved discussion which their religion has undergone. Objections have been stated and urged in their full force, and as fully answered; argument and railery have been repelled; and the controversy between Christians and deists has called forth a great number of excellent writers, who have illustrated both the doctrines and evidence of Christianity in a manner that will ever reflect honour on their names, and be of lasting service to the cause of genuine religion and the best interests of mankind.

DEITY, *Godhead*; a common appellation given to God; and also by the poets to the heathen gods and goddesses.

Deity,
Delaware.

DELAWARE, a province of North America, situated on a river of the same name.

The Dutch, under the pretended purchase made by Henry Hudson, took possession of the lands on both sides the river Delaware; and as early as the year 1623 built a fort at the place which has since been called *Gloucester*. In 1627, by the influence of William Useling, a respectable merchant in Sweden, a colony of Swedes and Finns came over, furnished with all the necessaries for beginning a new settlement, and landed at Cape Henlopen; at which time the Dutch had wholly quitted the country. The Dutch, however, returned in 1630, and built a fort at Lewistown, by them named *Hoarkill*. The year following the Swedes built a fort near Wilmington, which they called *Christein* or *Christiana*. Here also they laid out a small town, which was afterwards demolished by the Dutch. The same year they erected a fort higher up the river, upon Tenecum island, which they called *New Gottenburgh*; they also about the same time built forts at Chelster, Elfinburgh, and other places. John Prinz then governed the Swedes, who, in 1654, deputed his son-in-law, John Pappoia, and returned to Sweden. Pappoia soon followed his father-in-law to his native country, and John Ryfing succeeded to the government. In 1655, the Dutch under the command of Peter Stuyvesant, arrived in Delaware river, from New Amsterdam (New York), in seven vessels, with 6 or 700 men. They dispossessed the Swedes of their forts on the river, and carried the officers and principal inhabitants prisoners to New Amsterdam, and from thence to Holland. The common people submitted to the conquerors and remained in the country. On the first of October 1664, Sir Robert Carr obtained the submission of the Swedes on Delaware river. Four years after, Col. Nicolls, governor of New York, with his council, on the 21st of April, appointed a scout and five other persons to assist Capt. Carr in the government of the country. In 1672, the town of New-castle was incorporated by the government of New York, to be governed by a bailiff and six assistants; after the first year, the four oldest were to leave their office and four others to be chosen. The bailiff was president, with a double vote; the constable was chosen by the bench. They had power to try causes not exceeding L. 10, without appeal. The office of scout was converted into that of sheriff, who had jurisdiction in the corporation and along the river, and was annually chosen. They were to have a free trade, without being obliged to make entry at New York, as had formerly been the practice. Wampum was at this time the principal currency of the country. Governor Lovelace of New York, by proclamation, ordered that four white grains and three black ones should pass for the value of a shilling or penny. This proclamation was published at Albany, Esopus, Delaware, Long Island, and the parts adjacent. In 1674, Charles II. by a second patent, dated June 29th, granted to his brother duke of York all that country called by the Dutch *New Netherlands*, of which the three counties of Newcastle, Kent, and Sussex were a part. In 1683, the duke of York, by deed dated August 24th,

fold.

Delaware. fold to William Penn the town of Newcastle, with the district of 12 miles round the same; and by another deed of the same date, granted to him the remainder of the territory, which, till the revolution, was called the *Three Lower Counties*. These three counties were considered as a part of Pennsylvania in matters of government. The same governor presided over both: but the assembly and courts of judicature were different; different as to their constituent members, but in form nearly the same. At the late revolution they became a distinct territory, called

The *Delaware State*. This state is bounded on the north by the territorial line which divides it from Pennsylvania; on the east, by Delaware river and Bay; on the south, by a due east and west line, from Cape Henlopen, in lat. 38. 30. to the middle of the peninsula; and on the west by Maryland. The climate is in many parts unhealthy. The land is generally low and flat, which occasions the waters to stagnate, and the consequence is, the inhabitants are subject to intermit- tents.

The Delaware state is divided into three counties, viz. Newcastle, Kent, and Sussex; the chief towns of which are, Wilmington and Newcastle, Dover, Milford, and Lewiston.

Three rivers, the Choptank, Nanticok, and Pocomoke, have their sources in this state, and are navigable for vessels of 50 or 60 tons, 20 or 30 miles into the country. They all run a westwardly course into Chesapeake Bay. The south part of the state is a low flat country, and a considerable portion of it lies in forest. What is under cultivation is chiefly barren, except in Indian corn, of which it produces fine crops. In some places rye and flax may be raised, but wheat is a foreigner in these parts. Where nature is deficient in one resource, she is generally bountiful in another. This is verified in the tall thick forests of pines which are manufactured into boards, and exported in large quantities into every sea-port in the three adjoining states.—As you proceed north, the soil is more fertile, and produces wheat in large quantities, which is the staple commodity of the state. They raise all the other kinds of grain common to Pennsylvania. The state has no mountain in it, except Thunder Hill, in the western part of Newcastle county, and is generally level, except some small parts, which are stony and uneven. The trade of this state, which is inconsiderable, is carried on principally with Philadelphia, in boats and shallops. The articles exported are principally wheat, corn, lumber, and hay.

There are, in this state, 21 Presbyterian congregations, belonging to the synod of Philadelphia; seven Episcopal churches; six congregations of Baptists, containing about 218 souls; four congregations of the people called *Quakers*; besides a Swedish church at Wilmington, which is one of the oldest churches in the United States, and a number of Methodists. All these denominations have free toleration by the constitution, and live together in harmony.

In the convention held at Philadelphia, in the summer of 1787, the inhabitants of Delaware were reckoned at 37,000, which is about 26 for every square mile. There is no obvious characteristical difference between the inhabitants of this state and the Pennsylvanians. See PENNSYLVANIA.

Under the present constitution, the legislature is divided into two distinct branches, which together are styled *The General Assembly of Delaware*. One branch, called the *House of Assembly*, consists of seven representatives from each of the three counties, chosen annually by the freeholders. The other branch, called the *Council*, consists of nine members, three for a county, who must be more than 25 years of age, chosen likewise by the freeholders. A rotation of members is established by displacing one member for a county at the end of every year. All money bills must originate in the house of assembly, but they may be altered, amended, or rejected, by the legislative council. A president or chief magistrate is chosen by the joint ballot of both houses, and continues in office three years; at the expiration of which period, he is ineligible the three succeeding years. If his office becomes vacant during the recess of the legislature, or he is unable to attend to business, the speaker of the legislative council is vice-president for the time; and in his absence, the powers of the president devolve upon the speaker of the assembly. A privy council, consisting of four members, two from each house, chosen by ballot, is constituted to assist the chief magistrate in the administration of the government. The three justices of the supreme court, a judge of admiralty, and four justices of the common pleas and orphans courts, are appointed by the joint ballot of the president and general assembly, and commissioned by the president to hold their offices during good behaviour. The president and privy council appoint the secretary, the attorney general, registers for the probate of wills, registers in chancery, clerks of the common pleas, and orphans courts, and the clerks of the peace, who hold their offices during five years, unless sooner removed for mal-conduct. The house of assembly name 24 persons in each county for justices of peace, from which number the president, with the advice of his council, appoints and commissions twelve, who serve for seven years, unless sooner dismissed for mal-administration. The members of the legislative and privy councils are justices of the peace for the whole state.—The courts of common pleas and orphans courts have power to hold chancery courts in certain cases. The clerk of the supreme court is appointed by the chief justice, and the recorders of deeds, by the justices of the common pleas, for five years, unless sooner dismissed. All the military and marine officers are appointed by the general assembly. The court of appeals consists of seven persons; the president, who is a member, and presides by virtue of his office, and six others, three to be chosen by the legislative council and three by the house of assembly. To this court appeals lie from the supreme court, in all matters of law and equity. The judges hold their office during good behaviour.

The justices of the several courts, the members of the privy council, secretary, trustees of the loan office, clerks of the common pleas, and all persons concerned in army or navy contracts, are ineligible to either house of assembly. Every member, before taking his seat, must take the oath of allegiance, and subscribe a religious test, declaring his belief in God the Father, in Jesus Christ, and the Holy Ghost; and in the inspiration of the Scriptures.

The house of assembly have the privilege of impeaching

Delegate *legat. sen.* preaching delinquent officers of government; and impeachments are to be prosecuted by the attorney general, or other person appointed by the assembly, and tried before the legislative council. The punishment may extend to temporary or perpetual disability to hold offices under government, or to such other penalties as the laws shall direct.

There is, in Delaware, no establishment of one religious sect in preference to another; nor can any preacher or clergyman, while in his pastoral employment, hold any civil office in the state.

DELEGATE, in a general sense, a deputy or commissioner.

DELEGATES, commissioners appointed by the king, under the great seal, to hear and determine appeals from the ecclesiastical court.

Court of DELEGATES, the great court of appeal in all ecclesiastical causes. These delegates are appointed by the king's commission under his great seal, and issuing out of chancery, to represent his royal person, and hear all appeals to him made by virtue of the statute 25 Henry VIII. c. 19. This commission is usually filled with lords spiritual and temporal, judges of the courts at Westminster, and doctors of the civil law. Appeals to Rome were always looked upon by the English nation, even in the times of Popery, with an evil eye, as being contrary to the liberty of the subject, the honour of the crown, and the independence of the whole realm; and were first introduced in very turbulent times, in the 16th year of king Stephen (A. D. 1151), at the same period (Sir Henry Spelman observes) that the civil and canon laws were first imported into England. But in a few years after, to obviate this growing practice, the constitutions made at Clarendon, 11 Hen. II. on account of the disturbances raised by archbishop Becket and other zealots of the holy see, expressly declare, that appeals in causes ecclesiastical ought to lie from the archdeacon to the diocesan; from the diocesan to the archbishop of the province; and from the archbishop to the king; and are not to proceed any farther without special license from the crown. But the unhappy advantage that was given in the reign of king John, and his son Hen. III. to the encroaching power of the Pope, who was ever vigilant to improve all opportunities of extending his jurisdiction to Britain, at length rivetted the custom of appealing to Rome in causes ecclesiastical so strongly, that it never could be thoroughly broken off, till the grand rupture happened in the reign of Hen. VIII. when all the jurisdiction usurped by the Pope in matters ecclesiastical was restored to the crown, to which it originally belonged: so that the statute 25 Hen. VIII. was but declaratory of the ancient law of the realm. But in case the king himself be party in any of these suits, the appeal does not then lie to him in chancery, which would be absurd; but, by the 24 Henry VIII. c. 12. to all the bishops of the realm, assembled in the upper house of convocation.

DELEGATION, a commission extraordinary given by a judge to take cognisance of and determine some cause which ordinarily does not come before him.

DELEGATION, in Scots law. See Law, n^o clxxvii. 8.

DELEN (Dirk Van), an eminent painter of architecture and perspective, was born at Heusden, but in what year is not known. He was a disciple of

Francis Hals, in whose school he practised to paint those particular subjects which were most esteemed by that master, such as portraits and conversations; and by that means he acquired the skill to design figures with a great deal of spirit and correctness. But his predominant inclination directed him to paint architecture and perspective; and those he studied with so much care, as to make his works admired and coveted through the Low Countries. His subjects were, the insides of churches, filled with figures; grand temples; magnificent saloons and galleries, with people assembled at concerts of music, feasting, or dancing. Those subjects he finished highly: his architecture was in a noble taste; and the figures were well designed, as well as grouped with a great deal of judgment. Several authors mention the performances of this master with large commendation, for the goodness of his invention, and the neatness of his handling.

DELETERIOUS, an appellation given to things of a destructive or poisonous nature. See Poison.

DELFT, a town of the united provinces, and capital of Delftland in Holland. It is a pretty large place, very clean and well built, with canals in the streets, planted on each side with trees. The public buildings, especially the town-house, are very magnificent. Here are two churches: in one is the tomb of the prince of Orange, who was assassinated; and in the other, that of admiral Tromp. It has a fine arsenal, well furnished; is about two miles in circumference, and is defended against inundations by three dams or dikes. Here is made a prodigious quantity of fine earthen ware called *delft-ware*; but the town has no other trade. It is pleasantly situated among the meadows on the river Shie, in E. Long. 4. 13. N. Lat. 32. 6.

DELFT-Ware, a kind of pottery of baked earth, covered with an enamel or white glazing, which gives it the appearance and neatness of porcelain.—Some kinds of this enamelled pottery differ much from others, either in their sustaining sudden heat without breaking, or in the beauty and regularity of their forms, of their enamel, and of the painting with which they are ornamented. In general, the fine and beautiful enamelled potteries, which approach the nearest to porcelain in external appearance, are at the same time those which least resist a brisk fire. Again, those which sustain a sudden heat, are coarse, and resemble common pottery.

The basis of this pottery is clay, which is to be mixed, when too fat, with such a quantity of sand, that the earth shall preserve enough of its ductility to be worked, moulded, and turned easily; and yet that its fatness shall be sufficiently taken from it, that it may not crack or shrink too much in drying or in baking. Vessels formed of this earth must be dried very gently to avoid cracking. They are then to be placed in a furnace to receive a slight baking, which is only meant to give them a certain consistence or hardness. And, lastly, they are to be covered with an enamel or glazing; which is done, by putting upon the vessels thus prepared, the enamel, which has been ground very fine, and diluted with water.

As vessels on which the enamel is applied are but slightly baked, they readily imbibe the water in which the enamel is suspended, and a layer of this enamel adheres to their surface: these vessels may then be painted with

Deleterious,
Delft.

Delft.

with colours composed of metallic calces, mixed and ground with a fusible glass. When they are become perfectly dry, they are to be placed in the furnace, included in cases of baked earth called *seggars*, and exposed to a heat capable of fusing uniformly the enamel which covers them.—This heat given to fuse the enamel being much stronger than that which was applied at first to give some consistence to the ware, is also the heat necessary to complete the baking of it. The furnace and the colours used for painting this ware, are the same as those employed for PORCELAIN. The glazing, which is nothing but white enamel, ought to be so opaque as not to show the ware under it. There are many receipts for making these enamels: but all of them are composed of sand or flints, vitrifying salts, calx of lead, and calx of tin; and the sand must be perfectly vitrified, so as to form a glass considerably fusible. Somewhat less than an equal part of alkaline salt, or twice its weight of calx of lead, is requisite to effect such vitrifications of sand. The calx of tin is not intended to be vitrified, but to give a white opaque colour to the mass; and one part of it is to be added to three or four parts of all the other ingredients taken together. From these general principles, various enamels may be made to suit the different kinds of earths. To make the enamel, lead and tin are calcined together with a strong fire; and the sand is also to be made into a frit with the salts or ashes. The whole is then to be well mixed and ground together. This matter is then to be placed under the furnace, where it is melted and vitrified during the baking of the ware. It is next to be ground in a mill, and applied as above directed.

Chim. Dict.

The preparation of the white enamel is a very essential article in making delft-ware, and one in which many artists fail. M. Bosc. d'Antic, in a Memoir concerning this kind of ware, published in the *Mem. des Savans Etrang. tom. 6.* recommends the following proportions. An hundred pounds of calx of lead are to be mixed with about a seventh part of that quantity of calx of tin for common delft-ware, or a fourth part of calx of tin for the finest kind; an hundred, or an hundred and ten, pounds of fine sand; and about twenty or thirty pounds of sea-salt.—Concerning the earth of which the ware is made, he observes, that pure clay is not a proper material when used alone. Different kinds of earths mixed together are found to succeed better. Pieces of ware made of clay alone, are found to require too much time to dry; and they crack, and lose their form, unless they are made exceedingly thick. An addition of marle diminishes the contraction of the clay; renders it less compact; and allows the water to escape, without altering the form of the ware in drying. It affords also a better ground for the enamel; which appears more glossy and white than when laid on clay alone.—The kinds of clay which are chiefly used in the composition of delft-ware, are the blue and green. A mixture of blue clay and marle would not be sufficiently solid, and would be apt to scale, unless it were exposed to a fire more intense than what is commonly used for the burning of delft-ware. To give a greater solidity, some red clay is added; which, on account of its ferruginous matter, possesses the requisite binding quality. The proportions of these ingredients vary in different works, according to the dif-

N^o 98.

ferent qualities of the earths employed. Three parts of blue clay, two parts of red clay, and five parts of marle, form the composition used in several manufactories. M. d'Antic thinks, that the best delft-ware might be made of equal parts of pure clay and pure calcareous earth; but this composition would require that the fire should be continued twice as long as it generally is.

DELIA, in antiquity, a festival celebrated every fifth year in the island of Delos, in honour of Apollo. It was first instituted by Theseus, who at his return from Crete placed a statue there, which he had received from Ariadne. At the celebration they crowned the statue of the goddess with garlands, appointed a choir of music, and exhibited horse-races. They afterwards led a dance, in which they imitated by their motions the various windings of the Cretan labyrinth, from which Theseus had extricated himself by Ariadne's assistance.—There was another festival of the same name yearly celebrated by the Athenians in Delos. It also was instituted by Theseus, who, when he was going to Crete, made a vow, that if he returned victorious he would yearly visit in a solemn manner the temple of Delos. The persons employed in this annual procession were called *Deliasæ* and *Theori*. The ship, the same which carried Theseus, and had been carefully preserved by the Athenians, was called *Theoria* and *Delias*. When the ship was ready for the voyage, the priest of Apollo solemnly adorned the stern with garlands, and an universal lustration was made all over the city. The *Theori* were crowned with laurels, and before them proceeded men armed with axes, in commemoration of Theseus, who had cleared the way from Trœzen to Athens, and delivered the country from robbers. When the ship arrived at Delos, they offered solemn sacrifices to the god of the island, and celebrated a festival to his honour. After this they retired to their ship and sailed back to Athens, where all the people of the city ran in crowds to meet them. Every appearance of festivity prevailed at their approach, and the citizens opened their doors and prostrated themselves before the *Deliasæ* as they walked in procession. During this festival it was unlawful to put to death any malefactor, and on that account the life of Socrates was prolonged for thirty days.

DELIA, a surname of Diana, because she was born in Delos.

DELIAC, DELIACUS, among the ancients, denoted a poulterer, or a person who sold fowls, fatted capons, &c. The traders in this way were called *Deliaci*; the people of the isle of Delos first practised this occupation. They also sold eggs, as appears from Cicero, in his Academic Questions, lib. iv. Pliny, lib. x. cap. 30. and Columella, lib. viii. cap. 8. likewise mention the *Deliaci*.

DELIBAMENTA, in antiquity, a libation to the infernal gods, always offered by pouring downwards. See *Libati*.

JUS DELIBERANDI. See *LAW*, N^o clxxx. 23.

DELIBERATIVE, an appellation given to a kind or branch of rhetoric, employed in proving a thing, or convincing an assembly thereof, in order to persuade them to put it in execution.

To have a DELIBERATIVE voice in the assembly, is when a person has a right to give his advice and his vote

Delia
Delibera-
tive.See *Libati*

vote therein. In councils, the bishops have deliberative voices; those beneath them have only consultative voices.

DELICT, in Scots law, signifies such small offences or breaches of the peace as are punishable only by fine or short imprisonment.

DELIMA, in botany: A genus of the monogynia order, belonging to the polyandria class of plants; and in the natural method ranking with those of which the order is doubtful. There is no corolla; the calyx is five-leaved, with a two-seeded berry.

DELINQUENT, a guilty person, or one who has committed some fault or offence for which he is punishable. See **BRITAIN**, n^o 97.

DELIQUESCENCE, in chemistry, signifies the property which certain bodies have of attracting moisture from the air, and becoming liquid thereby. This property is never found but in saline substances, or matters containing them. It is caused by the great affinity which these substances have with water. The more simple they are, according to Mr Macquer, the more they incline to deliquescence. Hence, acids, and certain alkalies, which are the most simple, are also the most deliquescent salts. Mineral acids are so deliquescent, that they strongly imbibe moisture from the air, even though they are already mixed with a sufficient quantity of water to be fluid. For this purpose, it is sufficient that they be concentrated only to a certain degree.—Many neutral salts are deliquescent, chiefly those whose bases are not saline substances. Salts formed by the vitriolic acid, with fixed or volatile alkalies, earths, or most metallic substances, are not deliquescent; although this acid is the strongest of all, and, when disengaged, attracts the moisture of the air most powerfully.

Though the immediate cause of deliquescence is the attraction of the moisture of the air, as we have already observed; yet it remains to be shown why some salts attract this moisture powerfully, and others, though seemingly equally simple, do not attract it at all. The vegetable alkali, for instance, attracts moisture powerfully; the mineral alkali, though to appearance equally simple, does not attract it at all. The acid of tartar by itself does not attract the moisture of the air; but if mixed with borax, which has a little attraction for moisture, the mixture is exceedingly deliquescent.—Some theories have been suggested, in order to account for these and other similar facts; but we are as yet too little acquainted with the nature of the atmosphere, and the relation its constituent parts have to those of terrestrial substances, to determine any thing with certainty on this head.

DELIQUIUM, or *DELIQUIUM Animi* (from *delinquo*, “I swoon”), a swooning or fainting away; called also *syncope*, *lipothymia*, *lipopsychia*, *eclipsis*, and *apophysia*.

DELIQUIUM (from *deliquesco*, “to be dissolved”), in chemistry, is the dissolution or melting of a salt or calx by suspending it in a moist cellar.

Salt of tartar, or any fixed alkali, set in a cellar or other cool moist place, and in an open vessel, resolves or runs into a kind of liquor called by the chemists oil of tartar *per deliquium*.

DELIRIUM (from *deliro*, “to rave or talk idly”). When the ideas excited in the mind do not correspond

to the external objects, but are produced by the change induced on the common sensory, the patient is said to be delirious. See **MEDICINE-Index**.

DELIVERY, or **CHILD-BIRTH**. See **MIDWIFERY**.

DELLI, or **DELHI**, a kingdom and city of the Mogul's empire, in Asia. The city is one of the capitals of the empire. The road between it and *Agra*, the other capital, is that famous alley or walk planted with trees by Jehin Ghir, and 150 leagues in length. Each half league is marked with a kind of turret; and at every stage there are little farays or caravanferas for the benefit of travellers. The road, though pretty good, has many inconveniences. It is not only frequented by wild beasts, but by robbers. The latter are so dexterous at casting a noose about a man's neck, that they never fail, if within reach, to seize and strangle him. They gain their point likewise by means of handsome women; who, feigning great distress, and being taken up behind the unwary traveller, choak him with the same snare.—The capital consists of three cities, built near one another. The first, now quite destroyed, is said to have had 52 gates; and to have been the residence of king Porus, conquered by Alexander the Great. The second, which is also in ruins, was demolished by Shah Jehan, to build *Jehan-abad* with the materials. This makes the third city, and joins the ruins of the second. This city stands in an open plain country, on the river *Jamma*, which rises in this province. It is encompassed with walls, except towards the river. These are of brick, flanked with round towers; but without a ditch, and terraced behind, four or five feet thick. The circumference of the walls may be about nine miles. The fortrefs, which is a mile and an half in circuit, has good walls and round towers, and ditches full of water, faced with stone. It is surrounded with fine gardens, and in it is the Mogul's palace. See **INDOSTAN**. E. Long. 79. 25. N. Lat. 28. 20.

DELMENHORST, a strong town of Germany, in the circle of Westphalia, and county of Oldenburgh, belonging to Denmark; seated on the river Delm near the Weser. E. Long. 8. 37. N. Lat. 53. 10.

DELOS, an island of the Archipelago, very famous in ancient history. Originally it is said to have been a floating island, but afterwards it became fixed and immoveable. It was held sacred on account of its being the birth-place of Apollo and Diana.—Anciently this island was governed by its own kings. Virgil mentions one Anius reigning here in the time of the Trojan war. He was, according to that poet, both king and high-priest of Apollo, and entertained Æneas with great kindness. The Persians allowed the Delians to enjoy their ancient liberties, after they had reduced the rest of the Grecian islands. In after ages, the Athenians made themselves masters of it; and held it till they were driven out by Mithridates the Great, who plundered the rich temple of Apollo, and obliged the Delians to side with him. Mithridates was in his turn driven out by the Romans, who granted the inhabitants many privileges, and exempted them from all sorts of taxes. At present it is quite abandoned; the lands being covered with ruins and rubbish, in such a manner as to be quite incapable of cultivation. The inhabitants of Mycone hold it now, and pay but ten crowns land-tax to the Grand Signior for an island

Delos.

which was once one of the richest in the world.—Strabo and Callimachus tell us that the island of Delos was watered by the river Inapus: but Pliny calls it only a spring; and adds, that its waters swelled and abated at the same time with those of the Nile. At present there is no river in the island, but one of the noblest springs in the world; being twelve paces in diameter, and inclosed partly by rocks and partly by a wall. Mount Cynthus, whence Apollo had the surname of *Cynthius*, is by Strabo placed near the city, and said to be so high, that the whole island was covered by its shadow; but our modern travellers speak of it as an hill of a very moderate height. It is but one block of granite of the ordinary sort, cut on that side which faced the city into regular steps, and inclosed on both sides by a wall. On the top of the mountain are still to be seen the remains of a stately building, with a mosaic pavement, many broken pillars, and other valuable monuments of antiquity. From an inscription discovered there some time ago, and which mentions a vow made to Serapis, Isis, and Anubis, some have conjectured, that on this hill stood a temple dedicated to these Egyptian deities, though no where mentioned in history.—The city of Delos, as is manifest from the magnificent ruins still extant, took up that spacious plain reaching from one coast to the other. It was well peopled, and the richest city in the Archipelago, especially after the destruction of Corinth; merchants flocking thither from all parts, both in regard of the immunity they enjoyed there, and of the convenient situation of the place between Europe and Asia. Strabo calls it one of the most frequented empories in the world; and Pliny tells us, that all the commodities of Europe and Asia were sold, purchased, or exchanged, there. It contained many noble and stately buildings; as, the temples of Apollo, Diana, and Latona; the porticoes of Philip of Macedon, and Dionysius Eutyches; a gymnasium; an oval basin made at an immense expense, for the representation of sea-fights; and a most magnificent theatre. The temple of Apollo was, according to Plutarch, begun by *Eryfichon* the son of Cecrops; but afterwards enlarged and embellished at the common charges of all the states of Greece. Plutarch tells us, that it was one of the most stately buildings in the universe; and speaks of an altar in it, which, in his opinion, deserved a place among the wonders of the world. It was built with the horns of various animals, so artificially adapted to one another, that they hanged together without any cement. This altar is said to have been a perfect cube; and the doubling it was a famous mathematical problem among the ancients. This went under the name of *Problema Deliacum*; and is said to have been proposed by the oracle, for the purpose of freeing the country from a plague. The distemper was to cease when the problem was solved.—The trunk of the famous statue of Apollo, mentioned by Strabo and Pliny, is still an object of great admiration to travellers. It is without head, feet, arms, or legs; but from the parts that are yet remaining, it plainly appears, that the ancients did not exaggerate when they commended it as a wonder of art. It was of a gigantic size, though cut out of a single block of marble; the shoulders being six feet broad, and the thighs nine feet round. At a small distance from this statue lies, amongst confused heaps

of broken columns, architraves, bases, chapiters, &c. a square piece of marble $15\frac{1}{2}$ feet long, ten feet nine inches broad, and two feet three inches thick; which undoubtedly served as a pedestal for this colossus. It bears in very fair characters this inscription in Greek, “The Naxians to Apollo.” Plutarch tells us, in the life of Nicias, that he caused to be set up, near the temple of Delos, an huge palm-tree of brass, which he consecrated to Apollo; and adds, that a violent storm of wind threw down this tree on a colossian statue raised by the inhabitants of Naxos. Round the temple were magnificent porticoes built at the charge of various princes, as appears from inscriptions which are still very plain. The names of Philip king of Macedon, Dionysius Eutyches, Mithridates Euergetes, Mithridates Eupator, kings of Pontus, and Nicomedes king of Bithynia, are found on several pedestals.—To this temple the inhabitants of the neighbouring islands sent yearly a company of virgins to celebrate, with dancing, the festival of Apollo and his sister Diana, and to make offerings in the name of their respective cities.

So very sacred was the island of Delos held by the ancients, that no hostilities were practised here, even by the nations that were at war with one another, when they happened to meet in this place. Of this Livy gives an instance. He tells us, that some Roman deputies being obliged to put in at Delos, in their voyage to Syria and Egypt, found the galleys of Perseus king of Macedon, and those of Eumenes king of Pergamus, anchored in the same harbour, though these two princes were then making war upon one another.—Hence this island was a general asylum, and the protection extended to all kinds of living creatures; for this reason it abounded with hares, no dogs being suffered to enter it. No dead body was suffered to be buried in it, nor was any woman suffered to lie-in there; all dying persons, and women ready to be delivered, were carried over to the neighbouring island of Rhenea.

DELPHI, (anc. geog.), a town of Phocis situated on the south-west extremity of mount Parnassus. It was famous for a temple and oracle of that god, of which the following was said to be the origin: A number of goats that were feeding on mount Parnassus came near a place which had a deep and long perforation. The steam which issued from the hole seemed to inspire the goats, and they played and frisked about in such an uncommon manner, that the goat-herd was tempted to lean on the hole, and see what mysteries the place contained. He was immediately seized with a fit of enthusiasm, his expressions were wild and extravagant, and passed for prophecies. This circumstance was soon known about the country, and many experienced the same enthusiastic inspiration. The place was revered; a temple was soon after erected in honour of Apollo; and a city built, which became the chief and most illustrious in Phocis. The influence of its god has controlled the councils of states, directed the course of armies, and decided the fate of kingdoms. The ancient history of Greece is full of his energy, and an early register of his authority. The circumjacent cities were the stewards and guardians of the god. Their deputies composed the famous Amphictyonic assembly, which once guided Greece.

The temple of Apollo, it is related, was at first a kind

Delos,
Delphi

Delphi.

Delphi.

kind of cottage covered with boughs of laurel; but he was early provided with a better habitation. An edifice of stone was erected by Trophonius and Agamemdes, which subsisted about 700 years, and was burned in the year 636 after the taking of Troy, and 548 before Christ. It is mentioned in the hymn to Apollo ascribed to Homer. An opulent and illustrious family, called *Almeonidae*, which had fled from Athens and the tyrant Hippias, contracted with the deputies for the building of a new temple, and exceeded their agreement. The front was raised with Parian marble, instead of the stone called *Porus*; which resembled it in whiteness, but was not so heavy. A Corinthian was the architect. The pediments were adorned with Diana, and Latona, and Apollo, and the Muses; the setting of Phœbus or the sun; with Bacchus, and the women called *Thyades*. The architraves were decorated with golden armour; bucklers suspended by the Athenians after the battle of Marathon, and shields taken from the Gauls under Brennus. In the portico were inscribed the celebrated maxims of the seven sages of Greece. There was an image of Homer, and in the cell was an altar of Neptune, with statues of the Fates, and of Jupiter and Apollo, who were surnamed *Leaders of the Fates*. Near the hearth before the altar, at which Neoptolemus the son of Achilles was slain by a priest, stood the iron chair of Pindar. In the sanctuary was an image of Apollo gilded. The inclosure was of great extent, and filled with treasuries, in which many cities had consecrated tenths of spoil taken in war, and with the public donations of renowned states in various ages. It was the grand repository of ancient Greece, in which the labours of the sculptor and statuary, gods, heroes, and illustrious persons, were seen collected and arranged; the inequalities of the area or acclivity contributing to a full display of the noble assemblage.

The oracles were delivered by a priestess called Pythia, who received the prophetic influence in the following manner. A lofty tripod, decked with laurel, was placed over the aperture, whence the sacred vapour issued. The priestess, after washing her body, and especially her hair, in the cold water of Castalia, mounted on it, to receive the divine effluvia. She wore a crown of laurel, and shook a sacred tree, which grew by. Sometimes she chewed the leaves; and the frenzy which followed may with probability be attributed to this usage, and the gentler or more violent symptoms to the quantity taken. In one instance the paroxysm was so terrible, that the priests and suppliants ran away, and left her alone to expire, it was believed of the god. Her part was unpleasant; but, if she declined acting, they dragged her by force to the tripod. The habit of her order was that of virgins. The rules enjoined temperance and chastity, and prohibited luxury in apparel. The season of enquiry was in the spring, during the month called *Bubius*; after which Apollo was supposed to visit the altars of the Hyperboreans.

The city of Delphi arose in the form of a theatre, upon the winding declivity of Parnassus, whose fantastic tops overshadowed it, like a canopy, on the north, while two immense rocks rendered it inaccessible on the east and west, and the rugged and shapeless mount *Cirphis* defended it on the south. The foot of the

last-named mountain was washed by the rapid *Plistus*, which discharged itself into the sea at the distance of only a few leagues from the sacred city. This inaccessible and romantic situation, from which the place derived the name of Delphi (signifying, as explained in the glossaries, *solitary alone*), was rendered still more striking, by the innumerable echoes which multiplied every sound, and increased the ignorant veneration of visitants for the god of the oracle. The artful ministers of Apollo gradually collected such objects in the groves and temple as were fitted to astonish the senses of the admiring multitude. The splendor of marble, the magic of painting, the invaluable statues of gold and silver, represented (to use the language of antiquity) not the resemblance of any earthly habitation, but rather expressed the image of Olympus, adorned and enlightened by the actual presence of the gods.

The protection and superintendance of this precious depository of riches and superstition belonged to the Amphictyons, as already noticed. But the inhabitants of Delphi, who, if we may use the expression, were the original proprietors of the oracle, always continued to direct the religious ceremonies, and to conduct the important business of prophecy. It was their province alone to determine at what time, and on what occasion, the Pythia should mount the sacred tripod, to receive the prophetic steams by which she communicated with Apollo. When overflowing with the heavenly inspiration, she uttered the confused words, or rather frantic sounds, irregularly suggested by the impulse of the god; the Delphians collected these sounds, reduced them into order, animated them with sense, and adorned them with harmony. The Pythia, appointed and dismissed at pleasure, was a mere instrument in the hands of those artful ministers, whose character became so venerable and sacred, that they were finally regarded, not merely as attendants and worshippers, but as the peculiar family of the god. Their number was considerable, and never exactly ascertained, since all the principal inhabitants of Delphi, claiming an immediate relation to Apollo, were intitled to officiate in the rites of his sanctuary; and even the inferior ranks belonging to that sacred city were continually employed in dances, festivals, processions, and in displaying all the gay pageantry of an airy and elegant superstition.

Delphi was conveniently situated for the conflux of votaries, lying in the centre of Greece, and, as was then imagined, of the universe. It was customary for those who consulted the oracle to make rich presents to the god; his servants and priests feasted on the numerous victims which were sacrificed to him; and the rich magnificence of his temple had become proverbial even in the age of Homer. In after-times, Cræsus, the wealthiest of monarchs, was particularly munificent in his donations. This sacred repository of opulence was therefore often the object of plunder. Neoptolemus was slain, while sacrificing, on suspicion of a design of that kind. Xerxes divided his army at Panopeus, and proceeded with the main body through Bœotia into Attica, while a party, keeping Parnassus on the right, advanced along Schiste to Delphi; but was taken with a panic when near Ilium, and fled. This monarch, it is related, was as well apprised of the contents of the

Delphi.
Delphinia.

temple and the sumptuous offerings of Halyattes and Croesus as of the effects which he had left behind in his own palace. The divine hoard was seized by the Phocensians under Philomelus, and dissipated in a long war with the Amphietyons. The Gauls experienced a reception like that of the Persians, and manifested similar disdain and superstition. Sylla, wanting money to pay his army, sent to borrow from the holy treasury, and when his messenger would have frightened him, by reporting a prodigy, that the sound of a harp had been heard from within the sanctuary, replied, it was a sign that the god was happy to oblige him.

The trade of Apollo, after it had flourished for a long period, was affected by the mal-practices of some concerned in the partnership, who were convicted of bribery and corruption, and ruined the character of their principal. The temple in the time of Strabo was reduced to extreme poverty; but the offerings which remained were very numerous. Apollo was silent, except some efforts at intervals to regain his lost credit. Nero attempted to drive him, as it were by violence, from the cavern; killing men at the mouth and polluting it with blood; but he lingered on, and would not entirely forsake it. Answers were reported as given by him afterwards, but not without suspicion of forgery. An oracle of Apollo at another place informed the consulters, that he should no more recover utterance at Delphi, but enjoined the continuance of the accustomed offerings.

The city of Delphi was free under the Romans. In the time of Pausanias, who has particularly described it, there still remained an invaluable treasure of the offerings within the court of the temple. The number, variety, and beauty of these were prodigious. The store appeared inexhaustible; and the robbery of Nero, who removed five hundred brazen images, was rather regretted than perceived. The holy treasuries, though empty, served as memorials of the piety and glory of the cities which erected them. The Athenian portico preserved the beaks of ships and the brazen shields; trophies won in the Peloponnesian war. And a multitude of curiosities remained untouched.

Constantine the Great, however, proved a more fatal enemy to Apollo and Delphi than either Sylla or Nero. He removed the sacred tripods to adorn the Hippodrome of his new city; where these, with the Apollo, the statues of the Heliconian muses, and the celebrated Pan dedicated by the Greek cities after the war with the Medes, were extant when Sozomen wrote his history. Afterwards Julian sent Oribasius to restore the temple; but he was admonished by an oracle to represent to the emperor the deplorable condition of the place. 'Tell him the well-built court is fallen to the ground. Phœbus has not a cottage, nor the prophetic laurel, nor the speaking fountain (Cassotis); and even the beautiful water is extinct.' See DELPHOS.

DELPHINIA, in antiquity, feasts which the inhabitants of Egina celebrated in honour of Apollo, surnamed *Delphinus*, so called, as it is pretended, because he assumed the form of a dolphin to conduct Castalius and his colony from the isle of Crete to the *Simus Crisseus Delphinium*, one of the courts of judicature of the Athenians; so called from the proximity of the place, where they held their assemblies, to the temple of Apollo Delphinus.

Delphi-
nium,
Delphinus.

DELPHINIUM, DOLPHIN-FLOWER, OR LARK-SPUR: A genus of the trigynia order, belonging to the polyandria class of plants; and in the natural method ranking under the 26th order, *Mulifiliquæ*. There is no calyx; the petals are five; the nectarium bifid, and horned behind; the siliquæ three or one. There are seven species; four are cultivated in gardens. Two of these are annual, and two perennial. They are herbaceous plants of upright growth, rising from 18 inches to four feet in height, garnished with finely divided leaves, and terminated by long spikes of pentapetalous flowers of blue, red, white, or violet colours.—One species, the *consolida*, is found wild in several parts of Britain, and grows in corn-fields. According to Mr Withering, the expressed juice of the petals, with a little alum, makes a good blue ink. The seeds are acrid and poisonous. When cultivated, the blossoms often become double. Sheep and goats eat this plant; horses are not fond of it; cows and swine refuse it.—The first mentioned species makes a very fine appearance in gardens, and is easily propagated by seeds; being so hardy, that it thrives in any soil or situation.

DELPHINUS, or DOLPHIN; a genus of fishes belonging to the order of Cete. There are three species.

1. The delphinus, or dolphin. Historians and philologists seem to have contended who should invent most fables concerning this fish. It was consecrated to the gods, was celebrated in the earliest time for its fondness of the human race, was honoured with the title of the *sacred fish*, and distinguished by those of *boy-loving* and *philanthropist*. It gave rise to a long train of inventions, proofs of the credulity and ignorance of the times. Aristotle steers the clearest of all the ancients from these fables, and gives in general a faithful history of this animal; but the elder Pliny, Ælian, and others, seem to preserve no bounds in their belief of the tales related of this fish's attachment to mankind. Scarce an accident could happen at sea, but the dolphin offered himself to convey to shore the unfortunate. Arion the musician, when flung into the ocean by the pirates, is received and saved by this benevolent fish.

Inde (sive majus) tergo Delphinea recurvo,

Se memorant onere suppressisse novo.

Ille sedens cibaramquatenens, pretiumque vebendi

Contat, et aquareas carmine mulcet aquas.

OVID. *Fasts*, lib. ii. 113.

But (past belief) a dolphin's arched back

Preserved Arion from his destined wrack;

Secure he sits, and with harmonious strains

Requites his bearer for his friendly pains.

We are at a loss to account for the origin of those fables, since it does not appear that the dolphin shows a greater attachment to mankind than the rest of the cetaceous tribe. We know that at present the appearance of this fish, and the porpoise, are far from being esteemed favourable omens by the seamen; for their boundings, springs, and frolics, in the water, are held to be sure signs of an approaching gale.

It is from their leaps out of that element, that they assume a temporary form that is not natural to them; but which the old painters and sculptors have almost always given them. A dolphin is scarce ever exhibited by the ancients in a straight shape, but almost al-

Delphinus. ways incurvated: such are those on the coin of Alexander the Great, which is preserved by Belon, as well as on several other pieces of antiquity. The poets describe them much in the same manner, and it is not improbable but that the one had borrowed from the other:

*Tumidumque pando transfilit dorso mare
Tyrribenus omni piscis exultat freto,
Agitatque gyros.* SENECA. Trag. Agam. 450.

Upon the swelling waves the dolphins throw
Their bending backs; then, swiftly darting, go,
And in a thousand wreaths their bodies throw.

Plate
I.V.

The natural shape of the dolphin* is almost straight, the back being very slightly incurvated, and the body slender: the nose is long, narrow, and pointed, not much unlike the beak of some birds, for which reason the French call it *l'oye de mer*. It has in all 40 teeth; 21 in the upper jaw and 19 in the lower; a little above an inch long, conic at their upper end, sharp-pointed, bending a little in. They are placed at small distances from each other; so that when the mouth is shut, the teeth of both jaws lock into one another: the spout-hole is placed in the middle of the head; the tail is semilunar; the skin is smooth, the colour of the back and sides dusky, the belly whitish: it swims with great swiftness; and its prey is fish. It was formerly reckoned a great delicacy: Dr Caius says, that one which was taken in his time was thought a present worthy the Duke of Norfolk, who distributed part of it among his friends. It was roasted and dressed with porpessé sauce, made of crumbs of fine wheat bread, mixed with vinegar and sugar. This species of dolphin must not be confounded with that to which seamen give the name; the latter being quite another kind of fish, the *coryphæna hippuris* of Linnæus, and the *dorado* of the Portuguese.

2. The phocæna, or porpessé. This species is found in vast multitudes in all parts of the British seas; but in greatest numbers at the time when fish of passage appear, such as mackerel, herrings, and salmon, which they pursue up the bays with the same eagerness as a dog does a hare. In some places they almost darken the sea as they rise above water to take breath: but porpesses not only seek for prey near the surface, but often descend to the bottom in search of sand-eels and sea-worms, which they root out of the sand with their noses in the same manner as hogs do in the fields for their food. Their bodies are very thick towards the head, but grow slender towards the tail, forming the figure of a cone. The nose projects a little, is much shorter than that of the dolphin, and is furnished with very strong muscles, which enables it the readier to turn up the sand. In each jaw are 48 teeth, small, sharp-pointed, and a little moveable: like those of the dolphin, they are so placed as that the teeth of one jaw locks into those of the other when closed. The eyes are small; the spout-hole is on the top of the head; the tail semilunar. The colour of the porpessé is generally black, and the belly whitish; but they sometimes vary. In the river St Laurence there is a white kind; and Dr Borlase, in his voyage to the Scilly isles, observed a small species of cetaceous fish, which he calls *thornbacks*, from their broad and sharp fin on the back. Some of these were brown, some quite white, others spotted: but whether they were only a variety

of this fish, or whether they were small grampuses, *Delphinus*. which are also spotted, we cannot determine. The porpessé is remarkable for the vast quantity of the fat or lard that surrounds the body, which yields a great quantity of excellent oil: from this lard, or from their rooting like swine, they are called in many places *sea-hogs*; the Germans call them *meerschwein*; the Swedes *marfsuin*; and the English *porpessé*, from the Italian *porco pesce*.—This was once a royal dish, even so late as the reign of Henry VIII. and from its magnitude must have held a very respectable station at the table; for in a household book of that prince, extracts of which are published in the third volume of the *Archæologia*, it is ordered, that if a porpessé should be too big for a horse-lord, allowance should be made to the purveyor. This fish continued in vogue even in the reign of Elizabeth: for Dr Caius, on mentioning a dolphin (that was taken at Shoreham, and brought to Thomas Duke of Norfolk, who divided and sent it as a present to his friends) says, that it eat best with porpessé sauce, which was made of vinegar, crumbs of fine bread, and sugar.

3. The orca, or grampus, is found from the length of 15 feet to that of 25. It is remarkably thick in proportion to its length, one of 18 feet being in the thickest place 10 feet diameter. With reason then did Pliny call this “an immense heap of flesh armed with dreadful teeth.” It is extremely voracious; and will not even spare the porpessé, a congenious fish. It is said to be a great enemy to the whale, and that it will fasten on it like a dog on a bull, till the animal roars with pain. The nose is flat, and turns up at the end. There are 30 teeth in each jaw: those before are blunt, round, and slender; the farthest sharp and thick: between each is a space adapted to receive the teeth of the opposite jaw when the mouth is closed. The spout-hole is in the top of the neck. The colour of the back is black, but on each shoulder is a large white spot; the sides marbled with black and white; the belly of a snowy whiteness. These fishes sometimes appear on our coasts; but are found in much greater numbers off the North Cape in Norway, whence they are called the *North-Capers*. These and all other whales are observed to swim against the wind; and to be much disturbed, and tumble about with unusual violence, at the approach of a storm.

4. The beluga, a species called by the Germans *wit-fisch*, and by the Russians *beluga*; both signifying “white fish:” but to this the last add *morjkaia*, or “of the sea,” by way of distinguishing it from a species of sturgeon so named. The head is short: nose blunt: spiracle small, of the form of a crescent: eyes very minute: mouth small: in each side of each jaw are nine teeth, short, and rather blunt; those of the upper jaw are bent and hollowed, fitted to receive the teeth of the lower jaw when the mouth is closed: pectoral fins nearly of an oval form: beneath the skin may be felt the bones of five fingers, which terminate at the edge of the fin in five very sensible projections. This brings it into the next of rank in the order of beings with the *Manati*. The tail is divided into two lobes, which lie horizontally, but do not fork, except a little at their base. The body is oblong, and rather slender, tapering from the back (which is a little elevated) to the tail. It is quite destitute of the dorsal fin. Its length is from 12 to 18 feet. It makes great use of its

Delphinus,
Delphos.

its tail in swimming; for it bends that part under it, as a lobster does its tail, and works it with such force as to dart along with the rapidity of an arrow. It is common in all the Arctic seas; and forms an article of commerce, being taken on account of its blubber. They are numerous in the Gulph of St Laurence, and go with the tide as high as Quebec. There are fisheries for them and the common porpessé in that river. A considerable quantity of oil is extracted; and of their skins is made a sort of Morocco leather, thin, yet strong enough to resist a musket-ball. They are frequent in the Dwina and the Oby; and go in small families from five to ten, and advance pretty far up the rivers in pursuit of fish. They are usually caught in nets, but are sometimes harpooned. They bring only one young at a time, which is dusky; but grow white as they advance in age, the change first commencing on the belly. They are apt to follow boats, as if they were tamed; and appear extremely beautiful, by reason of their resplendent whiteness.

DELPHINUS, in astronomy, a constellation of the northern hemisphere.

DELPHOS, a town, or rather village, of Turkey in Asia, in the province of Libadia; occupying part of the site of the ancient Delphi. See DELPHI.

A late traveller † informs us, that some vestiges of temples are visible; and above them, in the mountain-side, are sepulchres, niches with horizontal cavities for the body, some covered with slabs. Farther on is a niche cut in the rock with a seat, intended, it seems, for the accommodation of travellers wearied with the rugged track and the long ascent. The monastery is on the site of the Gymnasium. Strong terrace walls and other traces of a large edifice remain. The village is at a distance. Castalia is on the right hand as you ascend to it, the water coming from on high and crossing the road; a steep precipice, above which the mountain still rises immensely, continuing on in that direction. The village consists of a few poor cottages of Albanians covering the site of the temple and oracle. Beneath it to the south is a church of St Elias, with areas, terrace walls, arches, and vestiges of the buildings once within the court. The concavity of the rock in this part gave to the site the resemblance of a theatre. Turning to the left hand, as it were toward the extremity of one of the wings, you come again to sepulchres hewn in the rock, and to a semicircular recess or niche with a seat as on the other side. Higher up than the village is the hollow of the Stadium, in which were some seats and scattered fragments.

Higher up, within the village, is a piece of ancient wall, concealed from view by a shed, which it supports. The stone is brown, rough, and ordinary, probably that of Parnassus. On the fourth side are many inscriptions, with wide gaps between the letters, which are negligently and faintly cut; all nearly of the same tenor, and very difficult to copy. They register the purchase of slaves who had entrusted the price of their freedom to the god; containing the contract between Apollo and their owners, witnessed by his priests and by some of the archons. This remnant seems to be part of the wall before Cassotis; as above it is still a fountain, which supplies the village with excellent water, it is likely from the ancient source.

The water of Castalia in the neighbourhood, from

which the Pythia, and the poets who versified her answers, were believed to derive a large share of their inspiration, descends through a cleft of Parnassus; the rock on each side high and steep, ending in two summits; of which one was called *Hyampeia*, and had beneath it the sacred portion of Autonous, a local hero as distinguished as Phylacus. From this precipice the Delphians threw down the famous *Æsop*. By the stream, within the cleft, are seen small broken stairs leading to a cavity in which is water, and once perhaps up to the top. Grooves have been cut, and the marks of tools are visible on the rock; but the current, instead of supplying a fountain, now passes over its native bed, and hastens down a course deep-worn to join the Pleistus. Close by, at the foot of the eastern precipice, is a basin with steps on the margin, once, it is likely, the bath used by the Pythia. Above, in the side of the mountain, is a petty church dedicated to St John, within which are excavations resembling niches, partly concealed from view by a tree.

DELTA, is a part of Lower Egypt, which takes up a considerable space of ground between the branches of the Nile and the Mediterranean Sea: the ancients called it the *Isle of Delta*, because it is in the shape of a triangle, like the Greek letter of that name. It is about 130 miles along the coast from Damietta to Alexandria, and 70 on the sides from the place where the Nile begins to divide itself. It is the most plentiful country in all Egypt, and it rains more there than in other parts, but the fertility is chiefly owing to the inundation of the river Nile. The principal towns on the coast are Damietta, Rosetta, and Alexandria; but, within land, Menoufia, and Maala or Elmala.

DELTOIDES, in anatomy. See ANATOMY, *Table of the Muscles*.

DELUGE, an inundation or overflowing of the earth, either wholly or in part, by water.

We have several deluges recorded in history; as that of Ogyges, which overflowed almost all Attica; and that of Deucalion, which drowned all Theffaly in Greece: but the most memorable was that called the *Universal Deluge* or *Noah's Flood*, which overflowed and destroyed the whole earth; and from which only Noah, and those with him in the ark, escaped.

This flood makes one of the most considerable epochs in chronology. Its history is given by Moses, Gen. ch. vi. and vii. Its time is fixed, by the best chronologers, to the year before the creation 1656, answering to the year before Christ 2293. From this flood, the state of the world is divided into *diluvian* and *antediluvian*. See ANTEDILUVIANS.

Among the many testimonies of the truth of this part of the Mosaic history, we may account the general voice of mankind at all times, and in all parts of the world. The objections of the free-thinkers have indeed principally turned upon three points, viz. 1. The want of any direct history of that event by the profane writers of antiquity; 2. the apparent impossibility of accounting for the quantity of water necessary to overflow the whole earth to such a depth as it is said to have been; and, 3. there appearing no necessity for an universal deluge, as the same end might have been accomplished by a partial one.

1. The former of these objections has given rise to several very elaborate treatises, though all that has yet been

Delta
Deluge.

† Chandler's
Travels in
Greece.

1
Era of the
deluge

2
Objection
to the fact

been done in this way has scarcely been able to silence the objectors. Mr Bryant, in his System of Mythology, has with great learning and considerable success endeavoured to show, that the deluge was one of the principal, if not the only foundation of the Gentile worship; that the first of all their deities was Noah; that all nations of the world look up to him as their founder; and that he, his sons, and the first patriarchs, are alluded to in most if not all of the religious ceremonies not only of the ancient but of the modern heathens. In short, according to this author, the deluge, so far from being forgot, or obscurely mentioned by the heathen world, is in reality conspicuous throughout every one of their acts of religious worship.

The Egyptian Osiris, according to him, was the same with Ham the son of Noah, though the name was sometimes bestowed on Noah himself. That this is the case, is evident, he thinks, from its being said that he was exposed in an ark, and afterwards restored to day; that he planted the vine, taught mankind agriculture, and inculcated upon them the maxims of religion and justice. Something of the same kind is related of Perseus. He is represented by some ancient historians as a great astronomer, and well versed in other sciences. After being conceived in a shower of gold, he was exposed in an ark upon the waters, and is said to have had a renewal of life.—The history of Myrina the amazon afford a kind of abridgement and mixture of the histories of Osiris and Perseus. Similar to these is the history of Hercules himself. But our author observes, that under the titles of *Osiris*, *Perseus*, *Myrina*, &c. the ancients spoke of the exploits of a whole nation, who were no other than the Cushites or Cushites, the descendants of Cush the son of Ham and father of Nimrod. These people spread themselves into the most remote corners of the globe; and hence the heroes whom they represented are always set forth as conquering the whole world.—According to Diodorus Siculus, the Egyptian Osiris was the same with the Dionysus of the Greeks. He is said to have been twice born, and to have had two fathers and two mothers; to have been wonderfully preserved in an ark; to have travelled all over the earth; taught the use of the vine, to build, plant, &c. The Indians claim him as a native of their country, though some allow that he came from the west. Of Cronus and Astarte, it is said that they went over the whole earth, disposing of the countries as they pleased, and doing good wherever they came. The same is related of Ouranus, Themis, Apollo, &c. though all their exploits are said to have been the effects of conquest, and their benevolence enforced by the sword. In a similar manner he explains the histories of other heroes of antiquity: and having thus, in the characters and history of the most celebrated personages, found traces of the history of Noah and his family, our author proceeds to inquire into the memorials of the deluge itself to be met with in the history or religious rites of the different nations of antiquity.

“We may reasonably suppose (says he), that the particulars of this extraordinary event would be gratefully commemorated by the patriarch himself, and transmitted to every branch of his family; that they were made the subject of domestic converse, where

the history was often renewed, and ever attended with a reverential awe and horror, especially in those who had been witnesses to the calamity, and had experienced the hand of Providence in their favour. In process of time, when there was a falling off from the truth, we might farther expect, that a person of so high a character as Noah, so particularly distinguished by the Deity, could not fail of being revered by his posterity; and, when idolatry prevailed, that he would be one of the first among the sons of men to whom divine honours would be paid. Lastly, we might conclude, that these memorials would be interwoven in the mythology of the Gentile world; and that there would be continual allusions to these ancient occurrences in the rites and mysteries as they were practised by the nations of the earth. In conformity to these suppositions, I shall endeavour to show that these things did happen; that the history of the deluge was religiously preserved in the first ages; that every circumstance of it is to be met with among the historians and mythologists of different countries; and traces of it are to be found particularly in the sacred rites of Egypt and of Greece.

“It will appear from many circumstances in the more ancient writers, that the great patriarch was highly revered by his posterity. They looked to him as a person highly favoured by heaven; and honoured him with many titles, each of which had a reference to some particular part of his history. They styled him *Prometheus*, *Deucalion*, *Atlas*, *Theuth*, *Zuth*, *Xuthus*, *Inachus*, *Osiris*. When there began to be a tendency towards idolatry, and the adoration of the sun was introduced by the posterity of Ham, the title of *Helius*, among others, was conferred upon him. They called him also *Mov* and *Mav*, which is the moon. When colonies went abroad, many took to themselves the title of *Minyadae* and *Minyae* from him; just as others were denominated *Achamenidae*, *Aurita*, *Heliadae*, from the sun. People of the former name are to be found in Arabia and in other parts of the world. The natives at Orchomenos were styled *Minyae*, as were some of the inhabitants of Thessaly. Noah was the original *Zeus* and *Dios*. He was the planter of the vine, and inventor of fermented liquors: whence he was denominated *Zeuth*, which signifies ferment, rendered *Zeus* by the Greeks. He was also called *Dionusos*, interpreted by the Latins *Bacchus*, but very improperly. Bacchus was Chus the grandson of Noah; as Ammon may in general be esteemed Ham, so much revered by the Egyptians.

“Among the people of the east, the true name of the patriarch was preserved; they called him *Noas*, *Naus*, and sometimes contracted *Nous*; and many places of sanctity, as well as rivers, were denominated from him. Anaxagoras of Clazomenae had obtained some knowledge of him in Egypt. By him the patriarch was denominated *Noas* or *Nous*; and both he and his disciples were sensible that this was a foreign appellation; notwithstanding which he has acted as if it had been a term of the Greek language. Eusebius informs us, that the disciples of Anaxagoras say, ‘that *Nous* is by interpretation, the deity *Dis* or *Dios*; and they likewise esteem *Nous* the same as *Prometheus*, because he was the renewer of mankind, and was said to have fashioned them again,’ after they had

Deluge.

had been in a manner extinct. After this, however, he gives a solution of the story upon the supposition that *Nous* is the same with the Greek word νοῦς the mind; that 'the mind was *Prometheia*; and Prometheus was said to renew mankind, from new forming their minds, and leading them, by cultivation, from ignorance.'

"Suidas has preserved, from some ancient author, a curious memorial of this wonderful personage, whom he affects to distinguish from Deucalion, and styles *Nannacus*. According to him, this *Nannacus* was a person of great antiquity, and prior to the time of Deucalion. He is said to have been a king, who, foreseeing the approaching deluge, collected every body together, and led them to a temple, where he offered up his prayers for them, accompanied with many tears. There is likewise a proverbial expression about *Nannacus* applied to people of great antiquity.

"Stephanus gives great light to this history, and supplies many deficiencies. 'The tradition is (says he), that there was one formerly named *Annacus*, the extent of whose life was above 300 years. The people who were of his neighbourhood and acquaintance had inquired of an oracle how long he was to live: and there was an answer given, that when *Annacus* died, all mankind would be destroyed. The Phrygians, upon this account, made great lamentations, from whence arose the proverb *το ἐπὶ Ἀννακῆ κλαυθεῖν*, the lamentation for *Annacus*, made use of for people or circumstances highly calamitous. When the flood of Deucalion came, all mankind were destroyed, according as the oracle had foretold. Afterwards, when the surface of the earth began to be again dry, Zeus ordered Prometheus and Minerva to make images of clay in the form of men: and, when they were finished, he called the winds, and made them breathe into each, and render them vital.'

From these histories Mr Bryant concludes as follows: "However the story may have been varied, the principal outlines plainly point out the person who is alluded to in these histories. It is, I think, manifest, that *Annacus*, and *Nannacus*, and even *Inachus*, relate to *Noachus* or *Noah*. And not only these, but the histories of Deucalion and Prometheus have a like reference to the patriarch; in the 600th year, and not the 300th, of whose life the waters prevailed upon the earth. He was the father of mankind, who were renewed in him. Hence he is represented by another author, under the character of Prometheus, as a great artist, by whom men were formed anew, and were instructed in all that was good.

"Noah was the original *Cronus* and *Zeus*; though the latter is a title conferred sometimes upon his son *Ham*. There is a very particular expression recorded by Clemens of Alexandria, and attributed to Pythagoras, who is said to have called the sea the *tear of Cronus*; and there was a farther tradition concerning this person, that he drank, or swallowed, up all his children. The tears of *Isis* are represented as very mysterious. They are said to have flowed whenever the Nile began to rise, and to flood the country. The overflowing of that river was the great source of affluence to the people, and they looked upon it as their

N° 99.

chief blessing; yet it was ever attended with mystical tears and lamentations. This was particularly observed at *Coptos*, where the principal deity was *Isis*. An ancient writer imagines that the tears and lamentations of the people were to implore an inundation; and the tears of *Isis* were supposed to make the river swell. But all this was certainly said and done in memorial of a former flood, of which they made the overflowing of the Nile a type.

"As the patriarch was by some represented as a king called *Naachus* and *Nauchus*; so by others he was styled *Inachus*, and supposed to have reigned at *Argos*. Hence *Inachus* was made a king of Greece; and *Phoroneus* and *Apis* brought in succession after him. But *Inachus* was not a name of Grecian original: it is mentioned by Eusebius, in his account of the first ages, that there reigned in Egypt *Telegonus*, a prince of foreign extraction, who was the son of *Ones* the shepherd, and the seventh in descent from *Inachus*. And in the same author we read, that a colony went forth from that country into Syria, where they founded the ancient city of *Antioch*: and that they were conducted by *Cafus* and *Belus*, who were sons of *Inachus*. By *Inachus* is certainly meant *Noah*: and the history relates to some of the more early descendants of the patriarch. His name has been rendered very unlike itself, by having been lengthened with terminations, and likewise fashioned according to the idiom of different languages. But the circumstances of the history are so precise and particular, that we cannot miss of the truth.

"He seems in the east to have been called *Noas*, *Noafis*, *Nufus*, and *Nus*; and by the Greeks his name was compounded *Dionufus*. The *Amonians*, wherever they came, founded cities to his honour: hence places called *Nusa* will often occur; and indeed a great many of them are mentioned by ancient authors. These, though widely distant, being situated in countries far removed, yet retained the same original histories; and were generally famous for the plantation of the vine. Misled by this similarity of traditions, people in after times imagined that *Dionufus* must necessarily have been where his history occurred: and as it was the turn of the Greeks to place every thing to the account of conquest, they made him a great conqueror, who went over the face of the whole earth, and taught mankind the plantation of the vine. We are informed, that *Dionufus* went with an army over the face of the whole earth, and taught mankind, as he passed along, the method of planting the vine, and how to press out the juice, and receive it in proper vessels. Though the patriarch is represented under various titles, and even these not always uniformly appropriated; yet there will continually occur such peculiar circumstances of his history as will plainly point out the person referred to. The person preserved is always mentioned as preserved in an ark. He is described as being in a state of darkness, which is represented allegorically as a state of death. He then obtains a new life, which is called a second birth; and is said to have his youth renewed. He is, on this account, looked upon as the first-born of mankind; and both his antediluvian and postdiluvian states are commemorated, and sometimes the intermediate state is also spoken of. *Diodorus* calls him *Deucalion*; but describes the deluge as

Deluge

Inachus,
Deucalion,
and *Prometheus*,
the same
with *Noah*.

luge. in a manner univerfal. ' In the deluge which happened in the time of Deucalion, almoft all flefti died.' Apollodorus having mentioned Deucalion *εὐκράων*, configned to the ark, takes notice, upon his quitting it, of his offering up an immediate facrifice to the God who delivered him. As he was the father of all mankind, the ancients have made him a perfon of very extenfive rule; and fuppofed him to have been a king. Sometimes he is defcribed as a monarch of the whole earth; at other times he is reduced to a petty king of Theffaly. He is mentioned by Heliadas in this latter capacity; who fpeaks of the deluge in his time, and of his building altars to the gods. Apollonius Rhodius fuppofes him to have been a native of Greece, according to the common notion: but notwithstanding his prejudices, he gives fo particular a character of him, that the true hiftory cannot be miftaken. He makes him indeed the fon of Prometheus, the fon of Japetus; but in thefe ancient mythological accounts all genealogy muft be entirely difregarded. Though this character be not precifely true, yet we may learn that the perfon reprefented was the firft of men, through whom religious rites were renewed, cities built, and civil polity eftablifhed in the world: none of which circumftances are applicable to any king of Greece. We are affured by Philo, that Deucalion was Noah; and the Chaldeans likewife mentioned him by the name of Xifuthrus, as we are informed by Cedrenus.

7 Deucalion ved not ave be- ged to ifaly. " That Deucalion was unduly adjudged by the people of Theffaly to their country folety, may be proved from his name occurring in different parts of the world, and always accompanied with fome hiftory of the deluge. The natives of Syria laid the fame claim to him. He was fuppofed to have founded the temple at Hierapolis, where was a chafm through which the waters after the deluge were faid to have retreated. He was likewife reported to have built the temple of Jupiter at Athens; where there was a cavity of the fame nature, and a like tradition, that the waters of the flood paffed off through this aperture. However groundlefs the notions may be of the waters having retreated through thefe paffages, yet they fhew what impreffions of this event were retained by the Amonians, who introduced fome hiftory of it wherever they came. As different nations fucceeded one another in thefe parts, and time produced a mixture of generations, they varied the hiftory, and modelled it according to their notions and traditions; yet the ground-work was always true, and the event for a long time univerfally commemorated. Jofephus, who feems to have been a perfon of extenfive knowledge, and verfed in the hiftories of nations, fays, that this great occurrence was to be met with in the writings of all perfons who treated of the firft ages. He mentions Berofus of Chaldea, Heronymus of Egypt, who wrote concerning the antiquities of Phenicia; alfo Alnafeas, Abydenus, Melon, and Nicolaus Damafcenus, as writers by whom it was recorded; and adds, that it was taken notice of by many others.

8 counts of flood ong the tern na- 25. " Among the eaftern nations, the traces of this event are more vivid and determinate than thofe of Greece, and more conformable to the accounts of Mofes. Eufebius has preferved a moft valuable extract to this purpofe from Abydenus; which was taken from

the archives of the Medes and Babylonians. This Deluge. writer fpeaks of Noah, whom he names Seifithrus, as a king; and fays, that the flood began upon the 15th day of the month Defius: that during the prevalence of the waters, Seifithrus fent out birds, that he might judge if the flood had returned: but that the birds, not finding any refting place, returned to him again. This was repeated three times; when the birds were found to return with their feet ftained with foil; by which he knew that the flood was abated. Upon this he quitted the ark, and was never more feen of men, being taken away by the gods from the earth. Abydenus concludes with a particular, in which the eaftern writers are unanimous; that the place of defcent from the ark was in Armenia, and fpeaks of its remains being preferved for a long time. Plutarch mentions the Noachic dove, and its being fent out of the ark. But the moft particular hiftory of the deluge, and the neareft of any to the account given by Mofes, is to be found in Lucian. He was a native of Samofata, a city of Comagene, upon the Euphrates, a part of the world where memorials of the deluge were particularly preferved, and where a reference to that hiftory was continually kept up in the rites and worfhip of the country. His knowledge therefore was obtained from the Afatic nations among whom he was born, and not from his kinfmen the Heliadians, who were far inferior in the knowledge of ancient times. He defcribes Noah under the name of Deucalion; and fays, ' that the prefent race of mankind are different from thofe who firft exifted; for thofe of the antediluvian world were all deftroyed. The prefent world is peopled from the fons of Deucalion; having increased to fo great a number from one perfon. In refpect to the former brood, they were men of violence, and lawlefs in their dealings. They regarded not oaths, nor obferved the rights of hofpitality, nor fhewed mercy to thofe who fued for it. On this account they were doomed to deftruction: and for this purpofe there was a mighty eruption of waters from the earth, attended with heavy fhowers from above; fo that the rivers fwelled, and the fea overflowed, till the whole earth was covered with a flood, and all flefti drowned. Deucalion alone was preferved to repeople the world. This mercy was fhown to him on account of his piety and juftice. His prefervation was effected in this manner: He put all his family, both his fons and their wives, into a vaft ark which he had provided, and he went into it himfelf. At the fame time animals of every fpecies, boars, horfes, lions, ferpents, whatever lived upon the face of the earth, followed him by pairs: all which he received into the ark, and experienced no evil from them; for there prevailed a wonderful harmony throughout, by the immediate influence of the Deity. Thus were they wafed with him as long as the flood endured.' After this he proceeds to mention, that, upon the difappearing of the waters, Deucalion went forth from the ark, and raifed an altar to God; but he tranfpofes the fcene to Hierapolis in Syria, where the natives pretended, as has been already mentioned, to have very particular memorials of the deluge.

9 Remains of the ark faid to have been long of vifible. " Moft of the authors who have transmitted to us thefe accounts, at the fame time inform us, that the remains of the ark were to be feen in their days on one

Deluge.

of the mountains of Armenia. Abydenus particularly says, in confirmation of this opinion, that the people of the country used to get small pieces of the wood, which they carried about by way of amulet. And Berofus mentions, that they scraped off the asphaltus with which it was covered, and used it as a charm. Some of the fathers seem to insist on the certainty of the ark being still remaining in their time. Theophilus says expressly, that the remains were to be seen upon the mountains of Aram, or Armenia. And Chrysofom appeals to it as to a thing well known. 'Do not (says he) those mountains of Armenia bear witness to the truth? those mountains where the ark first rested? And are not the remains of it preserved there even unto this day?'

10
Boats or ships carried in procession by the Amonians and Egyptians.

"There was a custom among the priests of Amon, of carrying a boat in procession at particular seasons, in which was an oracular shrine held in great veneration. They were said to have been 80 in number, and to have carried the sacred vessel about just as they were directed by the impulse of the Deity. This custom was likewise in use among the Egyptians; and bishop Pocock has preserved three specimens of ancient sculpture, wherein this ceremony is displayed. They are of wonderful antiquity, and were found by him in Upper Egypt.

"Part of the ceremony in most of the ancient mysteries consisted in carrying about a ship or boat; which custom, upon due examination, will be found to relate to nothing else but Noah and the deluge. The ship of Isis is well known, and the festivity among the Egyptians whenever it was carried in public. The name of this, and of all the navicular shrines, was *Baris*; which is remarkable: for it was the very name of the mountain, according to Nicolaus Damascenus, on which the ark of Noah rested, the same as Ararat in Armenia. He mentions, that there is a large mountain in Armenia, which stands above the country of the Minyæ, called *Baris*; to this it was said that many people betook themselves in the time of the deluge, and were saved; and there is a tradition of one person in particular floating in an ark, and arriving at the summit of the mountain. We may be assured then, that the ship of Isis was a sacred emblem; in honour of which there was among the Egyptians an annual festival. It was in after times admitted among the Romans, and set down in their kalendar for the month of March. The former, in their description of the primary deities, have continually some reference to a ship or float. Hence we frequently read of *θεοὶ ναυτιλλόμενοι* (sailing gods). They oftentimes, says Porphyry, describe the sun in the character of a man sailing upon a float. And Plutarch observes to the same purpose, that they did not represent the sun and the moon in chariots, but *wafted about upon floating machines*. In doing which they did not refer to the luminaries, but to a person represented under those titles. The sun, or Orus, is likewise described by Jamblichus as sitting upon the lotus, and sailing in a vessel.

11
Wonderful ship of Sesostris explained.

"It is said of Sesostris, that he constructed a ship which was 280 cubits in length. It was of cedar, plated without with gold, and inlaid with silver; and it was, when finished, dedicated to Osiris at Thebes. It is not credible that there should have been a ship of this size, especially in an inland district, the most re-

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mote of any in Egypt. It was certainly a temple and a shrine. The former was framed upon this large scale; and it was the latter on which the gold and silver were so lavishly expended. There is a remarkable circumstance relating to the Argonautic expedition; that the dragon slain by Jason was of the size of a trireme; by which must be meant, that it was of the shape of a ship in general, for there were no triremes at the time alluded to. And I have moreover shown, that all these dragons, as they have been represented by the poets, were in reality temples, *Draconia*; where, among other rites, the worship of the serpent was instituted. There is therefore reason to think, that this temple, as well as that of Sesostris, was fashioned, in respect to its superficial contents, after the model of a ship; and as to the latter, it was probably intended, in its outlines, to be the exact representation of the ark, in commemoration of which it was certainly built. It was a temple sacred to Osiris at Theba; or, to say the truth, it was itself called *Theba*; and both the city, said to be one of the most ancient in Egypt, as well as the province, was undoubtedly denominated from it. Now *Theba* was the name of the ark. It is the very word made use of by the sacred writer; so that we may, I think, be assured of the prototype after which this temple was fashioned. It is said indeed to have been only 280 cubits in length; whereas the ark of Noah was 300. But this is a variation of only one-fifteenth in the whole: and as the ancient cubit was not in all countries the same, we may suppose that this disparity arose rather from the manner of measuring than from any real difference in the extent of the building. It was an idolatrous temple, said to have been built by Sesostris in honour of Osiris. I have been repeatedly obliged to take notice of the ignorance of the Greeks in respect to ancient titles, and have shown their misapplication of terms in many instances; especially in their supposing temples to have been erected by persons to whom they were in reality sacred. Sesostris was Osiris; the same as Dionusus, Menes, and Noah. He is called *Seisifubros* by Abydenus; *Xixouthros* by Berofus and Apollodorus; and is represented by them as a prince in whose time the deluge happened. He was called *Zuth*, *Xuth*, and *Zeus*; and had certainly divine honours paid him.

"Pausanias gives a remarkable account of a temple of Hercules at Eruthra in Ionia; which he mentions as of the highest antiquity, and very like those of Egypt. The deity was represented upon a float, and was supposed to have come thither in this manner from Phenicia. Aristides mentions, that at Smyrna, upon the feast called *Dionysia*, a ship used to be carried in procession. The same custom prevailed among the Athenians at the Panathenæa; when what was termed the sacred ship was borne with great reverence through the city to the temple of Dameter at Eleusis. At Phalerus, near Athens, there were honours paid to an unknown hero, who was represented in the stern of a ship. At Olympia, the most sacred place in Greece, was a representation of the like nature. It was a building like the fore-part of a ship, which stood facing the end of the Hippodromus; and towards the middle of it was an altar, upon which, at the renewal of each Olympiad, certain rites were performed.

"I think it is pretty plain that all these emblematic

12
Other emblematic representations explained.

tical representations, of which I have given so many instances, related to the history of the deluge, and the conservation of one family in the ark. This history was pretty recent when these works were executed in Egypt, and when the rites were first established; and there is reason to think, that in early times most shrines of the Mizraim were formed under the resemblance of a ship, in memory of this great event. Nay, farther, both ships and temples received their names from thence; being styled by the Greeks, who borrowed largely from Egypt, *Navis* and *Navis*, and mariners *Nautai*, *Nautae*, in reference to the patriarch, who was variously styled *Noas*, *Nous*, and *Noah*.

“ However the Greeks may, in their mysteries, have sometimes introduced a ship as a symbol, yet in their references to the deluge itself, and to the persons preserved, they always speak of an ark. And though they were apt to mention the same person under various titles, and by these means different people seem to be made principals in the same history; yet they were so far uniform in their account of this particular event, that they made each of them to be exposed in an ark. Thus it is said of Deucalion, Perseus, and Dionusius, that they were exposed upon the waters in a machine of this fabric. Adonis was hid in an ark by Venus, and was supposed to have been in a state of death for a year. Theocritus introduces a pastoral personage named *Comates*, who was exposed in an ark for the same term, and wonderfully preserved. Of Osiris being exposed in an ark we have a very remarkable account in Plutarch; who mentions, that it was on account of *Typhon*, and that it happened on the 17th of the month Athyr, when the sun was in Scorpio. This, in my judgment, was the precise time when Noah entered the ark, and when the flood came, which, in the Egyptian mythology, was called *Typhon*.

13
plan-
ation of the
word Ty-
phon.

“ Typhon is one of those whose character has been greatly confounded. This has arisen from two different personages being included under one name, who undoubtedly were distinguished in the language of Egypt. Typhon was a compound of *Tuph* or *Tupha-On*; and signified an high altar of the Deity. There were several such in Egypt, upon which they offered human sacrifices; and the cities which had these altars were styled *Typhonian*. But there was another Typhon, who was very different from the former, however by mistake blended with that character. By this was signified a mighty whirlwind and inundation: and it oftentimes denoted the ocean; and particularly the ocean in a ferment. For, as Plutarch observes, by Typhon was understood any thing violent and unruly. It was a derivative from *Tuph*, like the former name; which *Tuph* seems here to have been the same as the *Suph* of the Hebrews. By this they denoted a whirlwind; but among the Egyptians it was taken in a greater latitude, and signified any thing boisterous, particularly the sea. Plutarch speaks of it as denoting the sea; and says likewise, that the salt of the sea was called the foam of Typhon. It signified also a whirlwind, as we learn from Euripides, who expresses

it *Tuphos*; and the like is to be found in Hesychius, Deluge, who calls it a violent wind.

“ The history of Typhon was taken from hieroglyphical descriptions. In these the dove, *ovias*, was represented as hovering over the *mundane* egg, which was exposed to the fury of Typhon: For an egg, containing in it the elements of life, was thought no improper emblem of the ark, in which were preserved the rudiments of the future world. Hence in the Dionusiaca, and in other mysteries, one part of the nocturnal ceremony consisted in the consecration of an egg. By this, as we are informed by Porphyry, was signified the world. This world was Noah and his family; even all mankind, inclosed and preserved in the ark.

“ In respect to Typhon, it must be confessed that the history given of him is attended with some obscurity. The Grecians have comprehended several characters under one term, which the Egyptians undoubtedly distinguished. The term was used for a title as well as a name; and several of those personages which had a relation to the deluge were styled Typhonian or Diluvian. All these the Grecians have included under one and the same name Typhon. The real deity by whom the deluge was brought upon the earth had the appellation of Typhonian, by which was meant *Diluvii Deus* (A). It is well known that the ark was constructed by a divine commission; in which, when it was completed, God inclosed the patriarch and his family. Hence it is said, that Typhon made an ark of curious workmanship, that he might dispose of the body of Osiris. Into this Osiris entered, and was shut up by Typhon. All this relates to the Typhonian deity who inclosed Noah, together with his family, within the limits of an ark. The patriarch also, who was thus interceded in the event, had the title of Typhonian. I have shown that the ark by the mythologists was spoken of as the mother of mankind. The stay in the ark was looked upon as a state of death and of regeneration. The passage to life was through the door of the ark, which was formed in its side. Through this the patriarch made his descent; and at this point was the commencement of time. This history is obscurely alluded to in the account of Typhon; of whom it is said, that without any regard to time or place, he forced a passage and burst into light obliquely through the side of his mother. This return to light was described as a revival from the grave; and Plutarch accordingly mentions the return of Osiris from *Hades*, after he had been for a long season inclosed in an ark and in a state of death. This renewal of life was by the Egyptians esteemed a second state of childhood. They accordingly, in their hieroglyphics, described him as a boy, whom they placed upon the lotos or water-lily, and called him Orus. He was the supposed son of Isis; but it has been shown that Isis, Rhea, Atargatis, were all emblems of the ark, that *receptacle* which was styled the mother of mankind. Orus is represented as undergoing from the Titans all that Osiris suffered from Typhon; and the history at bottom is the same. Hence it is said

4 Z 2

of

(A) “ Plutarch owns that the Egyptians in some instances esteemed Typhon to be no other than Helius the chief deity; and they were in the right, though he will not allow it.”

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of Isis, that she had the power of making people immortal; and that when she found her son Orus, in the midst of the waters, dead through the malice of the Titans, she not only gave him a renewal of life, but also conferred upon him immortality."

In this manner does our author decypher almost all the ancient fables of which no satisfactory solution was ever given before. He shows that the primitive gods of Egypt, who were in number eight, were no other than the eight persons saved in the ark; that almost all the heathen deities had one way or other a reference to Noah. He shows that he was characterised under the titles of Janus, Nereus, Proteus, Oannes, Dagon, &c. &c. and in short, that the deluge, so far from being unknown to the heathens, or forgot by them, was in a manner the basis of the whole of their worship. He traces the history of the raven and dove sent forth by Noah in the customs of various nations, not only in the east but the west also. Of the numberless testimonies of the truth of this part of sacred history to be met with among the western nations, however, we shall select one more, which is an ancient coin usually known by the name of the *Apamean medal*. "The learned Falconerius (says Mr Bryant) has a curious dissertation upon a coin of Philip the Elder, which was struck at Apamea (B), and contained on its reverse an epitome of this history. The reverse of most Asiatic coins relate to the religion and mythology of the places where they were struck. On the reverse of this coin is delineated a kind of square machine floating upon water. Through an opening in it are seen two persons, a man and a woman, as low as the breast; and upon the head of the woman is a veil. Over this ark is a triangular kind of pediment, on which there sits a dove; and below it another, which seems to flutter its wings, and hold in its mouth a small branch of a tree. Before the machine is a man following a woman, who by their attitude seem to have just quitted it, and to have got upon dry land. Upon the ark itself, underneath the persons there inclosed, is to be read in distinct characters, ΝΩΕ. The learned editor of this account says, that it had fallen to his lot to meet with three of these coins. They were of brass, and of the medallion size. One of them he mentions to have seen in the collection of the Duke of Tuscany; the second in that of the Cardinal Ottoboni; and the third was the property of Augustino Chigi, nephew to Pope Alexander VII."

14
Account of
the Apamean
medal.

15
Accounts
of the flood
to be met
with in
China and
Japan.

Not content with these testimonies, however, which are to be met with in the western regions, or at least in those not very far to the eastward, our author shows that "the same mythology (of the Egyptians), and the same hieroglyphics, were carried as far as China and Japan; where they are to be found at this day. The Indians have a person whom they call Buto or Budo. This is the same as Boutus of Egypt, Battus of Cyrene, and Bæotus of Greece. The account given of him is similar to that of Typhon; for it is said that he did not come to life in the usual way, but made himself a passage through the side of his mother; which mother is represented as a virgin. This history,

though now current among the Indians, is of great antiquity, as we may learn from the account given of this personage by Clemens Alexandrinus. 'There is a cast of Indians (says he) who are disciples of Boutas. This person, on account of his extraordinary sanctity, they look up to as a god.' The name of Boutas, Battus, and Bæotus, though apparently conferred upon the patriarch, yet originally related to the machine in which he was preserved. Of this some traces may be found among the Greeks. One of the Amonian names for the ark were Aren and Arene; and Bæotus is said by Diodorus Siculus to have been the son of Neptune and Arne, which is a contraction of *arene* the ark. The chief city, Boutus in Egypt, where was the floating temple, signified properly the city of the float or ark. The Bæotians, who in the Dionusiaca so particularly commemorated the ark, were supposed to be descended from an imaginary personage, *Bæotus*; and from him likewise their country was thought to have received its name. But Bæotus was merely a variation from Boutus, and Butus, the ark; which in ancient times was indifferently styled Theba, Argus, Aren, Butus, and Bæotus. The term Cibotus is a compound of the same purport, and signifies both the temple of the ark and also a place for shipping.

"All the mysteries of the Gentile world seem to have been memorials of the deluge, and of the event which immediately succeeded. They consisted for the most part of a melancholy process; and were celebrated by night in commemoration of the state of darkness in which the patriarch and his family had been involved. The first thing at those awful meetings was to offer an oath of secrecy to all who were to be initiated: after which they proceeded to the ceremonies. These began with a description of chaos: by which was signified some memorial of the deluge. Chaos was certainly the same as *Subos*, the great abyss. Who, says Epiphanius, is so ignorant as not to know, that Chaos and Buthos, the abyss, are of the same purport?"

16
Explanation
of
the word
Chaos.

"The names of the deities in Japan and China, and the form of them, as well as the mythology with which they are attended, point out the country from whence they originally came. In China the deity upon the lotos in the midst of waters has been long a favourite emblem, and was imported from the west. The insignie of the dragon was from the same quarter. The Cuthites worshipped Cham, the sun; whose name they variously compounded. In China most things which have any reference to splendor and magnificence, seem to be denominated from the same object. Cham is said, in the language of that country, to signify any thing *supreme*. Cum is a fine building or palace, similar to Coma of the Amonians. Cum is a lord or master; Cham a sceptre. Lastly, by Cham is signified a priest, analogous to the Chamanim and Chamenim of Cutha and Babylonia. The country itself is by the Tartars called *Ham*. The cities Cham-ju, Campion, Compition, Cumdan, Chamul, and many others of the same form, are manifestly compounded of the sacred term Cham. Cambalu, the name of the ancient metropolis,

(B) Our author had before shown that the ancient name of Apamea was *Cibotus*, one of the names of the ark.

Deluge. *opolis*, is the city of Cham-bal; and Milton styles it very properly *Cambaul*, seat of *Cathaian Chan*. By this is meant the chief city of the Cuthean monarch; for Chan is a derivative of Cahen, a prince. It seems sometimes in China and Japan to have been expressed *Quan* and *Quano*.

“Two temples are taken notice of Hamelton, near Syrian in Pegu, which he represents as so like in structure, that they seemed to be built on the same model. One of these was called *Kiakiack*, or the *God of Gods temple*. The other is called the *temple of Dagon*; and the doors and windows of it are perpetually shut, so that none can enter but the priests. They will not tell of what shape the idol is, but only say that it is not of a human form. The former deity, *Kiakiack*, is represented as asleep, of a human shape, and 60 feet long; and when he awakes, the world is to be destroyed. As soon as *Kiakiack* has dissolved the frame and being of this world, *Dagon* will gather up the fragments, and make a new one. I make no doubt but the true name of the temple was *Iach-Iach*, and dedicated to the same god as the *Jachuli* in Japan. Mr Wise takes notice of the Grecian exclamation to *Dionusus*, when the terms *Iacche, O Iacche*, were repeated: and he supposes, with great probability, that the Peguan name had a reference to the same deity. It is certain, that the worship of *Dionusus* prevailed very early among the nations in the east. The Indians used to maintain, that his rites first began among them. Professor Bayer has shown, that traces of his worship are still to be observed among the Tamuli of *Tranquebar*. ‘They have a tradition (says he), that there was once a gigantic person named *Maidashuren*, who was born at *Nisadabura* near the mountain *Meru*. He had the horns of a bull, and drank wine and made war upon the gods. He was attended by eight *Pudam*, who were gigantic and mischievous dæmons, of the family of those Indian shepherds called *Kobaler*.’ In this account we have a manifest reference to the history of *Dionusus*, as well as that of the *Dionusians*, by whom his rites were introduced. And we may perceive, that it bears a great resemblance to the accounts transmitted by the Grecians. What are these *Kobaler*, who were descended from the shepherds, but the same as the *Cobali* of Greece, the uniform attendants upon *Dionusus*? a set of priests whose cruelty and chicanery rendered them infamous. ‘The *Cobali* (says an ancient author) were a set of cruel dæmons, who followed in the retinue of *Dionusus*. It is a term made use of for knaves and cheats.’

“As the deity, in the second temple of Syrian, to which strangers were not admitted, was not of a human form, and was called *Dagon*, we may easily conceive the hidden character under which he was described. We may conclude, that it was no other than that mixed figure of a man and a fish, under which he was of old worshipped both in Palestine and Syria. He is expressed under this symbolical representation in many parts of India; and, by the Bramins is called *Wishnou* or *Vishnou*. *Dagon* and *Vishnou* have a like reference. They equally represent the man of the sea called by *Berosus* *Oannes*; whose history has been reversed by the Indians. They suppose that he will restore the world, when it shall be destroyed by the chief God. But by *Dagon* is signified the very person thro’

whom the earth has been already restored when it was in a state of ruin; and by whom mankind was renewed. *Dagon* and *Noah* I have shown to be the same *Vishnou* is represented, like *Dagon*, under the mixed figure of a man and a fish, or rather of a man, a princely figure, proceeding from a fish. The name of this district, near which the temples above stand, we find to be called *Syrian*; just as was named the region where stood the temples of *Atargatus* and *Dagon*. *Syrus*, *Syria*, and *Syrian*, are all of the same purport, and signify *Cœlestis* and *Solaris*, from *Sebor*, the sun.”

Our author next proceeds to describe some of the Indian temples or pagodas; particularly those of *Salsette*, *Eliphanta*, and another called *Elora* near *Aurangabad* in the province of *Balagate*, which was visited by *Thevenot*. That traveller relates, that “upon making diligent inquiry among the natives about the origin of these wonderful buildings, the constant tradition was, that all these pagodas, great and small, with all their works and ornaments, were made by giants; but in what age they could not tell.”

“Many of these ancient structures (continues Mr Bryant) have been attributed to *Ramscander*, or *Alexander the Great*; but there is nothing among these stately edifices that in the least favours of Grecian workmanship; nor had that monarch, nor any of the princes after him, opportunity to perform works of this nature. We have not the least reason to think that they ever possessed the country; for they were called off from their attention this way by feuds and engagements nearer home. There is no tradition of this country having been ever conquered except by the fabulous armies of *Hercules* and *Dionusus*. What has led people to think that these works were the operation of *Alexander*, is the similitude of the name *Ramscander*. To this person they have sometimes been attributed; but *Ramscander* was a deity, the supposed son of *Bal*; and he is introduced among the personages who were concerned in the incarnations of *Vishnou*.

“The temple of *Elora*, and all the pagodas of which I have made mention, must be of great antiquity, as the natives cannot reach their era. They were undoubtedly the work of the *Indo-Cuthites*, who came so early into these parts. And that these structures were formed by them, will appear from many circumstances; but especially from works of the same magnificence which were performed by them in other places. For scarce any people could have effected such great works, but a branch of that family which erected the tower in *Babylonia*, the walls of *Balbec*, and the pyramids of *Egypt*.”

Having then described a number of East Indian idols of surprising magnitude, “the *Babylonians* and *Egyptians* (says he), and all of the same great family, used to take a pleasure in forming gigantic figures, and exhibiting other representations equally stupendous. Such were the colossal statues at *Thebes*, and the sphinx in the plains of *Coume*. The statue erected by *Nebuchaduezzar* in the plains of *Dura*, was in height threescore *Babylonish* cubits. It was probably raised in honour of *Cham*, the sun; and perhaps it was also dedicated to the head of the *Chaldaic* family; who was deified, and revered under that title. *Marcellinus* takes notice of a statue of *Apollo* named *Coneus*; which, in the time of the emperor *Verus*, was brought

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brought from Seleucia to Rome. This related to the same deity as the preceding. We may also infer, that the temple at Kamju was erected to Cham the sun, whom the people worshipped under the name of *Samo-nifu*."

It is remarkable, that in Japan the priests and nobility have the title of *Cami*. The emperor Quebacondo, in a letter to the Portuguese viceroy, 1585, tells him, that Japan is the kingdom of Chamis; whom, says he, we hold to be the same as *Scin*, the origin of all things. By *Scin* is probably meant *San*, the sun; who was the same as Cham, rendered here *Chamis*. The laws of the country are spoken of as the laws of Chamis; and we are told by Kämpfer, that all the gods were styled either *Sin* or *Cami*. The founder of the empire is said to have been *Tensio Dai Sin*, or "Tensio the god of light." Near his temple was a cavern religiously visited, upon account of his having been once hid when no sun nor stars appeared. He was esteemed the fountain of day, and his temple was called *the temple of Naiku*. Near this cavern was another temple, in which the canusi or priests showed an image of the deity sitting upon a cow. It was called *Dainits No Ray*, "the great representation of the sun." One of their principal gods is *Jakusi*, similar to the Iacchus of the West. Kämpfer says, that he is the Apollo of the Japanese, and they describe him as the Egyptians did Orus. His temple stands in a town called *Minnoki*; and *Jakusi* is here represented upon a gilt tarate flower; which is said to be the *nymphæa palystris maxima*, or *saba Egyptiaca* of Prosper Alpinus. One half of a large scallop shell is like a canopy placed over him; and his head is surrounded with a crown of rays. They have also an idol named *Menippe*, much revered in different parts. Both these, continues our author, relate to the same person, viz. Noah. Kämpfer, an author of great credit, saw the temple of Dabys, which he truly renders *Daibod*, at Jedo in Japan. By *Dai-Bod* was meant the god Budha, whose religion was styled the *Budso*, and which prevailed greatly upon the Indus and Ganges. Kämpfer, from whom Mr Bryant takes this account, says, that the people of Siam represent him under the form of a Moor, in a sitting posture, and of a prodigious size. His skin is black, and his hair curled (probably woolly), and the images about him are of the same complexion. "This god was supposed (says Mr Bryant) to have neither father nor mother. By *Budha* we are certainly to understand the idolatrous symbol called by some nations *Buddo*; the same as *Argus* and *Theba* (names for the ark). In the mythology concerning it, we may see a reference both to the machine itself and to the person preserved in it. In consequence of which we find this person also styled *Bod*, *Budha*, and *Buddo*; and in the West *Butus*, *Batus*, and *Beotus*. He was said by the Indians not to have been born in the ordinary way, but to have come to light indirectly through the side of his mother. By Clemens of Alexandria he is called *Bouta*: and in the history of this person, however varied, we may perceive a relation to the arkite deity of the sea, called *Poseidon* or Neptune; also to Arculus and Dionusus, styled *Baotus* and *Thebanus*. Kämpfer has a curious history of a deity of this sort called *Abutto*; whose temple stood in the province of Bungo, upon the sea-

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shore, near the village of Toma. About a quarter of a German mile before you come to this village stands a famous temple of the god *Abutto*; which is said to be very eminent for miraculously curing many inveterate ditempers, as also for procuring a wind and good passage. For this reason, sailors and passengers always tie some farthings to a piece of wood, and throw it into the sea, as an offering to this *Abutto*, to obtain a favourable wind. The same deity, but under a different name, was worshipped in China. The *Apis*, *Mnevis*, and *Anubis* of Egypt, have often been mentioned and explained as well as the *Minotaur* of Crete. The same hieroglyphics occur in Japan; and we are informed by Marco Polo, that the inhabitants worship idols of different shapes. Some have the head of an ox, some of a swine, and others the head of a dog. The most common representation in this country is that of *Godso Ten Oo*, or "the ox-headed prince of heaven."

"It has already been taken notice, that the ark was represented under the symbol of an egg, called the *mundane egg*; which was exposed to the rage of Typhon. It was also described under the figure of a lunette, and called *Salene*, the moon. The person by whom it was framed, and who through its means was providentially preserved, occurs under the character of a steer, and the machine itself under the semblance of a cow or heifer. We have moreover been told, that it was called *Cibotus*, which Clemens of Alexandria calls *Thebotha*. Epiphanius mentions it by the name of *Idaal Baoth*; and says that, according to an eastern tradition, a person named *Nun* was preserved in it. The horse of Neptune was another emblem, as was also the hippopotamus or river-horse. The people of Elis made use of the tortoise for the same purpose, and represented Venus as resting upon its back. Some traces of these hieroglyphics are to be found in Japan, which were certainly carried thither by the Indic Ethiopians.

"From an account of a temple of *Daiboth* (probably the same with *Daibod*) at Meaco in Japan, we may perceive, that the people there speak of the renewal of the world at the deluge as the real creation, which I have shown to be a common mistake in the histories of this event. And though the story is told with some variation, yet in all the circumstances of consequence it accords very happily with the mythology of Egypt, Syria, and Greece. It matters not how the emblems have by length of time been misinterpreted. We have the *mundane egg* upon the waters, and the concomitant symbol of the moon; and the egg at last opened by the assistance of the sacred steer, upon which the world issues forth to this day." The author proceeds afterwards to mention the great veneration paid in these parts to the ox and cow; and says, that nobody dares injure them. One deity of the Japanese was Canon, the reputed lord of the ocean. He was represented in an erect posture, crowned with a flower, and coming out of the mouth of a fish. He is represented in the same manner by the natives of India, and named *Vishnou* and *Macauter*; and he is to be found in other parts of the East. Father Bouffet mentions a tradition among the Indians concerning a flood in the days of *Vishnou* which covered the whole earth. It is moreover reported of him, that seeing the prevalence

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of the waters, he made a float; and being turned into a fish, he steered it with his tail. This person, in the account of the Banians by Lord, is called *Menou*; which certainly should be expressed *Men-Now*. It is said, that in the Shaster of this people, a like history is given of the earth being overwhelmed by a deluge, in which mankind perished; but the world was afterwards renewed in two persons called *Menou* and *Ceteroupa*. Vishnou is described under many characters, which he is said at times to have assumed. One of these, according to the bramins of Tanjour, was that of Rama Sami. This undoubtedly is the same as Sana Rama of Babylonia, only reversed: and it relates to that great phenomenon the Iris; which was generally accompanied with the dove, and held in veneration by the Semarim.

"As the history of China is supposed to extend upwards to an amazing height, it may be worth while to consider the first eras in the Chinese annals, as they are represented in the writings of Japan: for the Japanese have preserved histories of China; and by such a collation, I believe no small light may be obtained towards the discovery of some important truths. Hitherto it has not been observed that such a collation could be made.

17
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"In the histories of this country, the first monarch of China is named *Fohi*; the same whom the Chinese call *Fohi*, and place at the head of their list. This prince had, according to some, the body, according to others the head, of a serpent. If we may believe the Japanese historians, he began his reign above 21,000 years before Christ. The second Chinese emperor was Sin-Noo, by the people of China called *Sin Num*; and many begin the chronology of the country with him. He is supposed to have lived about 3000 years before Christ; consequently there is an interval of near 18,000 years between the first emperor and the second; a circumstance not to be credited. The third, who immediately succeeded Sin-Noo, was Hoam-Ti. In this account we may, I think, perceive, that the Chinese have acted like the people of Greece and other regions. The histories which were imported they have prefixed to the annals of their nation; and adopted the first personages of antiquity, and made them monarchs in their own country. Whom can we suppose Fohi, with the head of a serpent, to have been, but the great founder of all kingdoms, the father of mankind? They have placed him at an immense distance, not knowing his true era. And I think we may be assured, that under the character of Sin Num and Sin-Noo we have the history of Noah; and Haam-Ti was no other than Ham. According to Kämpfer, Sin-Noo was exactly the same character as Serapis of Egypt. 'He was an husbandman, and taught mankind agriculture, and those arts which relate to the immediate support of life. He also discovered the virtues of many plants; and he was represented with the head of an ox, and sometimes only with two horns. His picture is held in high estimation by the Chinese.' Well indeed might Kämpfer think, that in Sin-Noo he saw the character of Serapis; for this personage was no other than Sar-Apis, the great father of mankind, the same as Men-Neuas of Egypt, the same also as Dionusius and Osiris. By Du Halde he is called *Chin-Nong*, and made the next monarch after Fohi. The Chinese

accounts afford the same history as has been given above. Deluze.

"As the family of Noah consisted of eight persons inclusive, there have been writers who have placed some of them in succession, and supposed that there were three or four persons who reigned between Sin-Noo and Hoam. But Du Halde says, that in the true histories of the country, the three first monarchs were Fohi, Chin-Nong, and Hoam, whom he styles *Hoang-Ti*. To these, he says, the arts and sciences owe their invention and progress. Thus we find, that those who were heads of families have been raised to be princes; and their names have been prefixed to the lists of kings, and their history superadded to the annals of the country. It is further observable, in the accounts given of those supposed kings, that their term of life, for the first five or six generations, corresponds with that of the patriarchs after the flood, and decreases much in the same proportion.

18
History
of Japan.

"The history of Japan is divided into three eras; which consist of gods, demigods, and mortals. The person whom the natives look upon to be the real founder of their monarchy is named *Synmu*; in whose reign the Sintoo religion, the most ancient of the country, was introduced. It was called *Sin-ju* and *Chani-mitsa*; from Sin and Chami, the deities which were the objects of worship. At this time it is said that 600 foreign idols were brought into Japan. To the Sintoo religion was afterwards added the Budso, together with the worship of Armida. This deity they commonly represented with the head of a dog, and esteemed him the guardian of mankind. This religion was more complicated than the former, and abounded with hieroglyphical representations and mysterious rites. It is the same which I have termed the *Arkite Idolatry*, wherein the sacred steer and cow were venerated. The deity was represented upon the lotus and upon a tortoise, and ostentines as proceeding from a fish. In this also, under the character of Budha, we may trace innumerable memorials of the ark, and of the person preserved in it. The author above, having mentioned the eleventh emperor inclusive from Syn Mu, tells us, that in his time these rites began. 'In his reign Budo, otherwise called Koborus, came over from the Indies to Japan; and brought with him, upon a white horse, his religion and doctrines.' We find here, that the object of worship is made the person who introduced it (a mistake almost universally prevalent); otherwise, in this short account, what a curious history is unfolded!

"The only people to whom we can have recourse for any written memorials concerning these things are the inhabitants of India Proper. They were, we find, the persons who introduced these hieroglyphics both in China and Japan. It will therefore be worth while to consider what they have transmitted concerning their religious opinions; as we may from hence obtain still greater light towards explaining this symbolical worship. Every manifestation of God's goodness to the world was in the first ages expressed by an hieroglyphic; and the Deity was accordingly described under various forms, and in different attitudes. These at length were mistaken for real transfigurations; and Vishnou was supposed to have appeared in different shapes, which were styled *incarnations*.

Deluge. tions. In one of these he is represented under the figure before mentioned, of a princely person coming out of a fish. In another he appears with the head of a boar, treading upon an evil demon, which seems to be the same as the Typhon of the Egyptians. On his head he supports a lunette, in which are seen cities, towers, in short, all that the world contains. In Baldæus we have a delineation and history of this incarnation. Kircher varies a little in his representation, yet gives him a similar figure of the Deity, and styles him *Vishnou Barachater*. By this I should think was signified Vishnou, "the offspring of the fish." The bramins say, that there was a time when the serpent with a thousand heads withdrew itself, and would not support the world, it was so overburdened with sin. Upon this the earth sunk in the great abyss of waters, and mankind and all that breathed perished. But Vishnou took upon himself the form above described, and diving to the bottom of the sea, lifted up the earth out of the waters, and placed it, together with the serpent of a thousand heads, upon the back of a tortoise.

19
Account of
the cosmogony and
deluge
given by
the Parsees.

"In the third volume of M. Perron's *Zendavesta*, there is an account given of the cosmogony of the Parsees; also of the subsequent great events that ensued. The supreme Deity, called by him *Ormizda*, is said to have accomplished the creation at six different intervals. He first formed the heavens; at the second the waters; at the third the earth. Next in order were produced the trees and vegetables: in the fifth place were formed birds and fishes, and the wild inhabitants of the woods; and in the sixth and last place, he created man. The man thus produced is said to have been an *ox-like* person, and is described as consisting of a purely divine and a mortal part. For some time after his creation he lived in great happiness; but at last the world was corrupted by a *dæmon* named *Ahriman*. This *dæmon* had the boldness to visit heaven; whence he came down to the earth in the form of a serpent, and introduced a set of wicked beings, called *karsesters*. By him the first *ox-like* personage, called *Aboudad*, was so infected that he died; after which *Kaiomorts*, probably the divine part, of which the ox was the representative, died also. Out of the left arm of the deceased proceeded a being called *Goschoraun*, who is said to have raised a cry louder than the shout of 1000 men. After some conversation between the supreme Deity and *Goschoraun*, it was determined to put *Ahriman* to flight, and to destroy all those wicked persons he had introduced; for there now seemed to be an universal opposition to the Supreme Deity *Ormizda*. At this season a second *ox-like* personage is introduced by the name of *Taschter*. He is spoken of both as a star and a sun. At the same time he is mentioned as a person upon earth under three forms. By *Taschter* is certainly signified *De Astier*; the same person whom the Greeks and Syrians represented as a female, and called *Astarte*. She was described horned, and sometimes with the head of a bull; supposed to proceed from an egg; and they esteemed her the same as Juno and the moon. At last it was thought proper to bring an universal inundation over the face of the earth; that all impurity might be washed away: which being accomplished by *Taschter*, every living creature perished, and the earth

N^o 99.

Deluge. was for some time entirely covered. At last, the waters retreating within their proper bounds, the mountain of Albordi in Ferakh-kand first appeared; which the author compares to a tree, and supposes that all other mountains proceeded from it. After this there was a renewal of the world; and the earth was restored to its pristine state. The particular place where *Ormizda* planted the germina from whence all things were to spring, was Ferakh-kand; which seems to be the land of Arach; the country upon the Araxes in Armenia."

Thus we have given an ample specimen of this very ingenious author's method of reasoning, and discovering traces of the sacred history even in things which have been thought least to relate to it. That the Greeks and western nations had some knowledge of the flood, has never been denied; and from what has been already related, it appears that the same has pervaded the remotest regions of the east. The knowledge which these people have of the fall of man, and the evil consequences which ensued, cannot, according to our author, be the consequences of their intercourse with Christians; for their traditions afford neither any traces of Christianity nor its founder. Whatever truths may be found in their writings, therefore, must be derived from a more ancient source. "There are (says he) in every climate some shattered fragments of original history; some traces of a primitive and universal language: and these may be observed in the names of deities, terms of worship, and titles of honour, which prevail among nations widely separated, who for ages had no connection. The like may be found in the names of pagodas and temples; and of sundry other objects which will present themselves to the traveller. Even America would contribute to this purpose. The more rude the monuments, the more ancient they may possibly prove, and afford a greater light upon inquiry."

The accounts hitherto met with in this continent, indeed, are far from being equally authentic and satisfactory with those hitherto treated of. In Acasta's²⁰ history of the Indies, however, we are informed, that the Mexicans make particular mention of a deluge in their country, by which *all men* were drowned. According to them, one *Viracocha* came out of the great lake Titicaca in their country. This person staid in Tiaguanaco, where at this day are to be seen the ruins of some ancient and very strange buildings. From thence he came to Cusco, where mankind began to multiply. They show also a small lake, where they say the sun hid himself; for which reason they sacrifice largely to him, both men and other animals.—Hennepin informs us, that some of the savages are of opinion, that a certain spirit, called *Otkon* by the Iroquois, and *Atabauta* by those at the mouth of the river St Laurence, is the Creator of the world; that *Messou* repaired it after the deluge. They say, that this *Messou* or *Otkon*, being a hunting one day, his dogs lost themselves in a great lake, which thereupon overflowing, covered the whole earth in a short time, and swallowed up the world. According to Herrera, the people of Cuba knew that the heavens and the earth had been created: and said they had much information concerning the flood; and that the world had been destroyed by water, by three persons, who

1

came

luge. came three several ways. Gabriel de Cabrera was told by a man of more than 70 years of age, that an old man, knowing the deluge was to come, built a great ship, and went into it with his family and abundance of animals; that he sent out a crow, which did not at first return, staying to feed on the carcasses of dead animals, but afterwards came back with a green branch. He is said to have added other particulars nearly consonant to the Mosaic account, as far as Noah's fous covering him when drunk, and the other scoffing at it. The Indians, he said, descended from the latter, and therefore had no clothes; but the Spaniards descending from the former, had both clothes and horses.—The same author likewise informs us, that it was reported by the inhabitants of Castilla del Oro in Terra Firma, that when the universal deluge happened, one man with his wife and children escaped in a canoe, and that from them the world was peopled. The Peruvians, according to our author, likewise affirmed, that they had received by tradition from their ancestors, that, many years before there were any incas or kings, when the country was very populous, there happened a great flood; the sea breaking out beyond its bounds, so that the land was covered with water, and all the people perished. To this it is added by the Guancas, inhabiting the vale of Xausca, and the natives of Chiquito in the province of Callao, that some persons remained in the hollows and caves of the highest mountains, who again peopled the land. Others affirm, that all perished in a deluge, only six persons being saved in a float, from whom descended all the inhabitants of that country. In Nieuhoff's voyages to Brasil, we are informed, that the most barbarous of the Brasilians, inhabiting the inland countries, scarce knew any thing of religion or an Almighty Being: they have some knowledge remaining of a general deluge; it being their opinion that the whole race of mankind were extirpated by a general deluge, except one man and his sister, who, being with child before, they by degrees re-peopled the world. M. Thevet gives us the creed of the Brasilians in this matter more particularly. In the opinion of these savages, the deluge was universal. They say, that *Sommay*, a Caribbee of great dignity, had two children named *Tamendonare* and *Ariconte*. Being of contrary dispositions, one delighting in peace and the other in war and rapine, they mortally hated each other. One day *Ariconte*, the warrior, brought an arm of an enemy he had encountered to his brother, reproaching him at the same time with cowardice. The ether retorted by telling, that if he had been possessed of the valour he boasted, he would have brought his enemy entire. *Ariconte* on this threw the arm against the door of his brother's house. At that instant the whole village was carried up into the sky, and *Tamendonare* striking the ground with violence, a vast stream of water issued out from it, and continued to flow in such quantity, that in a short time it seemed to rise above the clouds, and the earth was entirely covered. The two brothers, seeing this, ascended the highest mountains of the country, and with their wives got upon the trees that grew upon them. By this deluge all mankind, as well as all other animals, were drowned, except the two brothers above mentioned and their wives; who having descended when the flood abated, became heads of two different nations," &c.

To these American testimonies we may add another from the remote and uncivilized island of Otaheite. Dr Watson †, in his discourse to the clergy, informs us, that one of the navigators to the southern hemisphere having asked some of the inhabitants of that island concerning their origin, was answered, that their supreme God, a long time ago, being angry, dragged the earth through the sea, and their island being broken off, was preserved. In the East Indies also we are informed by Dr Watson †, that Sir William Jones, by whom a society for the advancement of Asiatic literature has been instituted at Calcutta, has discovered, that in the oldest mythological books of that country, there is such an account of the deluge as corresponds sufficiently with that of Moses.

21
Testimonies from Otaheite and the East Indies.
† Sermons and Tracts, p. 208.
Ibid. p. 221.

II. The fact being thus established by the universal consent of mankind, that there was a general deluge which overflowed the whole world; it remains next to inquire, by what means it may reasonably be supposed to have been accomplished. The hypotheses on this subject have been principally the following.

22
Hypotheses concerning the means by which the deluge took place.

1. It has been asserted, that a quantity of water was created on purpose, and at a proper time annihilated, by divine power. This, however, besides its being absolutely without evidence, is directly contrary to the words of the sacred writer whom the asserters of this hypothesis mean to defend. He expressly derives the waters of the flood from two sources; first, the fountains of the great deep, which he tells us were all broken up; and secondly, the windows of heaven, which he says were opened: and speaking of the decrease of the waters, he says, the fountains of the deep and the windows of heaven were stopped, and the waters returned continually from off the earth. Here it is obvious, that Moses was so far from having any difficulty about the quantity of water, that he thought the sources from whence it came were not exhausted; since both of them required to be stopped by the same almighty hand who opened them, lest the flood should increase more than it actually did.

23
Supposed creation and annihilation of water.

2. Dr Burnet, in his *Telluris Theoria Sacra*, endeavours to show, that all the waters in the ocean are not sufficient to cover the earth to the depth assigned by Moses. Supposing the sea drained quite dry, and all the clouds of the atmosphere dissolved into rain, we should still, according to him, want much the greatest part of the water of a deluge. To get clear of this difficulty, Dr Burnet and others have adopted Descartes's theory. That philosopher will have the antediluvian world to have been perfectly round and equal, without mountains or valleys. He accounts for its formation on mechanical principles, by supposing it at first in the condition of a thick turbid fluid replete with divers heterogeneous matters; which, subsiding by slow degrees, formed themselves into different concentric strata, or beds, by the laws of gravity. Dr Burnet improves on this theory, by supposing the primitive earth to have been no more than a shell or crust investing the surface of the water contained in the ocean, and in the central abyfs which he and others suppose to exist in the bowels of the earth. * At the time of the flood, this outward crust, according to him, broke in a thousand places; and consequently sunk down among the water, which thus spouted up in vast cataracts, and overflowed the whole surface. He supposes also, that before the flood there was a

24
Theory of Dr Burnet.

* See *Alty*

Deluge.

perfect coincidence of the equator with the ecliptic, and consequently that the antediluvian world enjoyed a perpetual spring; but that the violence of the shock by which the outer crust was broken, shifted also the position of the earth, and produced the present obliquity of the ecliptic. This theory, it will be observed, is equally arbitrary with the former. But it is, besides, directly contrary to the words of Moses, who assures us, that all the high hills were covered; while Dr Burnet affirms that there were then no hills in being.

25
Centre of gravity of the earth supposed to be shifted.

3. Other authors, supposing a sufficient fund of water in the abyfs or sea, are only concerned for an expedient to bring it forth: accordingly some have recourse to a shifting of the earth's centre of gravity, which, drawing after it the water out of its channel, overwhelmed the several parts of the earth successively.

26
Mr Whiston's theory.

4. The inquisitive Mr Whiston, in his *New Theory of the Earth*, shows, from several remarkable coincidences, that a comet descending in the plane of the ecliptic, towards its perihelion, passed just before the earth on the first day of the deluge; the consequences whereof would be, first, that this comet, when it came below the moon, would raise a vast and strong tide, both in the small seas, which according to his hypothesis were in the antediluvian earth (for he allows no great ocean there as in ours), and also in the abyfs which was under the upper crust of the earth. And this tide would rise and increase all the time of the approach of the comet towards the earth; and would be at its greatest height when the comet was at its least distance from it. By the force of which tide, as also by the attraction of the comet, he judges, that the abyfs must put on an elliptical figure, whose surface being considerably larger than the former spherical one, the outward crust of the earth, incumbent on the abyfs, must accommodate itself to that figure, which it could not do while it held solid, and conjoined together. He concludes, therefore, that it must of necessity be extended, and at last broke by the violence of the said tides and attraction; out of which the included water issuing, was a great means of the deluge: this answering to what Moses speaks of the "fountains of the great deep being broke open."—Again, the same comet, he shows, in its descent towards the sun, passed so close by the body of the earth, as to involve it in its atmosphere and tail for a considerable time; and of consequence left a vast quantity of its vapours, both expanded and condensed, on its surface; a great part of which being rarefied by the solar heat, would be drawn up into the atmosphere, and afterwards return in violent rains: and this he takes to be what Moses intimates by "the windows of heaven being opened," and particularly by the "forty days rain." For as to the following rain, which with this made the whole time of raining 150 days, Mr Whiston attributes it to the earth coming a second time within the atmosphere of the comet as the comet was on its return from the sun. Lastly, to remove this vast orb of waters again, he supposes a mighty wind to have arisen, which dried up some, and forced the rest into the abyfs through the clefts by which it came up; only a good quantity remained in the alveus of the great ocean, now first made, and in lesser seas, lakes, &c. This theory was at first only proposed

Deluge.

as an hypothesis; but, on further consideration, Mr Whiston thought he could actually prove that a comet did at that time pass very near the earth, and that it was the same which afterwards appeared in 1680. After this, he looked upon his theory no longer as an hypothesis, but published it in a particular tract, entitled, *The Cause of the Deluge demonstrated*. But the uncertainty of the comet's return in 1758, and the absolute failure of that which ought to have appeared in 1788 or 1789, must certainly render Mr Whiston's calculations for such a length of time extremely dubious; and the great similarity between the tails of comets and streams of electric matter renders his supposition of their being aqueous vapours exceedingly improbable.

5. According to Mr de la Pryme, the antediluvian world had an external sea as well as land, with mountains, rivers, &c. and the deluge was effected by breaking the subterraneous caverns, and pillars thereof, with dreadful earthquakes, and causing the same to be for the most part, if not wholly, absorbed and swallowed up, and covered by the seas that we now have. Lastly, this earth of ours arose out of the bottom of the antediluvian sea; and in its room, just as many islands are swallowed down, and others thrust up in their stead. On this, as on all the other hypotheses, it may be remarked, that it is quite arbitrary, and without the least foundation from the words of Moses. The sacred historian speaks not one word of earthquakes, nay, from the nature of the thing, we know it is impossible that the flood could have been occasioned by an earthquake, and the ark preserved, without a miracle. It is certain, that if a ship sinks at sea, the commotion excited in the water by the descent of such a large body, will swallow up a small boat that happens to come too near. If the pillars of the earth itself then were broken, what must the commotion have been, when the continents of Europe, Asia, and Africa, descended into the abyfs at once? not to mention America, which lying at so great a distance from Noah, he might be supposed out of danger from that quarter. By what miracle was the little ark preserved amidst the tumult of those impetuous waves which must have rushed in from all quarters? Besides, as the ark was built not at sea, but on dry ground; when the earth on which it rested sunk down, the ark must have sunk along with it; and the waters falling in as it were overhead, must have dashed in pieces the strongest vessel that can be imagined. Earthquakes, also, operate suddenly and violently; whereas, according to the Mosaic account, the flood came on gradually, and did not arrive at its height till six weeks, or perhaps five months, after it began.

27
Theory of Mr de la Pryme.

6. Mr Hutchinson and his followers present us with a theory of the deluge, which they pretend to derive from the word of God itself. This theory hath been particularly enlarged upon and illustrated by Mr Catcot, who in 1768 published a volume on the subject. This gentleman asserts, that when the world was first created, at the time when it is said to have been "without form and void," the terrestrial matter was then entirely dissolved in the aqueous; so that the whole formed, as it were, a thick muddy water. The figure of this mass was spherical; and on the outside of this sphere lay the gross dark air. Within the sphere of earth and water was an immense cavity, called by Mo-

28

Hutchinsonian theory.

sea

ges the deep; and this internal cavity was filled with air of a kind similar to that on the outside. On the creation of light, the internal air received elasticity sufficient to burst out through the external covering of earth and water. Upon this the water descended, filled up the void, and left the earth in a form similar to what it hath at present. Thus, according to him, the antediluvian world, as well as the present, consisted of a vast collection or nucleus of water, called the great deep, or the *abyss*; and over this the shell of earth perforated in many places; by which means the waters of the ocean communicated with the *abyss*. The breaking up of these fountains was occasioned by a miraculous pressure of the atmosphere, from the immediate action of the Deity himself. So violent was this pressure, that the air descended to where it had been originally; occupied the space of the *abyss*; and drove out the waters over the whole face of the dry land. But this account, so far from being infallibly certain, seems inconsistent with the most common observations. No pressure, however violent, will cause water rise above its level, unless that pressure is unequal. If, therefore, the atmosphere entered into the supposed *abyss*, by a vehement pressure on the surface of the ocean, that pressure must only have been on one place, or on a few places: and even though we suppose the atmosphere to have been the agent made use of, it is impossible that it could have remained for any time in the *abyss* without a continued miracle; as the pressure of the water would immediately have forced it up again through those holes which had afforded it a passage downwards.

The explication given from Hutchinson by Mr Catcot, of the "windows of heaven," is somewhat extraordinary. According to him, these windows are not in heaven, but in the bowels of the earth; and mean no more than the cracks and fissures by which the *airs*, as he calls them, found a passage through the shell or covering of earth, which they utterly dissolved and reduced to its original state of fluidity. It is, however, difficult to conceive how the opening of such windows as these could cause a violent rain for 40 days and nights.

It is not to be supposed, that we can pretend to ascertain any thing on the subject more than others have done. The following conjectures, however, may be offered in the manner in which the deluge might have happened without any violence to the established laws of nature.

1. If we consider the quantity of water requisite for the purpose of the deluge, it will not appear so very extraordinary as has been commonly represented. The height of the highest hills is thought not to be quite four miles. It will therefore be deemed a sufficient allowance, when we suppose the waters of the deluge to have been four miles deep on the surface of the ground. Now it is certain, that water, or any other matter, when spread out at large upon the ground, seems to occupy an immense space in comparison of what it does when contained in a cubical vessel, or when packed together in a cubical form. Suppose we wanted to overflow a room 16 feet every way, or containing 256 square feet, with water, to the height of one foot, it may be nearly done by a cubical vessel of six feet filled with water. A cube of eight feet will

cover it too feet deep, and a cube of ten feet will very nearly cover it four feet deep. It makes not the least difference whether we suppose feet or miles to be covered. A cube of ten miles of water would very nearly overflow 256 square miles of plain ground to the height of four miles. But if we take into our account the vast number of eminences with which the surface of the earth abounds, the above-mentioned quantity of water would do a great deal more. If, therefore, we attempt to calculate the quantity of water sufficient to deluge the earth, we must make a very considerable allowance for the bulk of all the hills on its surface. To consider this matter, however, in its utmost latitude: The surface of the earth is supposed, by the latest computations, to contain 199,512,595 square miles. To overflow this surface to the height of four miles, is required a parallelepiped of water 16 miles deep, and containing 49,878,148 square miles of surface. Now, considering the immense thickness of the globe of the earth, it can by no means be improbable, that this whole quantity of water may be contained in its bowels, without the necessity of any remarkable *abyss* or huge collection of water, such as most of our theorists suppose to exist in the centre. It is certain, that as far as the earth has been dug, it hath been found not dry, but moist; nor have we the least reason to imagine, that it is not at least equally moist all the way down to the centre. How moist it really is cannot be known, nor the quantity of water requisite to impart to it the degree of moisture it has; but we are sure it must be immense. The earth is computed to be near 8000 miles in diameter. The ocean is of an unfathomable depth; but there is no reason for supposing it more than a few miles. To make all reasonable allowances, however, we shall suppose the whole solid matter in the globe to be only equal to a cube of 5000 miles; and even on this supposition we shall find, that all the waters of the deluge would not be half sufficient to moisten it. The above mentioned parallelepiped of water would indeed contain 798,050,368 cubic miles of that fluid; but the cube of earth containing no less than an hundred and twenty-five thousand millions of cubic miles, it is evident that the quantity assigned for the deluge would scarce be known to moisten it. It could have indeed no more effect this way, than a single pound of water could have upon 150 times its bulk of dry earth. We are persuaded therefore, that any person who will try by experiment how much water a given quantity of earth contains, and from that experiment will make calculations with regard to the whole quantity of water contained in the bowels of the earth, must be abundantly satisfied, that though *all* the water of the deluge had been thence derived, the diminution of the general store would, comparatively speaking, have been next to nothing.

2. It was not from the bowels of the earth only that the waters were discharged, but also from the air; for we are assured by Moses, that it rained 40 days and 40 nights. This source of the deluvian waters hath been considered as of small consequence by almost every one who hath treated on the subject. The general opinion concerning this matter we shall transcribe from the Universal History, Vol. I. where it is very fully expressed. "According to the observations made of the

Deluge

Deluge.

quantity of water that falls in rain, the rains could not afford one ocean, nor half an ocean, and would be a very inconsiderable part of what was necessary for a deluge. If it rained 40 days and 40 nights throughout the whole earth at once, it might be sufficient to lay all the lower grounds under water, but it would signify very little as to the overflowing of the mountains; so that it has been said, that if the deluge had been made by rains only, there would have needed not 40 days, but 40 years, to have brought it to pass. And if we suppose the whole atmosphere condensed into water, it would not all have been sufficient for this effect; for it is certain that it could not have risen above 32 feet, the height to which water can be raised by the pressure of the atmosphere: for the weight of the whole air, when condensed into water, can be no more than equal to its weight in its natural state, and must become no less than 800 times denser; for that is the difference between the weight of the heaviest air and that of water."

On this subject we must observe, that there is a very general mistake with regard to the air, similar to the above-mentioned one regarding the earth. Because the earth below our feet appears to our senses firm and compact, therefore the vast quantity of water, contained even in the most solid parts of it, and which will readily appear on proper experiment, is overlooked, and treated as a non-entity. In like manner, because the air does not always deluge with excessive rains, it is also imagined that it contains but very little water. Because the pressure of the air is able to raise only 32 feet of water on the surface of the earth, it is therefore supposed we may know to what depth the atmosphere could deluge the earth if it was to let fall the *whole* water contained in it. But daily observations show, that the pressure of the atmosphere hath not the least connection with the quantity of water it contains. Nay, if there is any connection, the air seems to be lightest when it contains most water. In the course of a long summer's drought, for instance, the mercury in the barometer will stand at 30 inches, or little more. If it does so at the beginning of the drought, it ought to ascend continually during the time the dry weather continues; because the air is all the while absorbing water in great quantity from the surface of the earth and sea. This, however, is known to be contrary to fact. At such times the mercury does not ascend, but remains stationary; and what is still more extraordinary, when the drought is about to have an end, the air, while it yet contains the whole quantity of water it absorbed, and hath not discharged one single drop, becomes suddenly lighter, and the mercury will perhaps sink an inch before any rain falls. The most surprising phenomenon, however, is yet to come. After the atmosphere has been discharging for a number of days successively a quantity of matter 800 times heavier than itself, instead of being *lightened* by the discharge, it becomes *heavier*, nay *specifically* heavier, than it was before. It is also certain, that very dry air, provided it is not at the same time very hot, is always heaviest; and the driest air which we are acquainted with, namely Dr Priestley's *dephlogisticated* air, is considerably heavier than the air we commonly breathe. For these reasons we think the quantity of water contained in the whole atmosphere ought to be considered

as *indefinite*, especially as we know that by whatever agent it is suspended, that agent must counteract the force of gravity, otherwise the water would immediately descend; and while the force of gravity in any substance is counteracted, that substance cannot appear to us to gravitate at all.

3. The above considerations render it *probable* at least, that there is in nature a quantity of water sufficient to deluge the world, provided it was applied to the purpose. We must next consider whether there is any natural agent powerful enough to effectuate this purpose. We shall take the phrases used by Moses in their most obvious sense. The *breaking up of the fountains of the deep* we may reasonably suppose to have been the opening of all the passages, whether small or great, through which the subterraneous waters possibly could discharge themselves on the surface of the earth. The *opening of the windows of heaven* we may also suppose to be the pouring out the water contained in the atmosphere thro' those invisible passages by which it enters in such a manner as totally to elude every one of our senses, as when water is absorbed by the air in evaporation. As both these are said to have been opened at the same time, it seems from thence probable, that one natural agent was employed to do both. Now it is certain, that the industry of modern inquirers hath discovered an agent unknown to the former ages, and whose influence is so great, that with regard to this world it may be said to have a kind of *omnipotence*. The agent we mean is electricity. It is certain, that, by means of it, immense quantities of water can be raised to a great height in the air. This is proved by the phenomena of water-spouts. Mr Forster relates, that he happened to see one break very near him, and observed a flash of lightning proceed from it at the moment of its breaking. The conclusion from this is obvious. When the electric matter was discharged from the water, it could no longer be supported by the atmosphere, but immediately fell down. Though water-spouts do not often appear in this country, yet every one must have made an observation somewhat similar to Mr Forster's. In a violent storm of thunder and rain, after every flash of lightning or discharge of electricity from the clouds, the rain pours down with increased violence; thus showing, that the cloud, having parted with so much of its electricity, cannot longer be supported in the form of vapour, but must descend in rain. It is not indeed yet discovered that electricity is the cause of the suspension of water in the atmosphere; but it is certain that evaporation is promoted by electrifying the fluid to be evaporated*. It may therefore be admitted as a *possibility*, that the electric fluid contained in the air is the agent by which it is enabled to suspend the water which rises in vapour. If therefore the air is deprived of the due proportion of this fluid, it is evident that rain must fall in prodigious quantities.

Again, we are assured from the most undeniable observations, that electricity is able to swell up water on the surface of the earth. This we can make it do even in our trifling experiments; and much more must the whole force of the fluid be supposed capable of doing it, if applied to the waters of the ocean, or any others. The agitation of the sea in earthquakes is a sufficient proof of this †. It is certain, that at these times there is a discharge of a vast quantity of electric matter from

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* See Electricity and Evaporation.

† See Earthquake.

1 uge. the earth into the air; and as soon as this happens, all becomes quiet on the surface of the earth.

From a multitude of observations it also appears, that there is at all times a passage of electric matter from the atmosphere into the earth, and *vice versa* from the earth into the atmosphere. There is therefore no absurdity in supposing the Deity to have influenced the action of the natural powers in such a manner that for 40 days and nights the electric matter contained in the atmosphere should descend into the bowels of the earth;—if indeed there is occasion for supposing any such immediate influence at all, since it is not impossible that there might have been, from some natural cause, a descent of this matter from the atmosphere for that time. But by whatever cause the descent was occasioned, the consequence would be, the *breaking up of the fountains of the deep*, and the *opening the windows of heaven*. The water contained in the atmosphere being left without support, would descend in impetuous rains; while the waters of the ocean, those from which fountains originate, and those contained in the solid earth itself, would rise from the very centre, and meet the waters which descended from above. Thus the breaking up of the fountains of the deep, and the opening the windows of heaven, would accompany each other, as Moses tells us they actually did; for, according to him, both happened on the same day.

In this manner the flood would come on quietly and gradually, without that violence to the globe which Burnet, Whiston, and other theorists, are obliged to suppose. The abatement of the waters would ensue on the ascent of the electric fluid to where it was before. The atmosphere would then absorb the water as formerly; that which had ascended through the earth would again subside; and thus every thing would return to its pristine state.

III. Having thus shown in what manner it is possible that an universal deluge might take place by means of the natural agents known to us at present, we shall next consider some more of the evidences that such an event actually did happen, and that the deluge was universal. The proof here is so strong from the traditions prevalent among almost every nation on the face of the earth, and which have been already so amply treated, that no farther objection could be made to the Mosaic account, were it not that the necessity of an universal deluge is denied by some, who contend that all the deluges mentioned in history or recorded by tradition were only partial, and may be accounted for from the swelling of rivers or other accidental causes. Many indeed, even of those who profess to believe the Mosaic account, have thought that the deluge was not universal; or, though it might be universal with respect to mankind, that it was not so with regard to the earth itself. The learned Isaac Vossius was of this opinion, though his reasons seem principally to have been that he could not conceive how an universal deluge could happen. "To effect this (says he) many miracles must have concurred; but God works no miracles in vain. What need was there to drown those lands where no men lived, or are yet to be found? 'Tis a foolish thing to think that mankind had multiplied so much before the flood as to have overspread all the earth. How slow and sluggish

30
Vossius's
scheme of
partial de-
luge.

the first men were in propagating their kind is evident from hence, that Noah was but the ninth in a lineal descent from Adam. They are quite wide of the truth, therefore, who think mankind to have spread over all the earth in the days of Noah, who perhaps at that time had not extended themselves beyond the borders of Syria and Mesopotamia: but no reason obligeth us to extend the inundation of the deluge beyond those bounds which were inhabited; yea, it is altogether absurd to aver, that the effect of a punishment inflicted upon mankind only, should extend to those places where no men lived. Although we should therefore believe that part of the earth only to have been overflowed by the waters which we have mentioned, and which is not the hundredth part of the terrestrial globe, the deluge will nevertheless be *universal, acumenical*, since the destruction was universal, and overwhelmed the whole habitable world."

Deluge.

Another scheme of a partial deluge is published by Mr Coetlogon in his Universal History of Arts and Sciences, under the article *Antediluvians*. This appears to have been formed with a design to accommodate the belief of a deluge to the opinions of the free-thinkers, who deny the truth of the Mosaic accounts, as he tells us that they are willing to allow it. According to this author, the first inhabitants of the earth being placed at the confluence of two great rivers, the Euphrates and Tigris, those rivers may have overflowed their banks all of a sudden, and surpris'd the neighbouring inhabitants not yet accustomed to such sort of visits, and drown'd part of them (and if really designed as a punishment), such as were more guilty. That some of the animals, particularly the more slothful, and consequently not so apprehensive of danger or so ready to take to flight to avoid it, might have been involved in the same calamity, as well as some of the *volatiles*, which being deprived of food by the earth's being covered with water, might have perished; particularly those who, by the too great weakness of their wings to support their bodies, were not proper for a long flight. As for others who had these advantages above the rest, they would no doubt take care of their own preservation by flying to those parts of the earth which their natural instinct could show them free from the inundation.

31
Coetlogon's
scheme.

A third scheme of a partial deluge is given by the learned bishop Stillingfleet in his *Origines Sacrae*. "I cannot (says he) see any urgent necessity from the scripture to assert, that the flood did spread itself all over the surface of the earth. That all mankind (those in the ark excepted) were destroyed by it, is most certain according to the scriptures. When the Lord said, that he would destroy man from the face of the earth, it could not be any particular deluge of so small a country as Palestine, as some have ridiculously imagined; for we find an universal corruption in the earth mentioned as the cause; an universal threatening upon all men for this cause; and afterwards an universal destruction expressed as the effect of this flood. So then it is evident, that the flood was universal with regard to mankind; but from thence follows no necessity at all of asserting the universality of it as to the globe of the earth, unless it be sufficiently proved that the whole earth was peopled before the flood, which I despair of ever seeing proved:

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Bishop Stil-
lingfleet's
scheme.

Deluge. and what reason can there be to extend the flood beyond the occasion of it, which was the corruption of mankind?—The only probability then of asserting the universality of the flood, as to the globe of the earth, is from the destruction of all living creatures, together with man. Now though men might not have spread themselves over the whole surface of the earth, yet beasts and creeping things might, which were all destroyed with the flood; for it is said, ‘that all flesh died that moved upon the earth, both of fowl and of cattle, and of every creeping thing that creepeth upon the earth, and every man.’ To what end should there be not only a note of universality added, but such a particular enumeration of the several kinds of beasts, creeping things and fowls, if they were not all destroyed? To this I answer; I grant that, as far as the flood extended, all these were destroyed: but I see no reason to extend the destruction of these beyond that compass and space of the earth where men inhabited, because the punishment upon the beasts was occasioned by, and could not but be concomitant with, the destruction of man; but (the occasion of the deluge being the sin of man, who was punished in the beasts that were destroyed for his sake, as well as in himself) where the occasion was not, as where there were animals and no men, there seems no necessity of extending the flood thither.—But to what end, will it therefore be replied, did God command Noah, with so much care, to take all kinds of birds, beasts, and creeping things, into the ark with him, if all those living creatures were not destroyed by the flood? I answer, because all those things were destroyed wherever the flood was. Suppose then the whole continent of Asia was peopled before the flood, which is as much as in reason we may suppose; I say, all the living creatures in that continent were destroyed; or if we may suppose it to have extended over our whole continent of the ancient known world, what reason would there be, that in the opposite part of the globe, which we suppose to be unpeopled then, all the living creatures should there be destroyed, because men had sinned in this? and would there not have been on this supposition a sufficient reason to preserve living creatures in the ark for future propagation,” &c.?

33.
A partial deluge proved to be impossible.

Thus we have the strength of all the arguments that have been offered in support of a partial deluge, and which may all be summed up in the three following articles, 1. The impossibility, in a natural way, of accounting for the quantity of water necessary to overflow the whole world; 2. The small number of mankind supposed at that time to have existed on the earth; and, 3. The inutility of an universal deluge, when the divine purposes could have been equally well answered by a partial one. But to all this we may make one general answer, that a partial deluge is in the nature of things impossible. We cannot imagine that the waters could accumulate upon any country without going off to the sea, while the latter retained its usual level; neither can we suppose any part of the sea to remain above the level of the rest. On the supposition of bishop Stillingfleet therefore, that the deluge extended over the whole continent of Asia, we know that it must have covered the high mountains of Ararat, on which the ark rested; Caucasus, Taurus, &c. The height of Ararat is in-

Deluge. determined, as no traveller of any credit pretends to have ascended to its top; but from the distance at which it is seen, we can scarce look upon it to be inferior to the most celebrated mountains of the old continent*. Sir John Chardin thinks that some part of Caucasus is higher; and supposing each of these to be only a mile and an half in height, the sea all round the globe must have been raised to the same height; and therefore all that could remain of dry ground as a shelter to animals of any kind, must have been the uninhabitable tops of some high mountains scattered at immense distances from one another. We may therefore with equal reason suppose, that these were in like manner covered, and that no living creature whatever could find shelter even for a moment: and it is certainly more agreeable to the character of the Deity to believe, that he would at once destroy animal life by suffocation in water, rather than allow numbers of them to collect themselves on the tops of mountains to perish with hunger and cold. It is besides very improbable, that any creature, whether bird or beast, could sustain a continued rain of 40 days and 40 nights, even without supposing them to have been absolutely immersed in water.

This consideration alone is sufficient to show, that if there was a deluge at all, it must have been universal with regard to the world as well as the human race; and the possibility of such a deluge by natural means has already been evinced. Under the article ANTE-DILUVIANS it is shown, that, according to the most moderate computations, the world must have been vastly more full of people than at present. The least calculation there made indeed seems incredible; since, according to it, the world must have contained upwards of 68,719 times as many inhabitants as are at present to be met with in the empire of China, the most populous country in the world: but China bears a much larger proportion to the habitable part of the world than this. The violences exercised by mankind upon one another, have always been the means of thinning their numbers, and preventing the earth from being overstocked with inhabitants; and the strong expression in Scripture, that the “earth was filled with violence,” shows that it must have gone to an extraordinary height. But though this violence must have undoubtedly thinned the old world of its inhabitants, it must likewise have dispersed some of them into distant regions. There is therefore no reason for supposing, that before the flood the human race were not driven into the remotest regions of the habitable world, or that America was destitute of inhabitants then more than it is at present. At any rate, the schemes of Vossius and Coetlogon, who would confine the whole race of mankind to a small part of Asia, must appear evidently futile and erroneous in the highest degree.

Some objections have been made to the doctrine of an universal deluge from the state of the continent of America, and the number of animals peculiar to that and other countries, which could not be supposed to travel to such a distance either to or from the ark of Noah. On this subject Bishop Stillingfleet observes, that the supposition of animals being propagated much farther in the world than mankind before the flood, seems very probable, “because the production of animals is parallel in Genesis with that of fishes, and both

Deluge.

* See Ars. rat.

34

Objections

from some

species of

animals be-

ing peculiar

to certain

countries.

Del. e. of them different from man. For God saith, Let the waters bring forth every moving creature that hath life, viz. fish and fowl: And accordingly it is said, that the waters brought forth abundantly every living creature after their kind, and every fowl after his kind. Accordingly, in the production of beasts, we read, ' Let the earth bring forth the living creature after his kind, cattle, and every creeping thing, and beast of the earth, after his kind: and it was so.' But in the production of man it is said, ' Let us make man in our image, and after our likeness.' From hence I observe this difference between the formation of animals and of man, that in one God gave a prolific power to the earth and waters for the production of the several living creatures which came from them, so that the seminal principles of them were contained in the matter out of which they were produced; which was otherwise in man, who was made by a peculiar hand of the great Creator himself, who thence is said to have formed man out of the dust of the ground.

" If now this supposition be embraced, by it we presently clear ourselves of many difficulties concerning the propagation of animals in the world, and their conservation in the ark; as how the unknown kind of serpents in Brazil, the slow-bellied creature in the Indies, and all those strange species of animals seen in the West Indies, should either come into the ark of Noah, or be conveyed out of it into those countries which are divided by so vast an ocean on one side, and at least so large a tract of land on the other. Besides, some kind of animals cannot live out of the climate wherein they are; and there are many sorts of animals discovered in America and the adjoining islands, which have left no remainders of themselves in these parts of the world. And it seems very strange, that these should propagate into those parts of the world from the place of the flood, and leave none at all of their number behind them in these parts whence they were propagated."

To this Mr Cockburn, in his treatise on the deluge, replies, 1. That as it pleased God to create only one man and one woman at the beginning, and their posterity were sufficient to overspread the earth, it might well be supposed to be furnished with animals from an original pair of each. 2. On the supposition of many pairs of brute animals having been created originally, they must, when the human race were few in number, have multiplied to such a degree as to render the world uninhabitable. In confirmation of this, he informs us from the accounts of the Indian missionaries, that in the kingdom of Champua in the Indies, the river called by the natives *Tinacoreu*, but by the Portuguese *Varella*, goes up 80 leagues into the country to a mountain called *Moncalor*, above which it is much broader, but not so deep by far; there being banks of sand in some places, and lands overflowed with water, where there are an infinite number of fowls that cover all the country; inasmuch, that by reason of them the whole kingdom of Chintalculos had for 40 years been desolate, though it was eight days journey in length; which, at 30 miles a-day, made it 240 miles long. After passing this country, another was met with more wild, and full of great rocks; where there were a vast number of animals yet worse than the fowls, as elephants, rhinoceroses, lions, bears, buffaloes, and other beasts in such multitudes, that whatever men cultivated for the sup-

port of life was spoiled or destroyed by them, nor was it possible for the inhabitants to prevent it.

The Isle of France may be said to be the kingdom of rats. They come down from the mountains like an army, creep up the steepest rocks, march into the flat country, assemble in the marshy grounds, and bring desolation every where, especially in the night. Men can scarce sleep for them, and are obliged to roll themselves in such things as may best secure them from their bitings. It was the same in the Isle of Bourbon, which was as much infested with them at first, till it became more fully peopled. " We have good reason therefore (says Mr Cockburn) to conclude, that there was but one pair of animals created at first, that they might not increase too fast for mankind; and though they would multiply much more, and increase faster than men could do, they had room to spread themselves for a long time without much annoyance to man; and as men increased in number and extended their habitations, they would be able to drive them further off, or defend themselves from their depredations." The same mode of reasoning is by our author made use of with regard to aquatic animals. The multitude of these indeed, however great, could be no detriment to man who lived on land; but if we consider how large and numerous a spawn fishes cast at once, and in how short a time they multiply to immense numbers, he thinks it reasonable to conclude, that only one pair was created at once; and that the command to the waters to bring forth abundantly both fish and fowl, related only to the variety of species, not to a number of each.

3. Though at the restoration of the world it was to be repopled by six persons instead of two, and though at the same time animal food was given to man, yet Noah was commanded only to take a single pair of each of the animals, clean beasts, which are but a few in number, only excepted. It is further observable, that notwithstanding this scanty supply of animals, they had increased so much by the time of Nimrod, that it then became necessary to hunt and destroy them; and Nimrod was celebrated for his courage and skill in that necessary employment. " So numerous (adds he) were the animals before the flood, though but two of a kind were created, that Dr Woodward, from the remains of that earth, as well the animal as vegetable productions of it still preserved, concludes, that ' at the time the deluge came, the earth was so loaded with herbage, and so thronged with animals, that such an expedient was even wanting to ease it of the burden, and to make room for a new succession of its productions."

4. Mr Cockburn is of opinion, that America must have been peopled before the flood, as the old continent could not be supposed able to hold the number of inhabitants.

5. With regard to the main difficulty, viz. how the animals peculiar to different countries could travel to such distances to and from the ark, Mr Cockburn replies, that America, which Bishop Stillingfleet chiefly insists upon, has nothing peculiar to it, but what may equally well be urged both with respect to Asia and Africa; each of them having animals peculiar to themselves. It is also possible, that there might formerly be a more easy communication between the Asiatic

Deluge.

37
Vast increase of the animal creation.

38
Of the peopling of America, and migration of animals to it.

Repl. by Mr. Cockburn

Considers the number of birds

44
Section in the history of the world

Deluge. Asiatic and American continents than there is now. See the article AMERICA, n° 101—113.

Our author likewise observes, that though the ark rested on mount Ararat, yet we are not told where it was built, which might be far enough from the place where it is commonly supposed; so that those animals which are peculiar to America might not have so far to travel to the ark as is commonly imagined. This argument, however, seems to be very inconclusive; for though we should suppose the ark to have been constructed in America itself, the animals of Mesopotamia would have had as far to travel from thence to America, as the American animals from their own country to Mesopotamia, according to the common opinion. But in whatever part of the earth Noah lived and the ark was built, it was at God's command that the several kinds of animals came thither in order to their preservation; and his command could bring them from the farthest parts of the earth during the 120 years that the world lay under condemnation. Though after all, none of the animals might have very far to travel to the ark; for if only one pair of each kind was created at first, and all of these in or near one place, since they were all brought before Adam, and received names from him, there is no absurdity in supposing that some of every kind might remain in the country where they were first produced, from whence Noah's habitation might not be very distant. Neither can any objection be brought from the extinction of some species of animals in certain countries of the world, since they might have been hunted and destroyed either by the human race or by other creatures. Thus it is said, that there are now few or no deer in Switzerland, though formerly there were a great many when it was full of woods. In Britain also there are no wolves now to be found, though the island was infested with them in former times.

³⁹ Of the subsistence of carnivorous animals in the ark. In considering the subject of the deluge, among other questions which occur, one is, by what means were the ravenous animals, which feed only upon flesh, supported in the ark? For this some authors have supposed, that Noah, besides those animals whom he took into the ark for preservation, took likewise a great number for slaughter. For this purpose bishop Wilkins has allowed no fewer than 1825 sheep, though he was of opinion, that there were no carnivorous animals before the flood; and this latter opinion is adopted by Mr Cockburn. The idea indeed of slaughtering a number of harmless animals to satisfy a few vile rapacious ones, and that too in a place designed for the common asylum of the animal creation, seems inconsistent with that scheme of mercy displayed in the whole transaction. It is by much the more probable supposition then, that though some animals had been accustomed to live on flesh in their natural state, they could nevertheless subsist upon vegetable food. This seems the more probable, as some animals naturally carnivorous, particularly dogs and cats, may be supported in their domestic state by vegetable food alone. If we extend this to the whole canine and feline genera, we shall take in the most of the beasts of prey; as lions, tygers, leopards, panthers, wolves, foxes, hyænas, &c. Bears are well known sometimes to feed on berries; snakes will eat bread and milk; and there is no reason to suppose that even the most car-

N° 99.

nivorous birds could not be kept alive by grain or other vegetable food. By thus excluding such a number of useless animals, a very considerable space will be allowed for the circulation of air in the ark, the want of which seems to be the most inexplicable difficulty, if we may judge from the present constitution of things. It seems indeed to be certain, that no equal number of animals could subsist for a twelvemonth in an equal space so closely shut up as they were. The ark, it is true, contained near two millions of cubic feet; but considering the number of its inhabitants, the great space necessary for the food with which they were to be supplied, and the continual pollution of the air by their dung and filth as well as the effluvia from their bodies, there seems little probability that even such a vast bulk of air could suffice for any length of time. This difficulty will appear the greater, when we consider that any ventilation was impossible, as this could not have been done without opening both the door and window; and the former, we are certain, was not opened until the time that the command was given to come forth out of the ark. Neither is there the smallest probability, that the opening of a single window could renew the air in such a manner as to make it fit for breathing throughout the whole extent of the ark. In this particular therefore, we must have recourse to the immediate interposition of Divine power, and suppose that the air was miraculously preserved of a sufficient degree of purity, as the garments of the Israelites were preserved from turning old, and their feet from being affected by the journey through the desert in which they wandered so long.—Many other questions concerning the economy of the ark might be proposed; as, how they supplied themselves with water? in what manner they could use fire for the dressing of their victuals? &c. But as every answer to these must be founded wholly upon conjecture, and none can pretend that there was a natural impossibility of effecting any of these things, we forbear to insist farther upon them. The case, however, is very different with respect to the air necessary for sustaining animal life: for here there is a plain impossibility in a natural way; nay, we may even doubt whether the general mass of atmosphere, after being deprived of its electric matter, or otherwise altered in such a manner as to let fall such a quantity of the water it contained, was fit for the support of animal life; so that a miracle would have been necessary at any rate. To this indeed it may be replied, that on such a supposition, men and other animals would have been destroyed, not by the flood, but by the vitiated air they breathed. But, as has been already hinted, it is improbable that any living creature could resist the violent rain which took place, and which would soon drive the birds from their shelter, as the waters beginning to overflow the ground would soon expel the human race from their houses; and it would not be till the end of the 40 days and 40 nights that the air could be at its worst state, long before which time all animal life would be extinct.

We shall conclude this article with considering some Changes which have taken place in the world in consequence of the deluge. One of these is the much greater quantity of water on the present the deluge

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⁴⁰ Want of a proper circulation of air the greatest difficulty.

⁴¹

present than on the old world. Dr Keil has indeed endeavoured to prove, that the present extent of the surface of the waters is necessary to raise such a quantity of vapours as may supply the surface of the earth with rain and with springs. In answer to this, it is said, that it may justly be questioned whether all springs are derived from the vapours raised by the sun's heat? and, 2. Whether the primitive earth stood in need of such a quantity of rain to render it fertile as the present? Dr Woodward gives the following reason for supposing the antediluvian seas to have been nearly of the same extent with those at present, viz. that "the spoils of the sea, the shells and other marine bodies, are left in such prodigious numbers, and in heaps upon heaps in the earth, besides those which have long since perished, that they could not have been left in such quantities had not the seas occupied much the same space as they do now." This argument, however, is thought by Mr Cockburn to be also inconclusive: "For (says he) 1. Animal food, whether fish or flesh, was not used by mankind before the deluge: but, 2. Suppose it had, yet for the first 500 years the number of mankind was but small, and likely at a great distance from the sea; so that the increase of all kinds of fish during so long a time must have been prodigious. We need not be surprised, then, at the immense quantities of the exuviae of marine animals left on the earth by the deluge. But the reason he brings to prove that the several continents of the world were encompassed by seas as they are now, viz. that as there are different sorts of fishes in the different seas of the world, so the exuviae of the same kind are generally found upon contiguous lands, does not always hold, since there are some shells found in the continent which are strangers to the parts of the sea conterminous to these continents. That the seas in the present earth are vastly more extended, and consequently the dry land so much less in proportion, may likewise be inferred from the great multitude of islands that lie near the shores of the greater continents, if it be true what some allege, that they are parts broken off by the deluge from the main land, which before that reached to and beyond them. And though islands are thought to be rarely found in the great ocean, yet there have of late been found in the midst of the Indian ocean vast clusters of islands, &c."

To all this it may be replied, That the Mosaic account says nothing of the extent of the seas either before or after the flood; but simply tells us, that the waters were poured out upon the surface of the earth from the windows of heaven and the fountains of the deep, and that as the flood decreased the waters returned from off the face of the earth. If part of them returned, we have not the least reason to suppose that the whole did not do so likewise. That the fish, as well as land animals, were more numerous in the antediluvian world than now when such quantities are destroyed by mankind, is very probable, as we see they abound to this day in uninhabited places. This may account for the astonishing quantities of their exuviae to be met with in many different parts of the earth; but from the formation of islands nothing can be concluded concerning the antediluvian world. The late discoveries have shown that many islands have a volcanic origin; others are formed by the growth of

coral; some by an accumulation of sea-weeds and other matters floating on the surface of the ocean, and detained upon sand-banks or sunk rocks; while not a few of those near the great continents owe their origin to the quantities of mud brought down by the great rivers which empty themselves into the ocean. Authentic history scarce affords an instance of an island formed by the breaking off a piece from the continent, though it does many of islands being joined to continents by some one or other of the causes just mentioned.

The inferior fertility of the earth after the deluge is much insisted upon by the same author, for the following reasons: "1. The grant of animal food to Noah and his posterity; which he thinks is an indication of greater barrenness in the ground than formerly. 2. Our Saviour compares the days of Noah with those of Lot; and as the country about Sodom is said to have been exceedingly fertile like *the garden of the Lord*, he is of opinion that the antediluvian world must have been very fertile also. 3. As (according to Dr Woodward) the first earth brought forth all manner of plants of itself without any labour or culture of man, and even before there was a man to till the ground, we may reasonably suppose that the exterior stratum or surface of the earth consisted of such terrestrial matter as was fit for these productions; that is, of a rich light mould, affording plentifully matter for vegetation. Now, though God was pleased, upon man's transgression, to withdraw in part his benediction from the earth; yet the earth itself was untouched till the deluge, the same surface of rich mould was still upon it, and brought forth plentifully, especially when man's culture for corn was added. But the inundation of waters at the deluge greatly altered the constitution of the earth itself: it mixed and confounded this upper stratum of vegetative earth with other terrestrial matter not fit for vegetation, with sand, gravel, stones, and all kinds of mineral matter, which must needs render the earth in general much less fertile than before, and which made the plough necessary to dig up the proper vegetative mould and bring it to the surface, and also manure or compost to increase and enrich it; neither of which before the flood it needed. 4. There is a moral reason why the earth after the flood should be less fertile than before. The luxuriant productions of the first earth, after man's nature became corrupted, and to deviate more and more from righteousness, served only to excite and foment his lusts, and to minister plentiful fuel to his vices and luxury. To cut off, therefore, such occasion of sin and wickedness, God, in great mercy to men, retrenched the earth in its former fertility, thereby obliging them to labour and diligence, and employing most of their time to procure their necessary subsistence, which the earth by diligent culture will still afford, but not that luxuriant abundance it did before the flood. If we take a survey of the different regions and countries of the world, we shall find this to be the truth of the case. Some places, both in Asia and America, are as it were a paradise in respect of the rest, to show us perhaps what was and would have been the state of the earth had not man sinned; but far the greatest part is nothing to be compared to these, and evidently shows that effect which the sins of men had upon the

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earth itself. In a word, if we take a survey of the whole, it cannot be thought that the first blessing was restored to the earth after the flood, or that it came out of the hands of its maker in the state it is at present, since so great a part of it bears still the marks of the curse laid upon it."

Notwithstanding all that is here alleged, the extraordinary fertility of the ancient earth must still appear very problematical, if we consider all circumstances. For,

1. Even at the creation, when the earth was at its utmost perfection, we cannot suppose that every part of it produced spontaneously like the garden of Eden. On the contrary, we are told that this garden was *planted by the Lord God*, and that Adam was put into it to *dress it and to keep it*. It appears, therefore, that even in the Paradisaical state the earth would not have produced food for man without culture; for as God *planted* the first garden, there can be no doubt that had man continued in his state of innocence and multiplied, he must have *planted* other gardens when it became necessary. After the fall, the fertility of the earth was expressly removed, and that not in a slight degree; but if we can judge from the present state of things, it must have become extremely wild and barren. Thus, when it is said, "Thorns also and thistles shall it bring forth to thee;" we may judge of the state of the soil from that which we see bringing forth thorns and thistles at this day. Every one knows that an abundant crop of these weeds indicates poor ground, which will require a great deal of cultivation to bring it into order. Nay, that we may be sure that the cultivation of the earth was at this time no easy matter, it is likewise said, "In sorrow shalt thou eat of it all the days of thy life." Hence it would appear, that the antediluvian earth, instead of being more fertile, was much more barren than at present. That the labour of cultivating the ground at that time was also so great as to be almost intolerable, is evident from the speech of Lamech on the birth of Noah: "This same (says he) shall comfort us concerning our work and toil of our hands, concerning the ground which the Lord hath cursed."

2. There is a very evident natural reason why the antediluvian world should have been more barren than the present, and why the deluge should have removed that barrenness. Under the article ANTEDILUVIANS, n^o 19, it is hinted, that the purity of the air at that time was a principal cause of the longevity of the human race. If this was really the case, which is very probable, we must suppose the atmosphere to have then contained a greater quantity of *dephlogisticated air* than it does at present; for late experiments have put it beyond doubt, that from this the support of animal life is immediately derived. But this kind of air, however favourable to animal life, is found to be very unfavourable to vegetation; and therefore, in proportion to its abundance in the antediluvian atmosphere, the animals would be healthy, and the vegetables weak, puny, and sickly. But the deluge, by overflowing the earth for a whole year, destroyed every animal and vegetable, and consequently induced a vast putrefaction all over the globe; the consequence of which was the production of an immense quantity of what is called *phlogisticated air*. This mixing with the pure atmo-

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sphere, vitiated it to such a degree as to make it less friendly to animal life, but more so to vegetation. Hence the present world must naturally be more fertile than the former; and not only on this account, but by reason of its being manured by the stagnation of the waters upon its surface for a twelvemonth, and the immense quantity of animal matter left by them, the ground, instead of being lessened in its fertility as Dr Woodward supposes, must have been restored, as far as we can judge, to the very state it was in at its original formation.

3. That this was really the case appears probable from what the Deity said to Noah after offering up his sacrifice. "I will not (says he) curse the ground any more for man's sake." Now this was plainly intimating that the earth was restored to its primitive fertility, and that he would no more take it away; for when he did so to the primitive world it was in these words, "Cursed is the ground for thy sake." That the curse here alluded to was really the depriving the earth of its fertility, and not the overflowing the earth with water, is evident; because, after declaring that he would no more curse the ground for man's sake, he adds, "Neither will I again smite every living thing as I have done."

4. The moral reasons assigned why the present world should be less fertile than the former, seem to be inconclusive. However barren we may reckon the earth just now, it is certain that it produces, or might produce, much more than would suffice for all its inhabitants. The difficulties which mankind undergo are not at all owing to the barrenness of the earth; but to their own conduct, or their oppression of one another. Neither does it clearly appear that animal food is really in any degree cheaper than vegetable, but rather the contrary; so that whatever was the reason of this grant after the flood, we cannot fairly ascribe it to a foresight of the future barrenness of the earth.

Another question which naturally occurs on the subject of the deluge is, Whether there was any rain before it or not? The argument against the existence of rain before the flood is obviously derived from the rainbow being made a symbol of the divine favour immediately after. It is certain, indeed, that unless we suppose the nature of light or of water to have been different before this event from what it was afterwards, there is a natural impossibility of the refraction of the sun's light being prevented from showing the appearance of a rainbow whenever the sun and cloud were in a certain position with regard to one another. It appears improbable, to those who take this side of the question, that the Deity should institute any thing as an emblem of his displeasure being turned away, when the same emblem had been seen perhaps a very short time before the catastrophe happened. On the other hand it is replied, that there is no absurdity in supposing this to have been the case: for though the rainbow existed before the deluge, yet it never was appointed to be the symbol of this particular event, *viz.* the reconciliation of the Deity; and the impossibility of vegetables being supplied with a sufficient quantity of moisture without rain is likewise urged as a decisive argument. Still, however, it appears, that even vegetation may subsist, and that in its utmost perfection,

fection, without rain: for we are informed, that by means of a mist the ground was originally watered, and vegetables supplied with moisture, before there was any rain; and if this was the case at one time, it might have been at any other, or at any number of times we can suppose. Indeed, as matters stand at present, this would undoubtedly be a very scanty supply; and perhaps so it was in the antediluvian world: and thus the want of rain might have been one cause of that barrenness in the antediluvian world which we have already mentioned as probable, and which Mr Bryant mentions as the opinion of all the ancient mythologists.

For particular deluges, or overflowings of various parts of the earth by water, see the article **INUNDATION**.

DEMADES, a famous Athenian, who, from being a mariner, became a great orator, and appeased Philip by his eloquence, after the famous victory over the Athenians at Cheronea, in the 338th year B. C.

DEMAIN, or **DEMESNE**, in its common acceptation, is used for the lands round a manor-house, occupied by the lord.

DEMAIN, or *Demefne*, in law, is commonly understood to be the lord's chief manor-place, with the lands thereto belonging, which he and his ancestors have, time out of mind, kept in their own manual occupation.

DEMAND, in its popular sense, denotes a calling for or requiring one's due.

DEMAND, in law, has a more special signification, as contradistinguished from *plaint*: for all civil actions are pursued either by demands or plaints; according to which the pursuer is called either *demandant* or *plaintiff*: viz. in real actions, *demandant*; and in personal actions, *plaintiff*. See **PLAINTIFF**.

There are two kinds of demands: the one in *deed*, *de facto*, as in every precipe: the other in *law*, *de jure*; such is entry in land, distress for rent, &c.

DEMEMBRATION, in Scots law. See **LAW**, N^o clxxxvi. 17.

DEMEMBRE, in heraldry, is said of dismembered animals, or those with their limbs cut off.

DEMESNE. See **DEMAIN**.

DEMESNE LANDS. See **REVENUE**, n^o 5.

DEMETÆ (anc. geog.), a people of Britain, considered as a branch of the Silures, occupying that inner corner formed by the Bristol Channel and the Irish Sea.

DEMETRIA, a festival in honour of Ceres, called by the Greeks *Demeter*. It was then customary for the votaries of the goddess to lash themselves with whips made with the bark of trees. The Athenians had a solemnity of the same name in honour of Demetrius Poliorcetes.

DEMETRIOWITZ, a city of the duchy of Smolensko, in the Russian empire, situated upon the river Ugra, in E. Long. 37. 0. N. Lat. 53. 20.

DEMETRIUS, a son of Antigonus and Stratonice, surnamed *Poliorcetes*, "Destroyer of towns." At the age of 22, he was sent by his father against Ptolemy, who invaded Syria. He was defeated near Gaza; but he soon repaired his loss by a victory over one of the generals of the enemy. He afterwards sailed with

a fleet of 250 ships to Athens, and restored the Athenians to liberty, by freeing them from the power of Cassander and Ptolemy, and expelling the garrison, which was stationed there under Demetrius Phalereus. After this successful expedition, he besieged and took Munychia, and defeated Cassander at Thermopylae. His reception at Athens after these victories was attended with the greatest fervility, and the Athenians were not ashamed to raise altars to him as to a god, and consult his oracles. This uncommon success raised the jealousy of the successors of Alexander and Seleucus Cassander, and Lyfimachus united to destroy Antigonus and his son. Their hostile armies met at Ipsus, 299 years before the Augustan age. Antigonus was killed in the battle; and Demetrius, after a severe loss, retired to Ephesus. His ill success raised him many enemies; and the Athenians, who had lately adored him as a god, refused to admit him into their city. He soon after ravaged the territory of Lyfimachus, and reconciled himself to Seleucus, to whom he gave his daughter Stratonice in marriage. Athens now laboured under tyranny, and Demetrius relieved it and pardoned the inhabitants. The loss of his possessions in Asia recalled him from Greece, and he established himself on the throne of Macedonia by the murder of Alexander the son of Cassander. Here he was continually at war with the neighbouring states, and the superior power of his adversaries obliged him to leave Macedonia, after he had sat on the throne for seven years. He passed into Asia, and attacked some of the provinces of Lyfimachus with various success; but famine and pestilence destroyed the greatest part of his army, and he retired to the court of Seleucus for support and assistance. He met with a kind reception: but hostilities were soon begun; and after he had gained some advantages over his son-in-law, Demetrius was totally forsaken by his troops in the field of battle, and became an easy prey to the enemy. Though he was kept in confinement by his son-in-law, yet he maintained himself like a prince, and passed his time in hunting and in every laborious exercise. His son Antigonus offered Seleucus all his possessions, and even his person, to procure his father's liberty; but all proved unavailing, and Demetrius died in the 54th year of his age, after a confinement of three years, 286 years before Christ. His remains were given to Antigonus, and honoured with a splendid funeral pomp at Corinth, and thence conveyed to Demetrias. His posterity remained in possession of the Macedonian throne till the age of Perseus, who was conquered by the Romans. Demetrius has rendered himself famous for his fondness of dissipation when among the dissolute, and for his love of virtue and military glory in the field of battle. He has been commended as a great warrior; and his ingenious inventions, his warlike engines, and stupendous machines in his war with the Rhodians, justify his claims to that character. He has been blamed for his voluptuous indulgences; and his biographer observes that no Grecian prince had more wives and concubines than Poliorcetes. His obedience and reverence to his father has been justly admired; and it has been observed, that Antigonus ordered the ambassadors of a foreign prince, particularly to remark the cordiali-

Demetrius. ty and friendship which subsisted between him and his son.

DEMETRIUS, surnamed *Gonatas*, succeeded his father Antigonus on the throne of Macedonia. He reigned 12 years, and was succeeded by his son Philip.

DEMETRIUS, a son of Philip, king of Macedonia, delivered as an hostage to the Romans. His modesty delivered his father from a heavy accusation laid before the Roman senate. When he returned to Macedonia, he was falsely accused by his brother Perseus, who was jealous of his popularity, and his father too credulously consented to his death.

DEMETRIUS I. surnamed *Soter* or *Savior*, was son of Seleucus Philopator the son of Antiochus the Great, king of Syria. His father gave him as a hostage to the Romans. After the death of Seleucus, Antiochus Epiphanes, the deceased monarch's brother, usurped the kingdom of Syria, and succeeded by his son Antiochus Eupator. This usurpation displeased Demetrius, who was detained at Rome. He procured his liberty on pretence of going to hunt, and fled to Syria, where the troops received him as their lawful sovereign. He put to death Eupator and Lyfias, and established himself on his throne by cruelty and oppression. Alexander Bala, the son of Antiochus Epiphanes, laid claims upon the crown of Syria, and defeated Demetrius in a battle, 250 years before Christ.

DEMETRIUS II. surnamed *Nicanor*, or *Conqueror*, was son of Soter, to whom he succeeded by the assistance of Ptolemy Philometor. He married Cleopatra, the daughter of Ptolemy, who was before the wife of the expelled monarch Alexander Bala. Demetrius gave himself up to luxury and voluptuousness, and suffered his kingdom to be governed by his favourites. At that time a pretended son of Bala, called *Diodorus Tryphon*, seized a part of Syria; and Demetrius, to oppose his antagonist, made an alliance with the Jews, and marched into the east, where he was taken by the Parthians. Phraates king of Parthia gave him his daughter Rhodogyne in marriage; and Cleopatra was so incensed at this new connection, that she gave herself up to Antiochus Sidetes her brother-in-law, and married him. Sidetes was killed in a battle against the Parthians, and Demetrius regained the possession of his kingdom. His pride and oppression rendered him odious; and his subjects asked a king of the house of Seleucus from Ptolemy Physcon king of Egypt: and Demetrius, unable to resist the power of his enemies, fled to Ptolemais, which was then in the hands of his wife Cleopatra. The gates were shut up against his approach by Cleopatra; and he was killed by order of the governor of Tyre, whither he had fled for protection, A. U. C. 627. He was succeeded by Alexander Zebina, whom Ptolemy had raised to the throne.

DEMETRIUS Phalereus, a celebrated orator and peripatetic philosopher, was the scholar of Theophrastus. He acquired so much authority at Athens, that he governed the city for ten years; and ruled with so much wisdom and virtue, that they set up 36 statues in honour of him. By the slanders of some malicious persons in his absence, he was, however, condemned to die; and his images were pulled down: which when Demetrius heard, he said, they could not pull down that virtue for which those images were set up. He escaped into

Egypt, and was protected by Ptolemy Lagus. This king, it is said, asked his advice concerning the succession of his children to the throne; viz. whether he ought to prefer those he had by Euridice to Ptolemy Philadelphus whom he had by Berenice? and Demetrius advised him to leave his crown to the former. This displeased Philadelphus so much, that, his father being dead, he banished Demetrius; who was afterwards killed by the bite of an asp. Demetrius composed more works in prose and verse than any other peripatetic of his time; and his writings consisted of poetry, history, politics, rhetoric, harangues, and embassies. None of them are extant except his rhetoric, which is usually printed among the *Rhetores Selecti*.

DEMETRIUS, a cynic philosopher, disciple of Apollonius Thyaneus, in the age of Caligula. The emperor wished to gain the philosopher to his interest by a large present; but Demetrius refused it with indignation, and said, If Caligula wishes to bribe me, let him send me his crown. Vespasian was displeased with his insolence, and banished him to an island. The cynic derided the punishment, and bitterly inveighed against the emperor. He died in a great old age; and Seneca observes, that "nature had brought him forth to show mankind that an exalted genius can live securely without being corrupted by the vice of the surrounding world."

DEMI (formed from *dimidium*), a word used in composition with other words to signify *half*.

DEMI-Attici, boroughs or larger villages of Attica. The Athenian tribes were distributed into Demi. Homer, in his catalogue, distinguishes the Athenians by the appellation *Demos*. And when Theseus prevailed on them to quit the country and settle at Athens, they still continued to frequent the Demi, and to perform their several religious ceremonies there (Pausanias, Livy).

DEMI-Culverin, a piece of ordnance usually $4\frac{1}{2}$ inches bore, 2700 pound weight, 10 feet long, and carrying point blank 175 paces.

DEMI-Culverin of the least size, is $4\frac{1}{4}$ inches bore, 10 feet long, and 2000 pound weight. It carries a ball of 4 inches diameter and of 9 pounds weight, and its level range is 174 paces.

DEMI-Culverin of the largest sort, is $4\frac{1}{2}$ inches bore, $10\frac{3}{4}$ feet long, and weighs 3000 pounds weight. It carries a ball $4\frac{1}{2}$ inches diameter, weighing 12 pounds 11 ounces, point blank 178 paces.

DEMI-God. See HERO.

DEMI-Gorge, in fortification, is that part of the polygon which remains after the flank is raised, and goes from the curtain to the angle of the polygon. It is half of the vacant space or entrance into a bastion.

DEMI-Quaver, a note in music, two of which are equal to a quaver.

DEMI-Semi-Quaver, in music, the shortest note, two of them being equal to a semi-quaver.

DEMISE, in law, is applied to an estate either in fee-simple, fee-tail, or for term of life or years; and so it is commonly taken in many writs. The king's death is in law termed the demise of the king.

DEMISE, and **REDEMISE**, denote a conveyance where there are mutual leases made from one to another of the same land, or something out of it.

DEMIURGE (from *δημιος*, which denotes a *public servant*,

Demetrius
||
Demiurge.

democracy, *servant*, and *work*), in the mythology of the eastern philosophers, was one of the *ÆONS* employed by the supreme Deity in the creation of the world. The character they give him is a compound of shining qualities and insupportable arrogance; and his excessive lust of empire effaces his talents and virtues. He is represented as claiming dominion over the new world he has formed, as his sovereign right; and excluding totally the supreme Deity from all concernment in it, he demands from mankind, for himself and his associates, divine honours.

DEMOCRACY, from *δημο* *people*, and *κρατος* *to command or govern*; the same with a popular government, wherein the supreme power is lodged in the hands of the people: such were Rome and Athens of old; but as to our modern republics, Basil only excepted, their government comes nearer to aristocracy than democracy. See **LAW**, n^o 14.

DEMOCRITUS, one of the greatest philosophers of antiquity, was born at Abdera, a town of Thrace, about the 80th Olympiad; that is, about 460 years before Christ. His father, says Valerius Maximus, was able to entertain the army of Xerxes; and Diogenes Laertius adds, upon the testimony of Herodotus, that the king, in requital, presented him with some Magi and Chaldeans. From these Magi and Chaldeans Democritus received the first part of his education; and from them, whilst yet a boy, he learned theology and astronomy. He next applied to Leucippus, and learned from him the system of atoms and a vacuum. His father dying, the three sons, for so many there were, divided the estate. Democritus made choice of that part which consisted in money, as being, though the least share, the most convenient for travelling; and it is said, that his portion amounted to above 100 talents, which is near 20,000 l. Sterling. His extraordinary inclination for the sciences and for knowledge, induced him to travel into all parts of the world where he hoped to find learned men. He went to visit the priests of Egypt, from whom he learned geometry; he consulted the Chaldeans and the Persian philosophers; and it is said, that he penetrated even into India and Ethiopia, to confer with the Gymnosophists. In these travels he wasted his substance; after which, at his return, he was obliged to be maintained by his brother; and if he had not given proofs of the greatest understanding, and thereby procured to himself the highest honours, and the strongest interest of his country, he would have incurred the penalty of that law which denied the interment in the family-sepulchre to those who had spent their patrimony. After his return from travelling, he lived at Abdera, and governed there in a most absolute manner, by virtue of his consummate wisdom. The magistrates of that city made him a present of 500 talents, and erected statues to him even in his lifetime: but being naturally more inclined to contemplation than delighted with public honours and employments, he withdrew into solitude and retirement. Democritus incessantly laughed at human life, as a continued farce, which made the inhabitants of Abdera think he was mad; on which they sent for Hippocrates to cure him: but that celebrated physician having discoursed with the philosopher, told the Abderians, that he had a great veneration for Democritus; and that, in his opinion, those who esteemed themselves the most heal-

thy were the most distempered. Democritus died, according to Diogenes Laertius, in the 361st year before the Christian era, aged 109. It is said that he put out his eyes, in order that he might meditate more profoundly on philosophical subjects; but this has little probability. He was the author of many books, which are lost; and from these Epicurus borrowed his philosophy.

DEMONSTRABLE, a term used in the schools to signify that a thing may be clearly proved. Thus, it is demonstrable, that the three angles of a triangle are equal to two right ones.

DEMONSTRATION, in logic, a series of syllogisms, all whose premisses are either definitions, self-evident truths, or propositions already established. See **LOGIC**.

DEMONSTRATIVE, in grammar, a term given to such pronouns as serve to indicate or point out a thing. Of this number are *hic*, *hæc*, *hoc*, among the Latins; and *this*, *that*, *these*, *those*, in English.

DEMOSTHENES, the famous Athenian orator, was born at Athens 381 B. C. He lost his father at seven years of age; and was placed under the conduct of guardians, who robbed him of his substance, and neglected his education. Demosthenes repaired this loss by his love of eloquence and his extraordinary abilities. He became the disciple of Isæus and Plato, and applied himself to study the orations of Isocrates. At the age of 17 he gave an early proof of his eloquence and abilities against his guardians, from whom he obtained the retribution of the greatest part of his estate. His rising talents were, however, impeded by various natural defects. But these were at last conquered by dint of resolution and unwearied attention. He declaimed by the sea-shore, that he might be used to the noise of a tumultuous assembly; and with pebbles in his mouth, that he might correct a defect in his speech. He practised at home with a naked sword hanging over his shoulder, that he might check an ungraceful motion to which he was subject. He also confined himself in a subterraneous cave, to devote himself more closely to studious pursuits; and to eradicate all curiosity of appearing in public, he shaved one half of his head. In this solitary retirement, by the help of a glimmering lamp, he composed the greatest part of his orations, which have ever been the admiration of every age; though his contemporaries and rivals inveighed against them, and observed that they smelt of oil. His abilities as an orator raised him to consequence at Athens, and he was soon placed at the head of government. In this public capacity he roused his countrymen from their indolence, and animated them against the encroachment of Philip of Macedonia. In the battle of Cheronæa, Demosthenes betrayed his pusillanimity, and saved his life by flight. After the death of Philip, he declared himself warmly against his son and successor Alexander; and when the Macedonians demanded of the Athenians their orators, Demosthenes reminded his countrymen of the fable of the sheep which delivered their dogs to the wolves. By the prevalence of party, however, he was forced to retire from Athens; and in his banishment, which he passed at Træzen and Argina, he lived with more effeminacy than true heroism. When Antipater made war against Greece after the death of Alexander, Demost-

Demonstrable
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Demosthenes.

Demosthenes.

henes was publicly recalled from his exile, and a galley was sent to fetch him from Ægina. His return was attended with much splendor, and all the citizens crowded at the Piræus to see him land. His triumph and popularity were short. Antipater and Craterus were near Athens, and demanded all the orators to be delivered up into their hands. Demosthenes fled to the temple of Neptune in Calauria; and when he saw that all hopes of safety were vanished, he took a dose of poison, which he always carried in a quill, and expired on the day that the Thesmophoria were celebrated, 322 years before Christ. The Athenians raised a brazen statue to his honour, with an inscription translated into this distich:

*Si tibi par menti robur, Vir magne, fuisset,
Græcia non Mæcelo succubuisse hero.*

Demosthenes has been deservedly called *the prince of orators*. Indeed no orator had ever a finer field than Demosthenes in his Olynthiacs and Philippics, which are his capital orations; and undoubtedly to the greatness of the subject, and to that integrity and public spirit which breathe in them, they owe a large portion of their merit. The subject is, to excite the indignation of his countrymen against Philip of Macedon, the public enemy of the liberties of Greece; and to guard them against the treacherous measures by which that crafty tyrant endeavoured to lull them into a neglect of their danger. To attain this end, we see him use every proper means to animate a people distinguished by justice, humanity, and valour; but in many instances become corrupt and degenerate. He boldly accuses them of venality, indolence, and indifference to the public good; while, at the same time, he reminds them of their former glory, and of their present resources. His contemporary orators, who were bribed by Philip, and who persuaded the people to peace, he openly reproaches as traitors to their country. He not only prompts to vigorous measures, but teaches how they are to be carried into execution. His orations are strongly animated, and full of the impetuosity and ardour of public spirit. His composition is not distinguished by ornament and splendor. It is an energy of thought, peculiarly his own, which forms his character, and raises him above his species. He seems not to attend to words, but to things. We forget the orator, and think of the subject. He has no parade and ostentation, no studied introductions: but is like a man full of his subject; who, after preparing his audience by a sentence or two for the reception of plain truths, enters directly on business.

The style of Demosthenes is strong and concise; though sometimes, it must be confessed, harsh and abrupt. His words are highly expressive, and his arrangement firm and manly. Negligent of lesser graces, he seems to have aimed at that sublime which lies in sentiment. His action and pronunciation are said to have been uncommonly vehement and ardent; which, from the manner of his writings, we should readily believe. His character appears to have been of the austere rather than of the gentle kind. He is always grave, serious, passionate; never degrading himself, nor attempting any thing like pleausantry. If his admirable eloquence be in any respect faulty, it is that he sometimes borders on the hard and dry. He

may be thought to want smoothness and grace; which is attributed to his imitating too closely the manner of Thucydides, who was his great model for style, and whose history he is said to have transcribed eight times with his own hand. But these defects are more than atoned for by that masterly force of masculine eloquence, which, as it overpowered all who heard it, cannot in the present day be read without emotion.

CICERO calls him a perfect model, and such as he himself wished to be. These two great princes of eloquence have been often compared together; but the judgment hesitates to which to give the preference. The Archbishop of Cambrai, however, seems to have stated their merits with great justice and perspicuity in his Reflections on Rhetoric and Poetry. The passage, translated, is as follows. "I do not hesitate to declare, that I think Demosthenes superior to Cicero. I am persuaded no one can admire Cicero more than I do. He adorns whatever he attempts. He does honour to language. He disposes of words in a manner peculiar to himself. His style has great variety of character. Whenever he pleases, he is even concise and vehement; for instance, against Catiline, against Verres, against Antony. But ornament is too visible in his writings. His art is wonderful, but it is perceived. When the orator is providing for the safety of the republic, he forgets not himself, nor permits others to forget him. Demosthenes seems to escape from himself, and to see nothing but his country. He seeks not elegance of expression; unfought for he possesses it. He is superior to admiration. He makes use of language, as a modest man does of dress, only to cover him. He thunders, he lightens. He is a torrent which carries every thing before it. We cannot criticise, because we are not ourselves. His subject enchains our attention, and makes us forget his language. We lose him from our sight: Philip alone occupies our minds. I am delighted with both these orators; but I confess that I am less affected by the infinite art and magnificent eloquence of Cicero, than by the rapid simplicity of Demosthenes."

DEMPSTER (Thomas), a very learned man, but of a singular character. He was born in Scotland, but we do not find in what year. He went over to France for the sake of embracing the catholic religion, and taught classical learning at Paris about the beginning of the 17th century. Tho' his business was to teach school; yet he was as ready to draw his sword, and as quarrelsome as if he had been a duellist by profession: and it is said, that there scarce passed a day but he had something or other of this kind upon his hands. This spirit and turn of temper drew him into many scrapes; and one in particular, which obliged him to quit the country. Grangier, principal of the college of Beauvais at Paris, being obliged to take a journey, appointed Dempster his substitute. Dempster caused whip a scholar, in full school, for challenging one of his fellows to fight a duel. The scholar, to revenge this affront, brought three gentlemen of his relations, who were of the king's life-guards, into the college. Dempster made the whole college take arms; hamstringed the three life-guard-men's horses before the college gate; and put himself into such a posture of defence, that the three sparks were forced to ask for quarter. He gave them their lives; but imprisoned them, and did

not

Demosthenes, Dempster.

Dempster
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Denbigh.

not release them for some days. They fought another way to revenge themselves: they caused an information to be made of the life and moral behaviour of Dempster, and got some witnesses to be heard against him. Upon this he went over to England, where he found refuge; but did not make any long stay. He went abroad again, and read lectures upon polite learning in several universities; in that of Nismes particularly, where he disputed for a professor's chair, and obtained it. He went to Bologna, and was professor there for the remainder of his life; and was then also admitted a member of the Academy della Rotte. He died there in September 1625, leaving behind him several learned works; as Commentaries on *Rofinus de Antiquitatibus Romanorum*, and upon Claudian, &c.; four books of Epistles; several dramatic pieces, and other poems; some books of law; an Apparatus to the History of Scotland; a Martyrology of Scotland; and a List of the Scottish Writers.

DEMPSTER of Court, the name formerly given in Scotland to the common executioner or hangman.

DEMSTER, or DEEMSTER. See DEEMSTER.

DEMULCENTS, among physicians, medicines good against acrimonious humours. Such are the roots of marsh-mallows, of white lilies, of liquorice, and of viper-grass, the five emollient herbs, &c.

DEMURRAGE, in commerce, an allowance made to the master of a ship by the merchants, for staying in a port longer than the time first appointed for his departure.

DEMURRER, in law, a stop put to any action upon some point of difficulty which must be determined by the court, before any further proceedings can be had in the suit.

DEN, a syllable which, added to the names of places, shows them to be situated in valleys or near woods; as Tenterden.

DENARIUS, in Roman antiquity, the chief silver coin among the Romans, worth in our money about sevenpence three farthings. As a weight, it was the seventh part of a Roman ounce.

DENARIUS is also used in our law-books for an English penny.

DENBIGHSHIRE, a county of Wales, bounded on the south by Merioneth and Montgomery shires, on the north by Flintshire and the Irish Sea, on the west by Caernarvon and part of Merionethshire. It is about 40 miles long and 21 broad. The air is wholesome, but sharp; the county being pretty hilly, and the snow lying long on the tops of the mountains. The soil in general is barren; but the vale of Clwyd, so called from its being watered by that river, is a very fertile pleasant spot, of great extent, and well inhabited. The chief commodities are black cattle, sheep, and goats, rye, called here *amelcorn*, and lead-ore. The county sends two members to parliament, *viz.* a knight for the shire, and a burgess for Denbigh the capital.

DENBIGH, the capital town of Denbighshire in N. Wales. It is seated on the side of a rocky hill, on a branch of the river Clwyd, and was formerly a place of great strength, with an impregnable castle, now demolished. It is pretty large, well built, and inhabited by tanners and glovers, and gives the title of Earl to the noble family of Fielding. W. Long. 3. 30. N. Lat. 53. 15.

DENDERMOND, a handsome and strong town of the Austrian Netherlands, in Flanders, with a strong citadel. It was taken by the allies in 1706, and by the French in 1745. It is surrounded by marshes and fine meadows, which the inhabitants can lay under water when they please. It is seated at the confluence of the rivers Dender and Schelde. E. Long. 4. 3. N. Lat. 51. 3.

DENDRACHATES, in natural history, the name used by the ancients for an extremely elegant and beautiful species of agate, the ground of which is whitish, variegated with veins of a brighter white. These veins are beautifully disposed in a number of various figures; but generally in many concentric irregular circles, drawn round one or more points. It is common also, in various parts of this stone, to find very beautiful delineations of trees, mosses, sea-plants, and the like, so elegantly expressed, that many have erroneously taken them for real plants included in the substance of the stone; whence the name *dendrachates*.

DENDRANATOMY, a term used by some for a description of the various parts of trees; as root, trunk, branch, bark, wood, pith, flower, fruit, &c. See PLANTS, VEGETATION, &c.

DENDROMETER (from *δένδρον* a tree, and *μετρέω* I measure), an instrument lately invented by Messrs Duncombe and Whittel, for which they obtained a patent, so called from its use in measuring trees. This instrument consists of a semicircle A, divided into two quadrants, and graduated from the middle; upon the diameter B there hangs a plummet L for fixing the instrument in a vertical position; there is also a chord D parallel to the diameter, and a radius E, passing at right angles through the diameter and chord. From a point on the radius hangs an altimeter C, between the chord and diameter, to which is fixed a small semicircle G, and a screw, to confine it in any position. The altimeter, which is contrived to form the same angle with the radius of the instrument as the tree forms with the horizon, is divided from its centre both ways into forty equal parts; and these parts are again subdivided into halves and quarters. Upon the small semicircle G, on which is accounted the quantity of the angle made by the altimeter and radius, are expressed degrees from 60 to 120, being 30 on each quadrant. The radius is numbered with the same scale of divisions as the altimeter. There is also a nonius to the small semicircle, which shows the quantity of an angle to every five minutes. On the back of the instrument the stock M of the sliding piece is confined to the axis N, which moves concentrically parallel to the elevation index F on the opposite side, to which it is fixed. This index is numbered by a scale of equal divisions with the altimeter and radius: at the end of the index is a nonius, by which the angles of elevation above, or of depression below, the horizon, measured upon the semicircle of the instrument, are determined to every five minutes. There is also a groove in the radius, that slides across the axis by means of a screw I, working between the chord and semicircle of the instrument; and this screw is turned by the key O. Upon the stock M is a sliding piece P, that always acts at right angles with the altimeter, by means of a groove in the latter. To the flank of the sliding piece is affixed a moveable limb Q, which forms the

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Dendrometer. same angle with the altimeter as the bough forms with the body or trunk of the tree. This limb may be of any convenient length, divided into equal parts of the same scale with all the foregoing divisions. At the extremity of the fixed axis, on a centre, an index R, with telescopic sights, works horizontally upon the moveable limb of the sliding piece. Upon this horizontal index R may be fixed a small quadrant T, described with any convenient radius from the centre on which the index moves, and divided into 90 degrees, beginning at a right line drawn from the centre at right angles with the fiducial edge of the said index; and upon the extremity of the axis is a nonius, whereby to determine the quantity of an angle upon the quadrant every five minutes. There are also two small circular arches S, S, serving to keep the sights in a parallel position, each containing an equal number of degrees. Upon these arches is measured the angle, subtending a side equal to the difference of the altitudes of the observed objects above the plane of the horizon, and whose base is the nearest distance between the perpendiculars in which these objects are situated. The dendrometer is fitted to a theodolite, and may be used either with or without it as occasion requires.

The principal use of this instrument is for measuring the length and diameter of any tree, perpendicular or oblique, to an horizontal plane, or in any situation of the plane on which it rests, or of any figure, whether regular or irregular, and also the length and diameter of the boughs, by mere inspection; and the inventors of it have calculated tables, annexed to their account of the instrument itself, by the help of which the quantity of timber in a tree is obtained without calculation, or the use of the sliding rule. The instrument is rectified by setting it in a perpendicular position, by means of the plummet, and screwing it to the staff; then the altimeter is placed in the exact position of the tree, whether perpendicular, reclining, or inclining, and screwed fast. If the tree stands on level ground, the horizontal distance from the tree to the axis of the instrument is measured with a tape-line, and the radius is moved with the key till that distance be cut upon it by the inside of the diameter: but if the ground be slanting, the distance from the tree to the instrument is measured, and the elevation index is moved till the point of the tree from which the distance was measured is seen through the sights, and there screwed fast; and the radius is moved backwards or forwards with the key till this distance is cut upon the elevation index by the perpendicular line of the altimeter; and the horizontal line will be marked upon the radius by the inside of the diameter. In order to obtain the length of the tree, the elevation index is first moved downwards, till the bottom of the tree cut by the horizontal wires is observed through the lights, and the feet and inches marked by the index upon the altimeter below the point of sight or horizontal line are noted down: then the index is moved upwards till the part to which you would measure, cut by the horizontal wires, is seen, and the feet and inches marked on the altimeter above the point of sight are noted: these two quantities added together give the exact length of the tree, which is inserted in a field-book. For the girth of the tree, the circumference

in that part where the horizontal distance was taken, is measured with the tape-line; and a sixth part of this circumference is added to the distance on the radius, which was before cut by the inside of the diameter, because the tape-line, in taking the distance, cannot be applied to the centre of the body of the tree; then the elevation index is lowered to that part of the tree, of which the diameter is to be taken and screwed fast. Set the moveable limb of the sliding piece quite straight, and the edge of the horizontal index upon the first division of it. Turn the whole instrument about to the left hand till you see through the sights the left side of the tree cut exactly by the perpendicular wires; then the instrument being fixed, move the sights only upon the sliding piece, till you see the right side of the tree cut also by the perpendicular wires; and you will find the true diameter marked by the horizontal index upon the sliding piece, which is to be entered in a distinct column of the field-book.

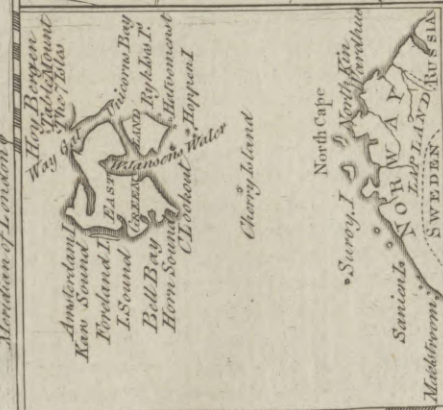
For the boughs: let the distance on the radius be now reduced to its former quantity, and the elevation index moved upwards till the bough is seen through the sights and screwed fast. Set the moveable part of the sliding piece in a position parallel to the bough, and the edge of the horizontal index on the first division of it. Turn the whole instrument about till you see through the sights the shoot of the bough close to the trunk cut by the perpendicular wires; then move the sights till you see the other end of the bough cut by the said wires, and note the feet and inches marked by the horizontal index on the moveable limb of the sliding piece, which will give the true length of the bough to be inserted in the field-book. And the girth of the bough may be obtained by directing the sights to that part of it whose girth is desired; then by moving the elevation index downwards till you see the under side of the bough cut by the horizontal wires, and there noting the feet and inches marked by the said index on the altimeter; after which, let the elevation index be moved upwards till the upper side of the bough cut by the horizontal wires is seen; the feet and inches marked upon the altimeter are to be noted as before. The former quantity subtracted from the latter will give the true diameter of the bough, which is entered in the field-book. The true solidity both of the body of the tree and of the boughs may be found from the diameter and lengths in tables calculated for this purpose.

The dendrometer, fitted to a theodolite, may be applied to measuring the heights and distances of objects, accessible or inaccessible, whether situated in planes parallel or oblique to the plane in which the instrument is placed. It may be also used for taking all angles, whether vertical, horizontal, or oblique, in any position of the planes in which they are formed; and thus for facilitating the practical operations of engineering, land surveying, levelling, mining, &c. and for performing the various cases of plane trigonometry without calculation; of which the inventors have subjoined to their account of this instrument many examples.

DENDROPHORIA, in antiquity, the carrying of boughs or branches of trees; a religious ceremony so called, because certain priests called from thence *dendrophori*,

32 Deg E from London

DENMARK, NORWAY, SWEDEN, And FINLAND.



How E. from London II

How E. from London I

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D mark. *dendrophori*, tree-bearers, marched in procession, carrying the branches of trees in their hands in honour of some god, as Bacchus, Cybele, Sylvanus, &c. The college of the *dendrophori* is often mentioned in ancient marbles; and we frequently see in basso relievo the bacchanals represented as men carrying little shrubs or branches of trees.

DENE^B, an Arabic term signifying *tail*, used by astronomers to denote several fixed stars. Thus, *deneb elect*, signifies the bright star in the lion's tail. *Deneb adigege*, that in the swan's tail, &c.

DENHAM (Sir John), an eminent English poet, the only son of Sir John Denham, chief baron of the exchequer in Ireland, and one of the lords commissioners there, was born in Dublin in 1615; but his father, in 1617, being made a baron of the exchequer in England, he received his education in that country. In his youth he followed gaming more than any thing else; but, in 1641, published a tragedy called the *Sophy*, which was much admired by the best judges; and, in 1643, wrote his famous poem called *Cooper's Hill*; which Mr Dryden pronounces will ever be the standard of good writing for majesty of style. Denham was sent ambassador from Charles II. to the king of Poland; and at the Restoration was made surveyor-general of his majesty's buildings, and created knight of the Bath. On obtaining this post, he is said to have renounced his poetry for more important studies; though he afterward wrote a fine copy of verses on the death of Cowley. He died at his office in Whitehall in 1668; and his works have been often since printed.

DENIER, a small French copper-coin, of which twelve make a sol.

There were two kinds of deniers, the one *tournois*, the other *parisis*, whereof the latter was worth a fourth part more than the former.

DENIZEN, in law, an alien made a subject by the king's letters-patent; otherwise called *donation*, because "his legitimation proceeds *ex donatione regis*, from the king's gift."

A denizen is in a kind of middle state between an alien and a natural born subject, and partakes of both of them. He may take lands by purchase or devise, which an alien may not; but cannot take by inheritance; for his parent, through whom he must claim, being an alien, had no inheritable blood, and therefore could convey none to the son; and, upon a like defect of blood, the issue of a denizen born before denization, cannot inherit to him; but his issue born after may. A denizen is not excused from paying the alien's duty, and some other mercantile burdens. And no denizen can be of the privy council, or either house of parliament, or have any office of trust civil or military, or be capable of any grant of lands, &c. from the crown.

DENMARK, one of the most ancient monarchies in Europe, comprehending the peninsula of Jutland, and the islands of Zealand, Funen, &c. But Denmark, properly so called, is only that part of Scandinavia which formerly went by the name of *Cimbrica Chersonesus*, and now is called *Jutland*. Including Holstein, it is bounded by the sea called the *Categate* on the north; by the Baltic on the east; by the river Elbe, which separates it from Bremen, on the south; and by

the duchy of Saxe-Lawenburg towards the south-east; ^{Denmark.} extending from 54. 40. to 58. 20. N. Lat.

The origin of the name *Denmark* is very uncertain. ¹ Name whence derived. The most probable conjecture concerning it is that of *Saxo-Grammaticus*, the most ancient and best Danish historian. He derives it from *Dan* the son of *Humble*, the first king, and *Mark*, or *Marc*, signifying a country in several dialects of the Teutonic; according to which etymology, the word *Denmark* signifies the land, or country, of *Dan*.—This *Dan* is thought to ² Dan the first king. have lived about 1038 years before the Christian era. Almost all historians agree that he was the son of *Humble*, a native of Zealand. His possessions and influence were very considerable, not only in Zealand, but in the islands of Langland and Mona. It was his courage, however, and skill in the art of war, that induced the inhabitants of Denmark to choose him for their king. He was called to the assistance of the Jutlanders upon an irruption of the Saxons into their territories, and promised the sovereignty of the country if he drove out the enemy. On this he immediately raised an army, gained a complete victory over the Saxons, and obliged them to leave the country; and he was accordingly elected king.

In such early ages as these, we are not to look for ³ History of this country fabulous for many ages. any authentic history either of this or any other kingdom. The history of Denmark, for a great number of ages after the reign of *Dan*, is filled with fabulous exploits of heroes, encounters with giants, dragons, &c. One of their kings named *Frotho*, who reigned about 761 years before Christ, is said to have conquered all Britain, Sleswick, Ruffia, Pomerania, Holstein, &c. an assertion which cannot easily be credited, considering the difficulty which succeeding warriors, even the greatest in the world, found to subdue the inhabitants of those countries.—It is certain, however, that anciently the kingdom of Denmark made a much more conspicuous figure than it does at present. The Danes appear to have had a very considerable naval force almost from the foundation of their empire; and the conquests they undoubtedly made in our island are certain proofs of their valour.

The natural enemies of the Danes were the Swedes, Norwegians, and Saxons; especially the first. With one or other of these nations almost perpetual war was carried on. The kingdom was also often rent by civil dissensions; which the neighbouring monarchs did not fail to take advantage of, in order to reduce the kingdom of Denmark under their subjection. As neither party, however, generally came off with advantage, the history of these wars affords nothing interesting or entertaining.—One of the greatest of the Danish monarchs was *Valdemar I.* who obtained the throne in ⁴ Valdemar I. a great monarch. 1157; having defeated and killed his competitor *Suen*, after a ten years civil war. He maintained a long war with the Vandals, whose power he at last entirely broke, and reduced under his subjection the island of Rugen. He also proved victorious over the Norwegians, so that their king and queen came in person to submit to him. In 1165, he also laid the foundations of the city of Dantzic: which, though it hath since become a place of such consequence, consisted at first only of a few poor fishermen's huts; but the privileges and immunities conferred upon it by this monarch, soon proved the means of its becoming a flourishing city.

Denmark.

city.—In 1169, he entirely subdued the Courlanders; and, soon after, was invested with the duchy of Holstein, by the emperor Frederic Barbarossa. He is said to have been poisoned by a quack medicine, given with a design to recover him from a distemper with which he was seized in 1182.

5
Power of
Denmark
in 1195.

In the year 1195, Canute, Valdemar's successor, caused a muster to be made of all the men fit to bear arms in his dominions; and ordered each province to fit out its proportion of shipping, every way equipped, and ready for action. The whole force of Denmark, at that time, consisted of 670 ships of war, besides the squadrons supplied by vassals, tributary states, and allies. The number of the land-forces is not mentioned. In the reign of this prince, the Danish dominions were enlarged by the entire conquest of Stromar; the districts of Lubec and Hamburg, formerly known by the name of *Nordalbingia*, but now included under the general name of *Holstein*. He died in 1203, and was succeeded by Valdemar II. who proved a very great and warlike prince. In 1211, he founded the city of Stralsund, opposite to the Isle of Rugen. The same year his queen died in child-bed; and in memory of her he built the castle of *Droningholm*, that name importing the *Queen's-Island*. In 1218, he undertook an expedition against the Livonians, having received advice that they, assisted by the Lithuanians, Muscovites, and other barbarous nations, had driven from their habitations all those in their neighbourhood who had embraced Christianity, and taken an oath of allegiance to the crown of Denmark. Fitting out a powerful fleet, therefore, he immediately set sail for that country; but his troops were no sooner landed, than they were seized with a panic at the sight of such a powerful army of savages as were assembled to oppose them. The king himself was dismayed at the unusual spectacle of a whole army clothed in skins, and resembling beasts more than human creatures. Encouraged, however, by the bishops who attended him, he ventured an engagement, and overthrew the barbarians with incredible slaughter. This victory was gained near the fortress of *Valdemar*, which received its name on that account.

6
Expedition
of Valde-
mar II. a-
gainst the
Livonians.

7
Flourishing
state of the
kingdom.

How potent and flourishing the kingdom of Denmark was at this time, appears from an estimate of the revenues of the tributary provinces, those countries conquered by Valdemar, and the standing forces of the whole kingdom. This account was copied by Pontanus from Witfeld a writer of those days, who had it from a register kept by Valdemar's steward. From the provinces were daily sent in 24 lasts of oats, 24 lasts of rye, and half that quantity of wheat, 13 talents of cheese and butter, and nine of honey; 24 oxen, 300 sheep, 200 hogs; and 600 marks of coined money. This was the certain revenue: but to this was added near an equal sum from adventitious circumstances; such as fines, forfeitures, taxes on law-suits and pleadings, with a variety of other contingencies; the whole amounting to upwards of 100,000 marks a-day, or 23,730,000*l.* per annum; a sum in those days almost incredible.—With this revenue were kept for constant service 1400 great and small ships for the king's use, each of which at a medium carried 121 soldiers; making the whole of the standing forces, besides garrisons, consist of 169,400 fighting men.

In 1223, a very great misfortune befel Valdemar,

notwithstanding all his power. Henry earl of Swerin, otherwise called *Henry Palatine*, a German prince, having been deprived of part of his dominions by Valdemar, surpris'd and carried off the king himself, and kept him close prisoner for three years. The conditions on which he at last obtained his liberty were very hard. He was obliged to pay a prodigious sum of money; to relinquish Holstein, Swerin, Hamburg, and all his possessions on the other side of the Elbe; and lastly, solemnly to swear that he would maintain this compulsive contract, and never take any measures to punish Henry or his associates. This treaty was signed on the 25th of March 1226.

Denmark.

8
Valdemar
taken pri-
soner.

9
Released on
condition of
ceding part
of his terri-
tories.

Besides these territories which the Danish monarch had been obliged to cede by treaty, many tributary princes took the opportunity of his captivity to recover their liberty; and among the rest, the inhabitants of Lubec revolted, and entered into alliance with Albert duke of Saxony against Valdemar. The latter, however, was not of a disposition to submit tamely to such treatment. He obtained a dispensation from the Pope to break his engagements with Henry, and immediately entered Holstein at the head of a numerous army. Here he was met by several German princes, at the head of a very numerous army; and a desperate engagement ensued. Valdemar at first had the advantage; but being wounded in the eye, his troops were at last defeated with great slaughter. It doth not appear that ever the king of Denmark was able to revenge himself of his enemies, or to recover the dominions he had lost. So far from this, he was obliged, in 1228, to cede Lawenberg to the duke of Saxony, who had already seized on Ratzburg and Molna. Soon after this, his eldest son Valdemar was accidentally killed as he was hunting, and his two other sons married the daughters of his two greatest enemies. Abel, the third son, married the daughter of Adolphus duke of Holstein; and Eric, the second, married the duke of Saxony's daughter. These misfortunes are supposed to have hastened his death, which happened in the month of April 1242.

10
He breaks
the treaty,
but is de-
feated.

On the death of Valdemar, the kingdom was divided between the two young princes; and between them a war commenced the very next year. A peace was concluded the year following, and war renewed the year after; but how long it continued, we are not informed. In 1250, Eric paid a visit to his brother Abel, intreating his mediation between him and the princes of Holstein, with whom he was then at war. Abel received him, in appearance, with great kindness, and promised that his utmost endeavours to procure a reconciliation should not be wanting; but in the mean time, laid a plan for having him murdered at sea: this was effected, and Abel became master of the whole kingdom.

11
Civil war
between his
two sons.

The new king did not long enjoy the sovereignty he had so wickedly obtained. He was tormented by his own conscience; especially when he found among his brother's papers, one by which he was left heir to the whole kingdom on the decease of Eric, and many kind expressions with regard to himself. He was at last killed in a battle with his own subjects in 1252, on account of some taxes he intended to impose.

12
Kingdom
divided
among a
number of
petty ty-
rants.

From this time to the year 1333, the kingdom of Denmark gradually declined. Usurpers established themselves.

Denmark themselves in different provinces; while the kings of Sweden did not fail to avail themselves of the distracted state of the Danish affairs. In 1333, died Christopher II. who possessed only the cities of Scanderburg in Jutland and Neoburg in Fionia, with some few other inconsiderable places, of all the hereditary dominions of Denmark. Halland, Holbec, Calemburg, and Samsoe, were held by Canute Porcius; Schonen, Lyftre, and Bleking, by the king of Sweden, to whom they had been lately sold: John earl of Wagria had the jurisdictions of Zealand, Falstre, Laaland, and Femerin; Gerhard, of Jutland and Fionia; and Lawrence Jonea, of Lang-land and Arras.

After the death of Christopher, an interregnum of seven years ensued.—The first attempt for the sovereignty was made by Otho, second son to the late king, who laid a scheme for driving Gerhard out of Jutland; but not being able to accomplish it, he was taken prisoner, and closely confined by Gerhard.—The king of Sweden next wrote to Pope Benedict XIII. beseeching his Holiness to confirm to him the provinces of Schonen and others which he possessed; and to allow him to subdue the rest of the kingdom, which was now usurped and rendered miserable by a set of petty princes, who knew not how to govern. To influence him the more powerfully, he also promised to hold this kingdom of the Pope; and to pay him the usual tax collected by the church. This request, however, was refused. Valdemar of Sleswic, nephew to Gerhard, then aspired to the sovereignty. He had formerly been elected king; but had given over all thoughts of enjoying the sovereignty, on account of the superior influence of Christopher; but now resumed his ambitious views at the instigation of his uncle. Several of the nobility also cast their eyes on young Valdemar Christopher's son, now at the emperor's court. But while each of these princes were laying schemes to aggrandise themselves, the unhappy Danes were distressed by exorbitant taxes, famine, and pestilence; the two last in consequence of the former. The peasants neglected to cultivate the lands, which they held on a very precarious tenure; the consequence of this was poverty and an unwholesome diet; and this, co-operating with the peculiar disposition of the air, produced a plague, which destroyed more than half the inhabitants of the country. The poor dropped down dead on the streets with disease and hunger, and the gentry themselves were reduced to a state of wretchedness; yet, though the whole kingdom was evidently on the verge of ruin, ambitious projects employed the great, as if every thing had been in the most profound tranquillity.

In the midst of these grievous calamities, Gerhard, sovereign of Jutland, proposed to his nephew Valdemar an exchange of territories, which he believed would prove favourable to the designs of the latter on the crown. A treaty for this purpose was actually drawn up and signed; but the inhabitants, notwithstanding their distressed situation, so highly resented their being disposed of like cattle, from one master to another, that they refused to pay the usual taxes. Gerhard resolved to compel them; and therefore led 10,000 men, whom he had levied in Germany, into the heart of the province. Providence, however, now raised up an enemy to this tyrant. One Nicholas Norevi, a man greatly

esteemed for his courage, public spirit, and prudence, beheld with sorrow the condition to which Denmark was reduced. He had long meditated a variety of projects for its relief, and at last imagined things were in such a situation that the whole depended on his single arm. Young Valdemar, Christopher's son, had a number of adherents in the kingdom; his most dangerous enemy was Gerhard; and could he be removed, the Jutlanders would at least be free from an oppressor, and might choose Valdemar, or any other they thought proper, for their sovereign. Collecting a body of chosen horse, therefore, he marched in the night to Randerhusen, where Gerhard had fixed his head quarters; and having forced open the tyrant's quarters, immediately put him to death. He then fled with the utmost expedition; but was pursued and overtaken by a party of the enemy's horse, through which he forced his way and escaped. Gerhard's sons hearing of his death, retired into Holstein from whence they had come; leaving the army, composed chiefly of Holsteiners, to be cut in pieces by the enraged peasants, who fell upon them from every quarter.

Still, however, the Holsteiners kept possession of the citadels and fortified places, from whence Nicholas resolved to dislodge them. He accordingly raised a body of forces; attacked and took Landen, a castle situated on the river Scherne: After which he laid siege to Albeg; but the garrison making an obstinate defence, he turned the siege into a blockade, by which they were soon reduced to great extremity. The governor sent an express to the sons of Gerhard, acquainting them with the impossibility of his holding out more than a few days, without being relieved. This determined them to march to the relief of so important a place. They came up with Nicholas just as the governor was ready to surrender, but were defeated; though Nicholas was unfortunately killed in the engagement.

Jutland having thus regained its liberty, the rest of the kingdom followed its example. Zealand first openly declared itself. Here Henry, Gerhard's son, maintained several garrisons; and resolved to defend his possessions in spite of all the power of the inhabitants. For this purpose he drew together an army; but, in the mean time, a tumult arose among the peasants on account of a Danish nobleman slain by the Holsteiners. By this the people were at last so irritated, that falling upon the Holsteiners sword in hand, they killed 300 of them, drove the rest out of the island, and chose Valdemar, Christopher's son, for their sovereign.

The Danes now resumed their courage; the lands were cultivated, the famine and pestilence ceased, and the kingdom began to flourish as formerly. Matters continued in a prosperous way till 1387, when Margaret mounted the throne. She raised the kingdom to its highest pitch of glory, as partly by her address, and partly by hereditary right, she formed the union of Calmar, by which she was acknowledged sovereign of Sweden, Denmark, and Norway. She held her dignity with such firmness and courage, that she was justly styled the *Semiramis of the North*. Her successors being destitute of her great qualifications, the union of Calmar fell to nothing: but Norway still continued annexed to Denmark. About the year 1448, the

3
D
st
to
om.

Denmark.
Nicholas
Norevi re-
covers the
liberty of
Jutland.

15
He is kill-

16
Margaret
unites the
crowns of
Denmark,
Sweden,
and Nor-
way.

Denmark. crown of Denmark fell to Christian count of Oldenburg, from whom the present royal family of Denmark is descended; and, in 1536, the Protestant religion was established in Denmark by that wise and politic prince Christian III.

Christian IV. of Denmark, in 1629, was chosen for the head of the Protestant league formed against the house of Austria: but, though brave in his own person, he was in danger of losing his dominions; when he was succeeded in that command by the famous Gustavus Adolphus, king of Sweden. The Dutch having obliged Christian, who died in 1648, to lower the duties of the Sound, his son Frederic III. consented to accept of an annuity of 150,000 florins for the whole. The Dutch, after this, persuaded him to declare war against Charles Gustavus king of Sweden, which had almost cost him his crown in 1657. Charles stormed the fortrefs of Fredericstادت; and in the succeeding winter, he marched his army over the ice to the island of Funen, where he surpris'd the Danish troops, took Odensee and Nyburg, and marched over the Great Belt to besiege Copenhagen itself. Cromwell, the English usurper, interposed: and Frederic defended his capital with great magnanimity till the peace of Roschild; by which Frederic ceded the provinces of Halland, Bleking, and Sconia, the island of Bornholm, Bahus, and Droutheim, in Norway, to the Swedes. Frederic fought to elude those severe terms; but Charles took Cronenburg, and once more besieged Copenhagen by sea and land. The steady intrepid conduct of Frederic under these misfortunes endeared him to his subjects; and the citizens of Copenhagen made an admirable defence, till a Dutch fleet arrived in the Baltic, and beat the Swedish fleet. The fortune of war was now entirely changed in favour of Frederic, who showed on every occasion great abilities, both civil and military: and having forced Charles to raise the siege of Copenhagen, might have carried the war into Sweden, had not the English fleet, under Montague, appeared in the Baltic. This enabled Charles to besiege Copenhagen a third time: but France and England offering their mediation, a peace was concluded in that capital; by which the island of Bornholm returned to the Danes; but the island of Rugen, Bleking, Halland, and Schonen, remained with the Swedes.

17
Several provinces ceded to Sweden.

18
Remarkable revolution, by which the king is rendered absolute.

The year 1660 affords us an example of a revolution almost unequalled in the annals of history, viz. that of a free people resigning their liberty into the hands of their sovereign, and of their own accord, and without the least compulsion, rendering him despotic. This was occasioned by the great character which Frederic had acquired by his prudent and valiant conduct when Copenhagen was besieged by the king of Sweden; and at that time he had also taken care to ingratiate himself with the commonalty, by obliging the nobility to allow them some immunities which they did not enjoy before; allowing them also, by a special edict, to possess lands, and enjoy all the privileges of nobility. After the conclusion of the treaty with Sweden, a diet was summoned at Copenhagen, to take into consideration the state of the kingdom, which was now very much exhausted, both by reason of the debts in which it was involved and by the calamities of war. This distressed state of affairs was, by the commons, at-

tributed to the nobility; who, on the other hand, took no care to conciliate the affections of the inferior classes, but rather increased the discontents by their arrogance. They had even the imprudence to remonstrate against the immunities above mentioned, which had been granted by the king during the siege. In consequence of this the deputies of the commons and clergy united against them; and being joined by the citizens of Copenhagen, formed a very considerable party. On bringing forward in the assembly the sums necessary for the national exigencies, a general excise was proposed by the nobles on every article of consumpt; and to which they themselves were willing to submit, though, by an express law, their order was to be exempted from all taxes. This offer was accompanied with a remonstrance to the king; in which they endeavoured not only to reclaim many obsolete privileges, but to add fresh immunities, and introduce many other regulations, all of them tending to diminish the royal prerogative, and check the rising influence of the commons and clergy. This proposal occasioned great disputes in the diet; and the two inferior orders insisted that they would not admit of any tax which should not be levied equally upon all ranks, without reserve or restriction. The nobles not only refused to comply with this proposal, but even to be subject to the tax for more than three years; pretending that all taxes whatever were infringements on their privileges. By way of compensation, however, they proposed new duties upon leather and stamped paper, and at last offered to pay a poll-tax for their peasants. This exchange seemed at first to be agreeable to the two inferior estates; but they suddenly altered their mind, and demanded that the fiefs and domains, which the nobles had hitherto possessed exclusively, and at a very moderate rent, should be let to the highest bidder.

Such a proposal appeared to the nobles to be to the last degree unreasonable. They said it was an infraction of their dearest privileges; as, by the 46th article of the coronation oath taken by Frederic, the possession of the royal fiefs was guaranteed to their order; but, in the heat of dispute, one of the chief senators having imprudently thrown out some reproachful expressions against the commons, a general ferment ensued, and the assembly was broken up in confusion. This gave occasion to the interposition of the king's friends; and an idea of rendering the crown hereditary, and enlarging the royal prerogative, began to be suggested as the proper method of humbling the nobility. This was first broached by the bishop of Zealand, at whose house a numerous meeting was held on the 6th of October 1660, where the scheme was fully laid open and approved; an act for rendering the crown hereditary drawn up; and the best method of publicly producing it taken into consideration. All this time the king seemed quite inactive, nor could he be prevailed upon to take any part in an affair which so nearly concerned him. But this indolence was abundantly compensated by the alertness and diligence of the queen; between whom and the heads of the party matters were soon concerted. On the morning of the 8th of October, therefore, the bishop of Zealand having obtained the consent and signature of the ecclesiastical deputies, delivered it to Nausen burgomaster of Copenhagen and speaker of the commons. The latter, in a most persuasive

mark. suasive speech, expatiated upon the wretched state of the kingdom, the oppressive power of the nobles, and the virtues of the king; concluding with an exhortation to the commons, to subscribe the act as the only means of saving their country.

The exhortations of the speaker had such an effect upon the assembly, that they subscribed it without a single dissent; the nobles being all the while in perfect security, and entirely ignorant of the transaction. Next day it was presented to the king by the bishop and Naufen; and as they were returning from the palace, they met the senator who had already given offence to the commons. With him they had a violent altercation, and were threatened with imprisonment for presuming to approach the king without acquainting the order of nobles. This threat was now altogether nugatory. The nobles having got some intelligence of what was going forward, had just assembled in order to consider of what was to be done, when the deputies of the two other estates entered, and informed them of their proceedings, and delivered to them the proposal for rendering the crown hereditary. By this declaration the nobles were thrown into the utmost consternation; but judging it improper to put a negative on the proposal at present, they endeavoured to gain time, and replied, that though they willingly gave their assent to the declaration, yet that, as it was a matter of great consequence, it deserved the most serious discussion. Naufen, however, replied, that the other estates had already taken their resolution; that they would lose no time in debate; and that if the nobles would not concur with them, they would immediately repair to the palace by themselves, where they had not the least doubt that the king would graciously accept their proffer.

In the mean time the nobles had privately dispatched a message to the king, intimating, that they were willing to render the crown hereditary in the male line of his issue, provided it was done with all the usual formalities. But this proposal did not prove agreeable to his majesty, unless they would confirm the right of succession in the female line also. He added, however, with great appearance of moderation, that he by no means wished to prescribe rules for their conduct; they were to follow the dictates of their own judgment; but as for his part, he would owe every thing to their free consent. While the nobles were waiting for this answer, the other deputies, perceiving that they wished to keep the matter in suspense, lost all patience, and repaired in solemn procession to the court; where, being admitted into the royal presence, the matter was opened by the bishop of Zealand. He addressed his majesty on the resolution taken by the clergy and commons, offering in their name to render the crown hereditary, and to invest him with absolute authority; adding, that they were ready to sacrifice their lives in the defence of an establishment so salutary to their country. His majesty thanked them for their favourable intentions; but mentioned the concurrence of the nobles as a necessary condition; though he had no doubt of this when they should have time to accompany the declaration with all the necessary formalities; he assured them of his protection, promised a redress of all grievances, and dismissed them with an exhortation to continue their sittings until they should have

brought their design to perfection, and he could receive their voluntary submission with all due solemnity. Denmark.

On departure of the commons from the place where they had been conferring with the nobles, the latter had been so distracted and confused, that they broke up without coming to any resolution, designing, however, to decide the matter finally at their meeting on the afternoon of the following day. But while they were thus wavering and irresolute, the court and the popular party took the necessary measures to force them to a concurrence. This was effectually done by an order to shut the gates; for by this they were so much dispirited that they instantly dispatched deputies to the court, with a message that they were ready to concur with the commons, and subscribe to all the conditions of the royal pleasure.

Nothing now remained but to ratify the transaction with all proper solemnity. Accordingly, on the 16th of October, the estates annulled, in the most solemn manner, the capitulation or charter signed by the king on his accession to the throne; absolved him from all his engagements; and cancelled all the limitations imposed upon his sovereignty. The whole was concluded by the ceremony of doing homage, taking the new oath with great ceremony; after which a new form of government was promulgated under the title of *The Royal Law of Denmark*.

Frederic was succeeded, in 1670, by his son Christian V. who obliged the Duke of Holstein Gottorp to renounce all the advantages he had gained by the treaty of Roschild. He then recovered a number of places in Schonen; but his army was defeated in the bloody battle of Lunden by Charles XI. of Sweden. This defeat did not put an end to the war; which Christian obstinately continued, till he was defeated entirely at the battle of Landskroon; and he had almost exhausted his dominions in his military operations, till he was in a manner abandoned by all his allies, and forced to sign a treaty on the terms prescribed by France, in 1679. Christian, however, did not desist from his military attempts; and at last he became the ally and subsidiary of Louis XIV. who was then threatening Europe with chains. Christian, after a vast variety of treating and fighting with the Holsteiners, Hamburgers, and other northern powers, died in 1699. He was succeeded by Frederic IV. who, like his predecessors, maintained his pretensions upon Holstein; and probably must have become master of that duchy, had not the English and Dutch fleets raised the siege of Tonningen; while the young king of Sweden, Charles XII. who was no more than 16 years of age, landed within eight miles of Copenhagen, to assist his brother-in-law the Duke of Holstein. Charles probably would have made himself master of Copenhagen, had not his Danish majesty agreed to the peace of Travendahl, which was entirely in the Duke's favour. By another treaty concluded with the States-General, Frederic obliged himself to furnish a body of troops, who were to be paid by the confederates; and who afterwards did great service against the French.

Notwithstanding this peace, Frederic was perpetually engaged in wars with the Swedes; and while Charles was an exile at Bender, he marched through Holstein into Swedish Pomerania; and in the year 1712, into Bremen, and took the city of Stade. His troops, Perpetual war with that kingdom.
however,

Denmark. however, were totally defeated by the Swedes at Gadesbusch, who laid his favourite city of Altona in ashes. Frederic revenged himself, by seizing great part of the ducal Holstein, and forcing the Swedish general, count Steinbock, to surrender himself prisoner, with all his troops. In the year 1716, the successes of Frederic were so great, by taking Tonningen and Stralsund, by driving the Swedes out of Norway, and reducing Wismar and Pomerania, that his allies began to suspect he was aiming at the sovereignty of all Scandinavia. Upon the return of Charles of Sweden from his exile, he renewed the war against Denmark with a most embittered spirit; but on the death of that prince, who was killed at the siege of Fredericshal, Frederic durst not refuse the offer of his Britannic majesty's mediation between him and the crown of Sweden; in consequence of which, a peace was concluded at Stockholm, which left him in possession of the duchy of Sleswic. Frederic died in the year 1730, after having, two years before, seen his capital reduced to ashes by an accidental fire. His son and successor, Christian Frederic, made no other use of his power, and the advantages with which he mounted the throne, than to cultivate peace with all his neighbours, and to promote the happiness of his subjects, whom he eased of many oppressive taxes.

In 1734, after guaranteeing the Pragmatic Sanction, Christian sent 6000 men to the assistance of the emperor, during the dispute of the succession to the crown of Poland. Though he was pacific, yet he was jealous of his rights, especially over Hamburg. He obliged the Hamburgers to call in the mediation of Prussia, to abolish their bank, to admit the coin of Denmark as current, and to pay him a million of silver marks. He had, two years after, viz. 1738, a dispute with his Britannic majesty about the little lordship of Steinhorst, which had been mortgaged to the latter by the Duke of Holstein Lawenburg, and which Christian said belonged to him. Some blood was spilt during the contest; in which Christian, it is thought, never was in earnest. It brought on, however, a treaty, in which he availed himself of his Britannic majesty's predilection for his German dominions; for he agreed to pay Christian a subsidy of 70,000 l. Sterling a-year, on condition of keeping in readiness 7000 troops for the proportion of Hanover: this was a gainful bargain for Denmark. And two years after, he seized some Dutch ships for trading without his leave to Iceland: but the difference was made up by the mediation of Sweden. Christian had so great a party in that kingdom, that it was generally thought he would revive the union of Calmar, by procuring his son to be declared successor to his then Swedish majesty. Some steps for that purpose were certainly taken: but whatever Christian's views might have been, the design was frustrated by the jealousy of other powers, who could not bear the thoughts of seeing all Scandinavia subject to one family. Christian died in 1746, with the character of being the father of his people.

His son and successor, Frederic V. had, in 1743, married the princess Louisa, daughter to his Britannic majesty. He improved upon his father's plan for the happiness of his people; but took no concern, ex-

cept that of a mediator, in the German war. For it was by his intervention that the treaty of Closter-seven was concluded between his royal highness the late duke of Cumberland and the French general Richelieu. Upon the death of his first queen, who was mother to his present Danish majesty, he married a daughter of the duke of Brunswic Wolfenbuttel; and died in 1766.

He was succeeded by his son Christian VII. his present Danish majesty, who married the princess Carolina Matilda of England. But this alliance proved extremely unfortunate, which is generally ascribed to the intrigues of the queen dowager, mother-in-law to the present king. She is represented as ambitious, artful, and designing; and as one who wished to have set aside the king himself in favour of her own son Frederic. On the arrival of the young queen, however, she received her with much apparent affection, telling her the faults of her husband, and at the same time promising to assist her on all occasions in reclaiming him from his vicious courses. Thus, under pretence of kindness and friendship, she sowed the seeds of dissention betwixt the royal pair before the unfortunate princess had the least suspicion of her danger; and while the unthinking queen revealed to the dowager all her secrets, the latter is said to have placed spies about the king to keep him constantly engaged in riot and debauchery, to which he was at any rate too much inclined. At last it was contrived to throw a mistress in his way, whom he was advised to keep in his palace.—It was impossible that any woman could pass such a piece of conduct unnoticed; however, in this affair, the queen dowager behaved with her usual duplicity. In the absence of the king she pretended great resentment against him, and even advised the queen not to live with him; but as soon as he returned, when his consort reproached him, though in a gentle manner, with his conduct, she not only took his part, but insisted that it was presumptuous in a queen of Denmark to pretend to direct her husband's conduct. Notwithstanding this incendiary behaviour, the queen was in a short time reconciled to her husband, and lived on very good terms with him until she again excited the jealousy of the dowager by assuming to herself the direction of that part of the public affairs which the dowager had been accustomed to look upon as her own privilege. For some time it seemed to be difficult for her to form any effectual plan of revenge, as the king had displaced several of her friends who had for some time had a share in the administration. Two new favourites, Brandt and Struensee, had now appeared; and as these paid great court to the queen, the dowager took occasion to insinuate not only that the queen was harbouring improper designs with regard to the government, but that she had an intrigue with Struensee. The new ministers indeed behaved imprudently, in attempting to make a reformation in several of the departments of the state at once, instead of waiting patiently until an opportunity should offer; and in these precipitate schemes they were certainly supported by the queen. These instances of want of circumspection in the ministers, were represented by the dowager and her party to be a settled scheme to make an alteration in the government; and a design was even spoken

20
An advantageous treaty with Great Britain.

Denmark.

21
Intrigues of the dowager and mistress of the young queen.

22
Intrigues of the dowager and Struensee.

^{mark} spoken of to supersede the king as being incapable of governing, to declare the queen regent during the minority of her son, and to make Struensee prime minister.

Thus a very formidable opposition was formed against Brandt and Struensee; and as the latter had made some innovations in the military department as well as the civil, some of the principal officers, who were the creatures of the dowager, represented him as designing to overthrow the whole system of government. When matters were brought to a proper bearing, it was at last resolved to surprize the king in the middle of the night, and force him instantly to sign an order which was to be ready prepared, for committing the obnoxious persons to separate prisons, accuse them of high treason in general, and particularly with a design to dethrone or poison the king. If this could not be properly authenticated, it was determined to suborn witnesses to confirm the report of a criminal correspondence between the queen and count Struensee. This design was executed on the night of the 16th of January 1772, when a masked ball was given at the court of Denmark. The queen, after having danced most part of the night with count Struensee, retired to her chamber about two in the morning. About four the same morning, prince Frederic got up, and went with the queen dowager to the king's bed-chamber, accompanied by general Eichstedt and count Rantzau. Having ordered the king's valet de chambre to awake him, they informed his majesty that the queen, with count Struensee, his brother, and Brandt one of the new ministers, were at that moment busy in drawing up an act of renunciation of the crown, which they would immediately after compel him to sign; and therefore there was a necessity for him to give an order for their arrestment. The king is said to have hesitated for some time, and inclined to refuse this scandalous requisition; but at length, through importunity, and, according to some accounts, being even threatened into compliance, he consented to what they required. Count Rantzau was dispatched, at that untimely hour, into the queen's apartments, and immediately executed the orders of the king. The unfortunate princess was conveyed in one of the king's coaches to the castle of Cronenburgh, together with the infant princess, attended by Lady Mostyn, and escorted by a party of dragoons. Struensee and Brandt were seized in their beds and imprisoned, as well as several other members of the new administration, to the number of 18. The queen dowager and her adherents seemed to assume the government entirely into their own hands, and a total change took place in the departments of administration. The prince royal, son of queen Matilda, then in the fifth year of his age, was put under the care of a lady of quality, who was appointed governess, under the superintendency of the queen dowager. Struensee and Brandt were put in irons, and very severely treated: they underwent long and frequent examinations; and Struensee at last confessed that he had a criminal intercourse with the queen. Both their heads were struck off on the 28th of April; but many of their partisans were set at liberty. The confession of Struensee is by many, and indeed with no small degree of probability, supposed to have been extorted by fear of the torture, and to have no foundation in truth; but as no means were used by the court of Britain to clear up the queen's character, the affair must undoubtedly

wear a suspicious aspect. At last, however, his Britannic majesty interfered so far as to send a small squadron of ships to convoy the unhappy princess to Germany. Here the city of Zell was appointed for her residence; and in this place she died of a malignant fever on the 10th of May 1775, aged 23 years and 10 months.

The inhuman treatment of this princess did not long prove advantageous to the queen dowager and her party: A new revolution took place in April 1784, when the queen dowager's friends were removed, a new council was formed under the auspices of the prince royal, and no instrument deemed authentic unless signed by the king, and countersigned by the prince. Since that time, the king, who from the beginning of his administration showed a great degree of incapacity, has been entirely laid aside from public business, and has no share in the government. The Danes are at present engaged on the side of Russia in her war with the Turks, the immediate opponent of Denmark being Sweden.

The kingdom of Denmark at present is divided into ²⁴ six grand districts or provinces; viz. 1. Denmark properly so called, comprehending the islands of Zealand, Funen, Langland, Laaland, Faltria, Mona, Samsoe, Arroo, Bornholm, Anholt, Lessaw, and that part of the continent called *North Jutland*. 2. The duchy of Sleswick, or South Jutland. 3. The duchy of Holstein. 4. The earldoms of Oldenburg and Delmenhorst, 5. The kingdom of Norway; and 6. Iceland, with the islands lying in the Northern Seas; for a particular description of which see these articles.

The language of Denmark is a dialect of the Teutonic, and bears a strong affinity to the Norwegian tongue; but is disagreeable to strangers, on account of the drawing tone with which it is pronounced. They have borrowed many words from the German; and, indeed, the high Dutch is used in common discourse by the court, the gentry, and the burghers. The better sort likewise understand French, and speak it fluently. The Lutheran doctrine is universally embraced through all Denmark, Sweden, and Norway; so that there is not another sect in these kingdoms. Denmark is divided into six dioceses, one in Zealand, one in Funen, and four in Jutland: but the bishops are, properly speaking, no other than superintendants, or *præmi inter pares*. They have no cathedrals, ecclesiastical courts, or temporalities. Their business is to inspect the doctrine and morals of the inferior clergy. The revenue of the bishop of Copenhagen amounts to about 2000 rixdollars; and this is the richest benefice in the kingdom. The clergy are wholly dependant on the government. They never intermeddle, nor are employed or consulted in civil affairs. They, nevertheless, have acquired great influence, and erected a sort of spiritual tyranny over the minds of the common people, by whom they are much revered. They are, generally speaking, men of exemplary lives, and some erudition. Their churches are kept more clean, and better adorned, than those of England: the people are great lovers of music, and their organists commonly entertain the congregation for half an hour before or after service. The state of literature is very low in Denmark. There is, indeed, an university at Copenhagen; but meanly endowed, and very ill supplied with masters. Taste and the belles lettres are utterly unknown in this country, which yet has produced some

Denmark.

²³ Change in the administration.²⁴ Division of the kingdom.²⁵ Language, religion, &c.² Execution of Struensee and Brandt.

Denmark.
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Govern-
ment.

men of great eminence in mathematics and medicine; such as Tycho Brahe, Borriclius, and the Bartholines.

The constitution of Denmark was heretofore of the free Gothic original. The convention of the estates, even including the representatives of the boors or peasants, elected a king for his personal virtues, having still a regard to the son of their late monarch, whom, however, they made no scruple of setting aside, if they deemed him unworthy of the royal dignity. They enacted laws; conferred the great offices of state; debated all affairs relating to commerce, peace, war, and alliances; and occasionally gave their consent to the imposition of necessary taxes. The king was no other than chief magistrate, generalissimo, and as it were prime minister to his people. His business was to see justice administered impartially; to command the army in time of war; to encourage industry, religion, arts, and sciences; and to watch over the interests of his subjects.

In 1660, however, the constitution was new modelled, as has been already related, and which was to the following purport. "The hereditary kings of Denmark and Norway should be in effect, and ought to be esteemed by their subjects, the only supreme head upon earth; they shall be above all human laws, and shall acknowledge, in all ecclesiastical and civil affairs, no higher power than God alone. The king shall enjoy the right of making and interpreting the laws, of abrogating, adding to, and dispensing with them. He may also annul all the laws which either he or his predecessors shall have made, excepting this royal law, which must remain irrevocable, and be considered as the fundamental law of the state. He has the power of declaring war, making peace, imposing taxes, and levying contributions of all sorts," &c. &c.

Then follow the regulations for the order of succession, the regency in case of minority, the majority of the king, the maintenance of the royal family; and, after having enumerated all the possible prerogatives of regal uncircumscribed authority, as if sufficient had not yet been laid down, it is added in the 26th article: "All that we have hitherto said of power and eminence, and sovereignty, and if there is any thing further which has not been expressly specified, shall all be comprised in the following words: "The king of Denmark and Norway shall be the hereditary monarch, and endued with the highest authority; inasmuch, that all that can be said and written to the advantage of a Christian, hereditary, and absolute king, shall be extended under the most favourable interpretation to the hereditary king or queen of Denmark and Norway," &c. &c.

27
Laws, &c.

The laws of Denmark are so concise, that the whole body is contained in one quarto volume, written in the language of the country. Every man may plead his own cause, without employing either counsel or attorney: but there are a few advocates for the benefit of those who cannot or will not speak in their own defence. The proceedings are so summary, that a suit may be carried through all the courts, and finally decided, in 13 months. There are three courts in Denmark, and an appeal lies from the inferior to the superior tribunal. The lowest of these is, in cities and towns, denominated the *Byfogheds Court*; and in the country, the *Herredsfogeds*. Causes may be appealed from this to the *Landstog*, or general head court for

N^o 99.

the province: but the final appeal lies to the court of *High right* in Copenhagen, where the king presides in person, assisted by the prime nobility. The judges of the two other courts are appointed by his majesty's letters patent, to sit and determine causes *durante bene placito*. These are punishable for any misdemeanours of which they may be guilty; and when convicted of having passed an unjust sentence, they are condemned to make reparation to the injured party. Their salaries are very inconsiderable, and paid out of the king's treasury, from the fines of delinquents, besides a small gratuity from the plaintiff and defendant when sentence is passed. Such is the peculiar privilege enjoyed by the city of Copenhagen, that causes appealed from the *Byfogheds court*, instead of passing through the provincial court, are tried by the burgomaster and common-council; from whence they proceed immediately to the highest court as the last resource. Affairs relating to the revenue are determined in the rent chamber of Denmark, which is analogous to our court of exchequer.

To another tribunal, composed of some members from this rent-chamber, from the admiralty, and college of commerce, merchants appeal for redress, when their commodities are seized for non-payment of duties. All disputes relating to the sea are determined by the court of admiralty, constituted of commissioners appointed for these purposes. The chancellor may be more properly termed a *secretary's office*. It consists of clerks, who write and issue all the king's decrees and citations, transcribe papers, and, according to the directions they receive, make draughts of treaties and alliances with other nations. The government of Denmark is very commendable for the excellent policy it maintains. Justice is executed upon criminals with great severity; and such regulations are established as effectually prevent those outrages that are daily committed in other countries. No man presumes to wag his tongue against the government, far less to hatch schemes of treason. All the subjects are, or seem to be, attached to their sovereign by the ties of affection. Robbery on the high-way, burglary, coining or clipping, are crimes seldom or never heard of in Denmark. The capital crimes usually committed are theft and manslaughter. Such offenders are beheaded very dexterously with one stroke of a sword. The executioner, though infamous, is commonly rich; because, over and above the functions of his office, he is employed in other scandalous occupations, which no other person will undertake. He, by means of his undertrapper, called the *pracher*, empties all the jakes, and removes from houses, stables, or streets, dead dogs, horses, &c. which no other Dane will vouchsafe to touch on any consideration whatsoever.

The Danish nobility and gentry are all included in the term *noblesse*; and formerly there were no distinctions of title: but within these 60 or 70 years, some few favourites have been dignified with the titles of *count* and *baron*. These, and these only, enjoy the privilege of disposing of their estates by will; though others may make particular dispositions, provided they have sufficient interest to procure the king's approbation and signature. The noblesse of Denmark formerly lived at their own seats with great magnificence; and at the conventions of estates met the king with numerous and superb retinues: but since he became absolute, they are so impoverished by exorbitant taxes, that they can hardly

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Slavish con-
dition of
the Danish
subjects.

Denmark.

hardly procure subsistence; and, for the most part, live obscurely in some corner of their ruined country palaces, unless they have interest enough to procure some employment at court. They no longer inherit the spirit and virtues of their ancestors; but are become servile, indolent, ostentatious, extravagant, and oppressive.

Their general character is a strange composition of pride and meanness, insolence and poverty. If any gentleman can find a purchaser for his estate, the king, by the Danish law, has a right to one third of the purchase-money: but the lands are so burdened with impositions that there would be no danger of an alienation, even tho' this restriction was not in force. Nay, some gentlemen in the Island of Zealand have actually offered to make a surrender to the king of large tracts of very fertile land in the Island of Zealand, if his majesty would be pleased to accept of them in place of the impositions laid on them. The reason of this is, because, by the law of Denmark, if any estate is burdened beyond what it can bear, the owner must make up the deficiency out of his other estates, if he has any. Hence the king generally refuses such offers; and some gentlemen have been transported with joy when they heard that his majesty had been "graciously pleased to accept their whole estates."

This oppression of the nobles by the king produces in them a like disposition to oppress the commons; and the consequence of all this is, that there is no part of the world where extravagance and dissipation reigns to such a degree. The courtiers maintain splendid equipages, wear fine clothes, drink a vast quantity of French wine, and indulge themselves with eating to excess. Such as derive money from their employments, instead of purchasing land in Denmark, remit their cash to the banks of Hamburg and Amsterdam. The merchants and burghers tread in the steps of their superiors: they spend all their gains in luxury and pleasure, afraid of incurring the suspicion of affluence, and being stripped by taxation. The peasant, or boor, follows the same example. No sooner has he earned a rix-dollar than he makes haste to expend it in brandy, lest it should fall into the hands of his oppressive landlord. This lower class of people are as absolute slaves as the negroes in the West Indies, and subsist upon much harder fare. The value of estates is not computed by the number of acres, but by the stock of boors, who, like the timber, are reckoned a parcel of the freehold; and nothing can be more wretched than the state of these boors. They feed upon stock-fish, salted meats, and other coarse diet: there is not the least piece of furniture of any value in their houses, except feather-beds, of which there is great plenty in Denmark; and which are used not only as beds to lie on but as blankets for covering. After the boor has toiled like a slave to raise the king's taxes, he must pay the overplus of his toil to his needy landlord. Should he improve his ground and repair his farm-house, his cruel master will immediately transplant him to a barren farm and a naked habitation, that he may let the improved ground to another tenant at a higher price. The peasants likewise sustain a great deal of damage and violence from the licentious soldiers that are quartered in their houses. They are moreover obliged to furnish horses and waggons for the royal family

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and all their attendants when the king makes a progress through the country, or removes his residence from one palace to another. On such occasions the neighbouring boors are summoned to assemble with their cattle and carriages, and not only to live at their own expence, but to bear every species of outrage from the meanest lacquies of those who attend his majesty. The warlike spirit of the Danes no longer subsists: the common people are mean-spirited, suspicious, and deceitful; nor have they that talent for mechanics so remarkable in some northern nations. While the peasants are employed in their labour without doors, the women are occupied at home in spinning yarn for linen, which is here made in great perfection.

In Denmark, all persons of any rank above the vulgar dress in the French taste, and affect finery; the winter-dress of the ladies is peculiar to the country, very neat, warm, and becoming. The common people are likewise remarkably neat, and pride themselves in different changes of linen. They are very little addicted to jollity and diversion: their whole amusements consist in running at the goose on Shrove Tuesday, and in winter in being drawn in sleds upon the ice. They also feast and make merry at weddings and funerals. With respect to marriage, the man and woman frequently cohabit together on contract long before the ceremony is performed. The nobility and gentry pique themselves on sumptuous burials and monuments for the dead: the corpse is very often kept in a vault, or in the chancel of a church, for several years, before an opportunity offers of celebrating the funeral.

The taverns in this country are poorly supplied; and he who diets in them must be contented to eat in a public room, unless he will condescend to pay an extravagant price for a private apartment. The metropolis is but indifferently furnished with game. The wild-ducks and plover are hardly eatable; but the hares are good, and the markets sometimes produce tolerable roebuck. Their sea-fish are not to be commended; but the rivers produce plenty of delicious carp, perch, and craw-fish. The gardens of the gentry are well provided with melons, grapes, peaches, and all sorts of greens and salads in perfection.

The army of Denmark is composed, 1. of the troops of Denmark and Holstein; and, 2. of Norway.

The forces of Denmark and Holstein are divided into regulars and national or militia. These forces (the foot and horse guards excepted who are all regulars) are not separated, as in our army, into distinct regiments, but are formed in the following manner: Before the late augmentation, every regiment of infantry, when complete, consisted of 26 officers and 1632 privates, divided into ten companies of fusileers and two of grenadiers. Of these 1632 privates, 480, who are chiefly foreigners enlisted in Germany, are regulars. The remaining 1152 are the national militia, or peasants who reside upon the estates of their landholders, each estate furnishing a certain number in proportion to its value. These national troops are occasionally exercised in small corps upon Sundays and holidays; and are embodied once every year for about 17 days in their respective districts. By a late addition of ten men to each company, a regiment of infantry is increased to 1778, including officers. The expence of

Denmark.

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Dress, &c.30
Army of
Denmark.

Denmark. each regiment, which before amounted to L.6000, has been raised by the late augmentation to L.8000. The cavalry is upon the same footing; each regiment consisting of 17 officers, including serjeants and corporals, and 565 privates, divided into five squadrons. Of these about 260 are regular and the remainder national troops. The regiments of foot and horse guards are regulars; the former is composed of 21 officers and 465 men, in five companies; and the latter of 7 officers and 154 men, in two squadrons.

The forces of Norway are all national troops or militia, excepting the two regiments of Sundenfield and Nordenfield; and as the peasants of that kingdom are free, the forces are levied in a different manner from those of Denmark. Norway is divided into a certain number of districts, each whereof furnishes a foldier. All the peasants are, upon their birth, registered for the militia; and the first on the list supplies the vacancy for the district to which he belongs. After having served from 10 to 14 years they are admitted among the invalids; and when they have attained the seniority of that corps receive their dismissal. These troops are not continually under arms; but are only occasionally exercised like the national forces of Denmark. A fixed stipend is assigned to the officers, nearly equal to that of the officers in the regulars; but the common soldiers do not receive any pay except when they are in actual service, or performing their annual manœuvres. The Academy of Land Cadets, instituted by Frederic IV. supplies the army with officers. According to this foundation, 74 cadets are instructed in the military sciences at the expence of the king. The whole amount of the Danish troops is computed at 60,900.

From their insular situation the Danes have always excelled as a maritime people. In the earlier ages, when piracy was an honourable profession, they were a race of pirates, and issued from the Baltic to the conquests of England and Normandy. And though, since the improvement of navigation by the invention of the compass, other nations have risen to a greater degree of naval eminence, still, however, the Danes, as they inhabit a cluster of islands, and possess a large tract of sea-coast, are well versed in maritime affairs, and are certainly the most numerous, as well as the most experienced, sailors of the north.

The greatest part of the Danish navy is stationed in the harbour of Copenhagen, which lies within the fortifications: the depth of water being only 20 feet, the ships have not their lower tier of guns on board, but take them in when they get out of port. Beside large magazines, each vessel has a separate storehouse on the water's edge, opposite to which she is moored when in harbour, and may by this means be instantly equipped. The number of registered seamen are near 40,000, and are divided into two classes; the first comprises those inhabiting the coasts, who are allowed to engage in the service of merchant-ships trading to any part of the world. Each receives 8s. annually from the crown as long as he sends a certificate of his being alive; but is subject to a recal in case of war. The second comprehends the fixed sailors, who are constantly in the employ of the crown, and amount to about 4000, ranged under four divisions, or 40

companies: they are stationed at Copenhagen for the ordinary service of the navy, and work in the dock-yard. Each of them, when not at sea, receives 8s. *per* month, beside a sufficient quantity of flour and other provisions; every two years a complete suit of clothes; and every year breeches, stockings, shoes, and a cap. Some of them are lodged in barracks. When they sail, their pay is augmented to 20s. *per* month. The marine artillery consists of 800 men, in four divisions.

The whole navy consists of 38 ships of the line, including 9 of 50 guns and one of 44, and 20 frigates; but if we except those which are condemned, and those which are allotted only for parade, we cannot estimate that in 1779 the fleet consisted of more than 25 ships of the line and 15 frigates fit for service; a number, however, fully adequate to the situation of Denmark; and if we include the excellence of the sailors, it must be esteemed as complete a navy as any in the north.

The revenue of his Danish majesty arises from taxes laid on his own subjects; from the duties paid by foreigners, from his own estate, crown-lands, and confiscations. The taxes are altogether arbitrary, and therefore fluctuating; but they are always grievous to the subject. They commonly consist of customs or toll, for export and import; of excise upon the consumption of wine, salt, tobacco, and all kinds of provisions; of taxes upon marriages, paper, brewing, grinding, and the exercise of different professions; of impositions on land, poll-money, ground-rent for all houses in Copenhagen and elsewhere; of money raised for maintaining fortifications, and for a portion to the king's daughter when she happens to be married: but this seldom exceeds 100,000 rixdollars. One considerable article in the revenue is the toll paid by foreign ships that pass through the Sound, or *Ore-Sound* (the strait between Schonen and Zealand), into the Baltic. This was originally no other than a small contribution, which trading nations agreed to make for maintaining lights at certain places, to direct their course through the passage in dark and stormy weather. At the same time these trading nations agreed, that every ship should pass this way and pay its share of the expence, rather than use the Great Belt, which is the other passage, but unprovided with any such conveniency. In process of time the Danes converted this voluntary contribution into an exorbitant toll, and even exacted arbitrary sums, in proportion to the weakness of the nation whose ships they visited. These exactions sometimes involved them in quarrels with their neighbours, and the toll was regulated in repeated treaties.

DENNIS, or ST DENNIS, a famous town of the Isle of France, with a Benedictine abbey, wherein are the tombs of the kings of France, with a considerable treasure. E. Long. 2. 26. N. Lat. 48. 56.

DENNIS (John), the celebrated critic, was the son of a reputable tradesman in London, and born in the year 1657. He received the first branches of education at the great school in Harrow on the Hill, where he commenced acquaintance and intimacy with many young noblemen and gentlemen, who afterwards made considerable figures in public affairs, whereby he laid the foundation of a very strong and extensive interest, which might, but for his own fault, have been of infi-

Denmark,
Dennis.Navy.³¹Revenue.³²

Dennis. nite use to him in future life. From Harrow he went to Caius-college Cambridge; where, after his proper standing, he took the degree of bachelor of arts. When he quitted the university, he made the tour of Europe; in the course of which he conceived such a detestation for despotism, as confirmed him still more in those Whig principles which he had from his infancy imbibed.

On his return to England he became early acquainted with Dryden, Wycherly, Congreve, and Southerne; whose conversation inspiring him with a passion for poetry, and a contempt for every attainment that had not something of the *belles lettres*, diverted him from the acquisition of any profitable art, or the exercise of any profession. This, to a man who had not an independent income, was undoubtedly a misfortune: however, his zeal for the Protestant succession having recommended him to the patronage of the duke of Marlborough, that nobleman procured him a place in the customs worth L. 120 *per annum*; which he enjoyed for some years, till from profuseness and want of economy, he was reduced to the necessity of disposing of it to satisfy some very pressing demands. By the advice of Lord Halifax, however, he reserved to himself, in the sale of it, an annuity for a term of years; which term he outlived, and was, in the decline of his life, reduced to extreme necessity.

Mr Theo. Cibber relates an anecdote of him, which we cannot avoid repeating, as it is not only highly characteristic of the man whose affairs we are now considering, but also a striking and melancholy instance, among thousands, of the distressful predicaments into which men of genius and literary abilities are perhaps apter than any others to plunge themselves, by paying too slight an attention to the common concerns of life, and their own most important interests. "After that he was worn out (says that author) with age and poverty, he resided within the verge of the court, to prevent danger from his creditors. One Saturday night he happened to saunter to a public house, which in a short time he discovered to be without the verge. He was sitting in an open drinking-room, when a man of a suspicious appearance happened to come in. There was something about the man which denoted to Mr Dennis that he was a bailiff. This struck him with a panic; he was afraid his liberty was at an end; he sat in the utmost solicitude, but durst not offer to stir lest he should be seized upon. After an hour or two had passed in this painful anxiety, at last the clock struck twelve; when Mr Dennis, in an ecstasy, cried out, addressing himself to the suspected person, "Now, Sir, bailiff or no bailiff, I don't care a farthing for you, you have no power now." The man was astonished at his behaviour; and when it was explained to him, was so much affronted with the suspicion, that had not Mr Dennis found his protection in age, he would probably have smarted for his mistaken opinion. A strong picture of the effects of fear and apprehension, in a temper naturally so timorous and jealous as Mr Dennis's; of which the following is a still more whimsical instance. In 1704 came out his favourite tragedy, *Liberty Asserted*; in which were so many strokes on the French nation, that he thought they were never to be forgiven. He had worked himself into a persuasion that

the king of France would insist on his being delivered up, before he would consent to a peace: and full of this idea of his own importance, when the congress was held at Utrecht, he is said to have waited on his patron the duke of Marlborough, to desire that no such article might be stipulated. The duke told him he really had no interest then with the ministry; but had made no such provision for his own security, though he could not help thinking he had done the French as much injury as Mr Dennis himself. Another story relating to this affair is, that being at a gentleman's house on the coast of Suffex, and walking one day on the sea-shore, he saw a ship sailing, as he fancied, towards him: he instantly set out for London, in the fancy that he was betrayed; and, congratulating himself on his escape, gave out that his friend had decoyed him down to his house, to surrender him up to the French.

Mr Dennis, partly through a natural peevishness and petulance of temper, and partly perhaps for the sake of procuring the means of subsistence, was continually engaged in a paper-war with his cotemporaries, whom he ever treated with the utmost severity: and, though many of his observations were judicious, yet he usually conveyed them in language so scurrilous and abusive, as destroyed their intended effect; and as his attacks were almost always on persons of superior abilities to himself, viz. Addison, Steele, and Pope, their replies usually turned the popular opinion so greatly against him, that, by irritating his testy temper the more, it rendered him a perpetual torment to himself; till at length, after a long life of vicissitudes, disappointments, and turmoils, rendered wretched by indifcretion, and hateful by malevolence, having outlived the reversion of his estate, and reduced to distress, from which his having been daily creating enemies had left him scarcely any hopes of relief, he was compelled to what must be the most irksome situation that can be conceived in human life, the receiving obligations from those whom he had been continually treating ill. In the very close of his days, a play was acted for his benefit at the little theatre in the Hay-market, procured through the united interests of Messrs Thomson, Mallet, and Pope; the last of whom, notwithstanding the gross manner in which Mr Dennis had on many occasions used him, and the long warfare that had subsisted between them, interested himself very warmly for him; and even wrote an occasional prologue to the play, which was spoken by Mr Cibber. Not long after this, viz. on the 6th of January 1733, he died, being then in the 77th year of his age.

Mr Dennis certainly was possessed of much erudition, and a considerable share of genius. In prose, he is far from a bad writer, where abuse or personal scurrility does not mingle itself with his language. In verse, he is extremely unequal; his numbers being at some times spirited and harmonious, and his subjects elevated and judicious; and at others, flat, harsh, and puerile.—As a dramatic author, he certainly deserves not to be held in any consideration. It was justly said of him by a wit, that he was the most complete instructor for a dramatic poet, since he could teach him to distinguish good plays by his *precepts*, and bad ones by his *examples*.

Denomina-
tion
||
Dentatus.

DENOMINATION (from *denomino*, of *de* and *nomen*, "a name;") a name imposed on any thing, usually expressing some quality predominant therein.

DENOMINATOR, in arithmetic, a term used in speaking of fractions. See **ARITHMETIC**, n^o 21.

DENSITY of **BODIES**, is that property directly opposite to rarity, whereby they contain such a quantity of matter under such a bulk.

Accordingly, a body is said to have double or triple the density of another body, when, their bulk being equal, the quantity of matter is in the one double or triple the quantity of matter in the other.

DENSITY of the *Air*, is a property that has employed the later philosophers, since the discovery of the Torricellian experiment.

It is demonstrated, that in the same vessel, or even in vessels communicating with each other, at the same distance from the centre, the air has every where the same density. The density of air, *ceteris paribus*, increases in proportion to the compressing powers. Hence the inferior air is denser than the superior; the density, however, of the lower air is not proportional to the weight of the atmosphere on account of heat and cold, and other causes perhaps which make great alterations in density and rarity. However, from the elasticity of the air, its density must be always different at different heights from the earth's surface; for the lower parts being pressed by the weight of those above, will be made to accede nearer to each other, and the more so as the weight of the incumbent air is greater. Hence the density of the air is greatest at the earth's surface, and decreases upwards in geometrical proportion to the altitudes taken in arithmetical progression.

If the air be rendered denser, the weight of bodies in it is diminished; if rarer, increased, because bodies lose a greater part of their weight in denser than in rarer mediums. Hence, if the density of the air be sensibly altered, bodies equally heavy in a rarer air, if their specific gravities be considerably different, will lose their equilibrium in the denser, and the specifically heavier body will preponderate. See **PNEUMATICS**.

DENTALIUM, in natural history, a shell-fish belonging to the order of vermes testacea. The shell consists of one tubulous straight valve, open at both ends. There are eight species, distinguished by the angles, striæ, &c. of their shells.

DENTARIA, **TOOTH-WORT**, or *Tooth-violet*: A genus of the siliquosa order, belonging to the tetrady-namia class of plants; and in the natural method ranking under the 39th order, *Siliquosa*. The siliqua parts with a spring, and the valvules roll spirally backwards; the stigma is emarginated; the calyx closing longitudinally. There are three species, all of them hardy perennials; producing annual stalks 12 or 18 inches high, adorned with many-lobed leaves, and spikes of quadrupetalous cruciform flowers of a red or purple colour. They delight in shady places; and are propagated either by seeds or parting the roots. The seeds may be sown in autumn or early in the spring, in a shady border of light earth; and when the plants are three inches high, they may be planted where they are to remain. The time for parting the roots is in October or November, or early in the spring.

DENTATUS (Curius), a renowned disinterested Roman general, whose virtues render him more me-

morable than even his great military reputation, flourished 272 years B. C. He was thrice consul; he conquered the Samnites, Sabines, and Lucanians; and gave each citizen 40 acres of land, allowing himself no more. The ambassadors of the Samnites making him a visit, found him boiling turnips in a pipking; upon which they offered him gold to come over to their interest; but he told them, his design was not to grow rich, but to command those who were so. He defeated Pyrrhus near Tarentum, and received the honour of a triumph.

DENTELLA, in botany: A genus of the monogynia order, belonging to the pentandria class of plants. The calyx is a five-parted perianthium, with small subulated leaves; the stamina five short subulated filaments; the antheræ small; the pericarpium a globular, bilocular capsule; the seeds egg-shaped, and very numerous.

DENTILES, or **DENTILS**, in architecture, an ornament in corniches bearing some resemblance to teeth, particularly used in the Ionic and Corinthian orders. See **ARCHITECTURE**.

DENTIFRICE, in medicine, a remedy for the teeth. There are various kinds; generally made of earthy substances finely pounded, and mixed with alum, or some other saline substances: but these are pernicious, on account of their wearing away the enamel of the teeth; but more especially by the septic quality with which these earthy substances are endowed. On this account, a portion of Peruvian bark finely pounded is now commonly added, which answers the double purpose of cleaning the teeth, and preserving them afterwards from corruption.

DENTISCALPRA, in surgery, an instrument for scouring yellow, livid, or black teeth; to which being applied near the gums, it scrapes off the foul morbid crust.

DENTITION, the breeding or cutting the teeth in children. See (*Index* subjoined to) **MEDICINE**.

DENUNCIATION, a solemn publication or promulgation of any thing.

All vessels of enemies are lawful prizes, after denunciation or proclamation of war. The design of the denunciation of excommunicated persons is, that the sentence may be the more fully executed by the person's being more known.

DENUNCIATION at the Horn, in Scots law. See **LAW**, Part III. N^o clxvi. 14.

DENYS (the Little). See **DIONYSIUS**.

DEOBSTRUENTS, in pharmacy, such medicines as open obstructions. See **DETERGENT**.

DEODAND, in our customs, a thing given or forfeited as it were to God, for the pacification of his wrath in a case of misadventure, whereby a Christian soul comes to a violent end, without the fault of any reasonable creature.

As, if a horse strike his keeper and kill him: if a man, in driving a cart, falls so as the cart-wheel runs over him, and presses him to death: if one by felling a tree, and gives warning to the standers-by to look to themselves, yet a man is killed by the fall thereof: in the first place, the horse; in the second, the cart-wheel, cart, and horses; and in the third, the tree, is *Deo dandus*, "to be given to God," that is, to the king, to be distributed to the poor by his almoner, for expiation of this

Dentella
||
Deodand.

dephleg-
nation,
dephlogi-
sticated
Air.

this dreadful event; though effected by irrational, nay, senseless and dead creatures.

Omnis quæ movent ad mortem sunt Deodanda.
What moves to death, or kills him dead,
Is Deodand, and forfeited.

This law seems to be an imitation of that in Exodus, chap. xxi. "If an ox gore a man, or a woman, with his horns, so as they die; the ox shall be stoned to death, and his flesh not be eat; so shall his owner be innocent."

Fleta says, the Deodand is to be sold, and the price distributed to the poor, for the soul of the king, his ancestors, and all faithful people departed this life.

DEPHLEGMATION, is an operation by which the superabundant water of a body is taken from it; and it is principally effected by evaporation or distillation. Dephlegmation is also called *concentration*, particularly when acids are the subject. See CONCENTRATION.

DEPHLOGISTICATED, in chemistry, any thing deprived of the phlogiston supposed to be contained in it.

DEPHLOGISTICATED Air, an invisible elastic fluid, of somewhat greater specific gravity than that of the common atmosphere, and capable of supporting animal life and flame for a much longer time than the air we commonly breathe.

This fluid was first discovered by Dr Priestley, and a very short time after by Mr Scheele, who appears to have been entirely unacquainted with what the Doctor had done. The methods of making it artificially are enumerated under the article AEROLOGY; here we shall make some observations on the way in which nature seems to accomplish the same end. Under that article, as well as that of FIXED Air, and others connected with them, it has been observed, that this kind of air becomes convertible into fixed air by the addition of a certain proportion of phlogiston or charcoal; and that these two ingredients may be again separated by certain means; the dephlogisticated air assuming its proper state, and the charcoal its own native form. A great number of experiments also are there related concerning the effects of vegetables in purifying tainted air, and their emission of the dephlogisticated kind; which has been thought to indicate, that vegetation is probably one of the methods by which nature supplies the great quantity of this fluid necessary for the purposes of animal life. This was suggested by an experiment of Dr Priestley, who had discovered that pump-water, on being exposed to the light of the sun, soon began to emit pure air; and that, after some days, a quantity of green matter accumulated on the sides of the vessel. This was naturally supposed to be of the vegetable kind, till Sir Benjamin Thomson found it to consist of a number of very minute animals. Upon this discovery he disputed the commonly received opinion, that vegetation is employed by nature as a purifier of the atmospheric air. He likewise opposed the conclusion drawn from Dr Ingenhousz's experiments, who had observed that fresh leaves of plants immersed in water, and exposed to the light, emitted a vast quantity of dephlogisticated air. Sir Benjamin justly observed, that a leaf certainly ceased to vegetate after being separated from the plant on which it grew: and therefore the emission of this kind of air could by no means be ascribed to

vegetation: as a more decisive proof of which, he likewise urged, that leaves, after being entirely dead and withered, would notwithstanding emit dephlogisticated air for a very considerable time. Thus matters seemed to be rendered doubtful; but by an attentive observation of all circumstances relating to these experiments, we shall find that considerable light will be thrown upon the subject.

In the first place, we are to consider that the light of the sun, or at least a very strong light of some kind, is necessary in all these productions of dephlogisticated air; for if the apparatus is set in a very dark place, little will be formed, and that of a bad quality. So ignorant are we of the nature of this mysterious fluid, that scarce any inquiry has been made into its mode of operation in producing dephlogisticated air. By some the element of light has been supposed to be phlogiston itself, or some modification of it: but since the discovery of the identity of phlogiston and charcoal, it is probable that this opinion will not be held by many. One experiment, however, commonly brought in favour of this supposition, deserves particular attention. This is the property which light has of giving a black colour to the calces of silver; a phenomenon so remarkable, that it has been imagined an indubitable proof of the identity of light and phlogiston. In like manner, the pure and dephlogisticated spirit of nitre is found to be converted into the phlogisticated and smoking kind by exposure to the solar rays. The extensive diffusion of the substance called *phlogiston*, however, is now so well known, that we may reasonably conclude, that in these experiments it was contained in the ingredients themselves, and not in the light. Thus when silver is precipitated by chalk, and the mass turns black on exposure to the sun's rays, we are very sure that the chalk contains phlogiston; and that there is an attraction between the metallic calx and this principle: but we are by no means ascertained of the nature of light, as not being in any manner of way the subject of our investigation except by observing its effects. As in all other cases, therefore, where light is concerned, we can only say that such a thing is the effect of the operation of light, and not the substance of the element made visible, or converted into some other thing; we have no reason, in this case, to say, that the blackening of the metallic calx is any other than an effect of the light's operation, and not the detention of any part of its substance. This operation may be easily conceived to be the promoting of the union of the phlogiston and calx, which we know that light has a great tendency to do at any rate when we augment its action in such a manner as to make it become fire. The tendency of light, therefore, to promote an union betwixt phlogiston and other substances, will explain this and many other experiments in a very easy manner. In the case of chalk and calx of silver, the action of the light enables the calx to attract the phlogiston of the chalk, and thus become black. If the calx is not precipitated by chalk, but by an alkali, it must be in contact either with air, water, or some other fluid. All these undoubtedly contain phlogiston. With regard to air, it has not been denied that it is a general receptacle of all the decayed and volatile parts of vegetables and animals; that it contains vast quantities of inflammable air, which are constantly emitted

Dephlogi-
sticated Air.

Dephlogi- from various parts of the earth; and, according to the
 ficated Air. Phlogistians, that fluid called *phlogificated air*, which
 constitutes the other part of the fluid we breathe, like-
 wise contains a quantity of the same matter. We are
 not to be surpris'd therefore that, in the case of the
 calx of silver, some of these substances should be ob-
 liged to part with a little of their phlogiston, sufficient
 to blacken the metallic earth. In order to prove that
light and phlogiston are the same, the experiment ought
 to succeed in a perfect vacuum, of which there is no
 probability; though indeed it has never been tried
 that we know of. In like manner, when spirit of
 nitre is rendered high coloured and smoking by expo-
 sure to the sun in a glass, the phlogiston may come
 either from the glass itself, which is now found to con-
 tain phlogiston, or from the quantity of air which is
 necessary to be left in the glass, in order to make the
 experiment succeed.

Thus we may reasonably suppose the blackening of
 the calx of silver, and the rendering clear spirit of
 nitre high-coloured, to proceed only from the separa-
 tion of phlogiston by means of light, and its conse-
 quent attraction by the calx or acid; and in other
 cases, where any similar effect is observed by the ex-
 posure of bodies to that element, we are to suppose
 that it is occasioned by the detachment of phlogiston
 from one substance and its attachment to another. In
 the case of the emission of dephlogificated air by
 means of light, therefore, we may, by reasoning analo-
 gically, conclude, that it is occasioned by the absorp-
 tion of phlogiston by the substance which is said to
 emit the air.

Before this matter, however, can be determined ex-
 actly, we ought to be well acquainted with the com-
 position of dephlogificated air itself; and indeed, with-
 out this, it seems almost in vain to speak upon the sub-
 ject. But, notwithstanding the labours and ingenuity
 of modern aerologists, this point has not been in any
 degree settled. On examination, it is found to consist
 of an invisible fluid which does not appear to gravi-
 tate, and which in all probability is no other than
 elementary fire; and of another substance equally in-
 visible, but capable of attaching itself to certain bod-
 ies, particularly iron, and adding to its weight very
 considerably. On attempting to procure this sub-
 stance by itself, we find the attachment so strong, that
 no force of fire can separate them. In attempting a
 decomposition by means of the electric spark, all that
 has been yet done, even with the greatest power of
 electricity excited by Van Marum's new machine, is
 to make it lose some part of its bulk, the remainder
 appearing by the eudiometer to have undergone no
 change. Dr Priestley, in his sixth volume of Experi-
 ments on Air, acquiesces in the opinion suggested to
 him by Mr Watt, that the air in question is nothing
 else but one of the component parts of water united
 with the element of heat. Allowing this to be just,
 and indeed there is no experiment hitherto published
 by which it can be contradicted, the natural method
 of the production of dephlogificated air from water may
 be easily explained. This only requires us to suppose,
 that the substances immersed in the water, are by the
 action of the sun's light made to attract part of the
 phlogiston of the water; in consequence of which the
 dephlogificated part of that element, instantly being

volatilized by the light and heat of the sun (for heat
 is necessary for the production as well as light), assumes
 the properties of dephlogificated air. But why, it
 may be asked, does water of itself emit dephlogifica-
 ted air without any substance whatever immersed in it?
 or, after certain substances have been immersed in it,
 by which this emission is promoted, why does the
 production of air stop with regard to any particular
 substance, and any determined quantity of water?
 Thus, it may be said, if any quantity of water, suppose
 a pint, yields one inch of cubic air by the immersion of
 a certain substance into it, why does not this substance
 attract from it all the phlogiston it is capable of ab-
 sorbing? Instead of this, the water appears, by the co-
 lour it acquires, to be more phlogificated than before;
 and the substance immersed, by being put into fresh
 water, will immediately occasion the emission of new
 quantities of air, and this for several times running.
 But to this it may be replied, that though the sub-
 stance immersed attracts the phlogiston of the water,
 the latter will part with it only to a certain degree;
 and it is well known, that when two substances are uni-
 ted to the point of saturation by chemical attraction, the
 abstraction of a part of one of them will increase the
 attraction betwixt the remainder to a great degree.
 Though the substance immersed in the fluid, there-
 fore, has originally a greater attraction for the phlogis-
 ton of the water than the dephlogificated part of
 the element itself; yet as the one gradually augments,
 and the other diminishes, a balance soon takes place.
 With regard to the green colour generally assumed by
 the water after such experiments, it most probably
 proceeds from an accumulation of some terrestrial par-
 ticles partly supplied by the immersed substance, or
 perhaps from a disposition to generate the green mat-
 ter observed by Dr Priestley. That the substance
 immersed in the water does really part with some par-
 ticles, is evident, because the water smells of it, as when
 raw silk is made use of; nor can we suppose that any
 vegetable or animal substance, such as are found to be
 alone fit for these experiments, can endure a long ma-
 ceration in water without parting with a considerable
 quantity of their component parts. Indeed, under the
 article CHARCOAL, it is shown that this body, though
 now allowed to be pure phlogiston, or the next thing
 to it, has the power of separating other phlogistic
 matter, probably such as is more impure, from different
 substances. Hence its property of whitening tartar,
 purifying malt spirits, &c. It is not unreasonable,
 therefore, to suppose, that a dead leaf, though a very
 phlogistic substance, may have the power of attracting
 more phlogiston from the water, and thus allowing
 part of that element to be changed into dephlogifica-
 ted air; while, in lieu of the phlogiston attracted from
 the water, it diffuses a certain portion of its own sub-
 stance through the fluid, and thus gives it the colour
 in question. With regard to the other difficulty, viz.
 that water, when exposed to the solar rays, will emit
 dephlogificated air without any thing immersed in it,
 it may be accounted for from the ease with which the
 dephlogificated part of the water is volatilized; so
 that the attraction of the other is not able to detain
 it. This we find exemplified in several chemical expe-
 riments, as when a volatile alkali is joined with any of
 the more fixed acids; for in these cases the alkali,

Dephlogi-
cated Air. notwithstanding the mutual attraction betwixt it and the acid, will be made to fly off by a strong heat.

On the supposition that dephlogificated air is composed of elementary fire and one of the constituent parts of water, there is very little difficulty in accounting for the origin of the immense quantity necessary to supply the animal creation with it. Under the article DAMPS, it has been shown that a vast quantity of fixed air is continually elaborated in the bowels of the earth. This is composed entirely of dephlogificated air, compounded with a certain portion of phlogiston. Part of this fixed air must be undoubtedly evaporating constantly from the surface, and would as certainly infect the lower parts of the atmosphere, were there not some natural causes for its decomposition. One of these undoubtedly is the absorption of the phlogistic part by vegetables, which under the article AGRICULTURE is shown to be their proper food. But when the phlogiston is absorbed, a great quantity of dephlogificated air is prepared, which supplies the deficiency occasioned by the respiration of animals. It must likewise be observed, that after the dephlogificated air has been spoiled either by respiration or the support of flame, it is not for that reason entirely destroyed, but only converted into fixed air, and consequently may again be purified as before.

It may be likewise reasonably supposed, that in cases where vegetation does not take place, and in spring before the plants begin to exert their vegetative powers, and in autumn, or the beginning of winter, when they decay, the vegetable soil itself may perform this office: and indeed the circumstance of fresh vegetable mold affording an agreeable smell when turned up, as is mentioned under the article AGRICULTURE, seems to be a considerable confirmation of this.

The property which water has of absorbing fixed air, and also phlogiston, may likewise induce us to suppose that it acts as a purifier not only of the common atmosphere, but of that which issues from the earth; and hence some waters, particularly that of the ocean, are found to contain air of a purer kind than that of the atmosphere.

As light, however, is an indispensable requisite in all these cases, a difficulty still remains concerning the production of dephlogificated air in winter, when the light and heat are so much diminished. In this season, indeed, it is probable that a quantity will be produced greatly inferior to that which the summer affords: but here we may very reasonably have recourse to the immense magazine of the atmosphere itself; which, from the mere circumstance of quantity, must be much more than sufficient to answer the expences of one season; especially when we consider, that in summer a superabundant quantity is certainly produced. Add to this, that in extreme cold, fixed air seems not only to be less noxious than at other times, but even necessary for the preservation of health*. We must likewise consider, that during the winter season there will be a constant flux of the cold air of the northern and southern regions towards the equator; and this, however imperceptible to the inhabitants, will keep up a constant circulation of atmospherical fluid, so that there cannot be any stagnation even in the calmest weather and most severe and long continued frosts.

Soon after Dr Priestley began his experiments on

air, he found that the red colour of the blood depends on the air; that by coming in contact with it, the black venous blood became in a very short time of a beautiful florid colour; and that even the under side of a clot of blood, by exposure to the air, will lose its disagreeable dark colour, and assume the same with that of blood newly drawn. These effects are entirely to be attributed to the dephlogificated part: and his theory of respiration being a phlogistic process, seems to be fully confirmed by the discovery of the composition of fixed air. For, as fixed air is known to be composed of phlogiston and dephlogificated air, we cannot suppose this phlogiston to be derived from any other source than the lungs. The doctor in this theory likewise obviates an objection that might naturally occur, that the air has not immediate access to the blood in the lungs, because of the thin membranes of the vessels which intervene. But, from his experiments, it appears that this is no obstacle. The serum of blood he finds to be capable of transmitting dephlogificated air, or at least of propagating this effect through a very considerable thickness of its own substance, as well as through bladders moistened with it; a property which does not belong to any other animal fluid.

As dephlogificated air is now known to be the immediate support of animal life, it has naturally been supposed that it might answer valuable purposes in medicine; but the difficulty of procuring it in sufficient quantity has hitherto prevented these hopes from being realized, excepting only in cases of drowning, where it is said to produce very great effects. With regard to any method of preparing it, no farther discovery has been made than what is suggested under the article AEROLOGY.

DEPILATORY MEDICINES, those applied in order to take off the hair: such are lime and orpiment known to be, but which ought to be used with great caution.

DEPONENT, in Latin grammar, a term applied to verbs which have active significations, but passive terminations or conjugations, and want one of their participles passive.

DEPONENT, in the law of Scotland, a person who makes a deposition. See DEPOSITION.

DEPOPULATION, the act of diminishing the number of people in any country, whether by war or bad politics.

DEPORTATION, a sort of banishment used by the Romans, whereby some island or other place was allotted to a criminal for the place of his abode, with a prohibition not to stir out of the same on pain of death.

DEPOSIT, among civilians, something that is committed to the custody of a person, to be kept without any reward, and to be returned again on demand.

DEPOSITARY, in law, a person intrusted as keeper or guardian of a deposit.

DEPOSITION, in law, the testimony given in court by a witness upon oath.

DEPOSITION is also used for the sequestering or depriving a person of his dignity and office.

This deposition only differs from abdication, in that the latter is supposed voluntary, and the act of the dignitary, or officer himself; and the former of compulsion, being the act of a superior power, whose authority

Deprecation || Depth. rity extends thereto. Some say the deposition, and some the abdication, of king James II.

Deposition does not differ from deprivation: we say indifferently, a deposed, or deprived bishop, official, &c.

Deposition differs from suspension, in that it absolutely and for ever strips or divests a priest, &c. of all dignity, office, &c. whereas suspension only prohibits, or restrains, the exercise thereof.

Deposition only differs from degradation, in that the latter is more formal, and attended with more circumstances, than the former; but in effect and substance they are the same; those additional circumstances being only matter of show, first set on foot out of zeal and indignation, and kept up by custom, but not warranted by the laws or canons. See DEGRADATION.

DEPRECATION, in rhetoric, a figure whereby the orator invokes the aid and assistance of some one; or prays for some great evil or punishment to befall him who speaks falsely, either himself or his adversary.

DEPRECATORY, or DEPRECATIVE, in theology, a term applied to the manner of performing some ceremonies in the form of prayer.

The form of absolution is deprecative in the Greek church, being conceived in these terms, *May God absolve you*: whereas it is in the declarative form in the Latin church, and in some of the reformed churches, *I absolve you*.

DEPRESSION of the POLE. When a person sails or travels towards the equator, he is said to depress the pole; because as many degrees as he approaches nearer the equator, so many degrees will the pole be nearer the horizon. This phenomenon arises from the spherical figure of the earth.

DEPRESSOR, or DEPRIMENS, in anatomy, a name applied to several muscles, because they depress the parts they are fastened to.

DEPRIVATION, in the common law, the act of bereaving, divesting, or taking away a spiritual promotion or dignity: as when a bishop, vicar, prebend, or the like, is deposed or deprived of his preferment, for some matter, or fault, in fact, or in law. See DEPOSITION.

Deprivation is of two kinds; *a beneficio, et ab officio*.

DEPRIVATION *a beneficio* is, when for some great crime a minister is wholly and for ever deprived of his living or preferment: which differs from suspension, in that the latter is only temporary.

DEPRIVATION *ab officio*, is when a minister is for ever deprived of his order: which is the same, in reality, with what we otherwise call *deposition* and *degradation*; and is usually for some heinous crime deserving death, and is performed by the bishop in a solemn manner. See DEGRADATION.

DEPTFORD, a town three miles east of London, on the southern banks of the Thames; chiefly considerable for its fine docks for building ships, and the king's yard. E. Long. 0. 4. N. Lat. 51. 30.

DEPTH, the measure of any thing from the surface downwards.

Measuring of DEPTHS by the Barometer, depends on the same principles on which heights are measured by N° 100.

the same instrument. The mensuration of depths being chiefly applied to mines, is still more precarious than the mensuration of heights, on account of the various kinds of vapours with which these subterranean regions are filled. But for a particular account of these difficulties, with the best methods of obviating them, see the articles BAROMETER and MINES.

DEPTH of a Squadron, or Battalion, is the number of men in a file; which in a squadron is three, and in a battalion generally six. See SQUADRON, FILE, &c.

We say, the battalion was drawn up six deep; the enemies horse were drawn up five deep.

DEPURATION is the freeing of any fluid from its heterogeneous matter or feculence. It is of three kinds. 1. Decantation; which is performed by letting the liquid to be depurated stand for some time in a pretty deep vessel, till the gross sediment has fallen to the bottom; after which the clear fluid is poured off. 2. Despumation; which is performed by means of the whites of eggs, or other viscid matter, and is also called CLARIFICATION. 3. Filtration. See CHEMISTRY, n° 69.

DEPURATORY FEVER, a name given by Sydenham to a fever which prevailed much in the years 1661, 1662, 1663, and 1664. He called it depuratory, because he supposed that nature regulated all the symptoms in such a manner, as to fit the febrile matter, prepared by proper concoction, for expulsion in a certain time, either by a copious sweat or a freer perspiration.

DEPUTATION, a mission of select persons out of a company or body, to a prince or assembly, to treat of matters in their name.

DEPUTY, a person sent upon some business by some community.

DEPUTY is also one that exercises an office in another's right; and the forfeiture or misdemeanour of such deputy shall cause the person whom he represents to lose his office.

DEPUTATUS, among the ancients, a name applied to persons employed in making of armour; and likewise to brisk active people, whose business was to take care of the wounded in engagements, and carry them off the field.

DER, a syllable frequently prefixed to the names of places in England. It is said to signify that such were formerly places where wild beasts herded together, so called from the Saxon *deop, fera*, unless the situation was near some river.

DERBEND, a strong town of Asia, in Persia, said to have been founded by Alexander the Great. The walls are built with stones as hard as marble; and near it are the remains of a wall which reached from the Caspian to the Black Sea. It is seated near the Caspian Sea, at the foot of Mount Caucasus. E. Long. 50. 0. N. Lat. 42. 8.

DERBY, the capital of a county of the same name in England. It is thought to have received its name from being formerly a park or shelter for deer; and what makes this supposition more probable is, that the arms of the town consist of a buck couchant in a park. It is very ancient, having been a royal borough in the time of Edward the Confessor. At present it is a neat town, very populous, and sends two members to parliament. In digging for foundations of houses, hu-

Derbyshire
||
Derelicts.

man bones of a monstrous size have sometimes been found. The trade consists in wool, corn, malt, and ale, of which considerable quantities are sent to London. Here also is that curious machine for throwing silk, the model of which Sir Thomas Lombe, at the hazard of his life, brought from Italy. Before that time, the English merchants used to purchase thrown silks of the Italians for ready money. But by the help of this wonderful machine, one hand-mill will twist as much silk as 50 people could do without it. It works 73,726 yards of silk every time the water-wheel goes round, which is thrice in a minute. The house in which it is contained is five or six stories high, and half a quarter of a mile in length. When Sir Thomas's patent expired in 1732, the parliament were so sensible of the value and importance of the machine, that they granted him a further recompence of 14,000 l. for the hazard and expence he had incurred in introducing and erecting it, upon condition he should allow an exact model of it to be taken. This model is deposited in the Tower of London, in order to prevent so curious and important an art from being lost. The town of Derby is watered by a river and a brook; the latter of which has nine bridges over it, the former only one. Derby gives title of Earl to the noble family of Stanley, being the second earldom in England. W. Long. 1. 45. N. Lat. 52. 57.

DERBY-SHIRE, a county of England, bounded on the east by Nottinghamshire, and a part of Leicestershire, which last bounds it also on the south. On the west it is bounded by Staffordshire, and part of Cheshire; and on the north by Yorkshire. It is near 40 miles in length from south to north; about 30 in breadth on the north side, but on the south no more than six.—The air is pleasant and healthful, especially on the east side; but on the west, about the peak, it is sharper and more subject to wind and rain. The soil is very different in different parts of the country. In the east and south parts it is very fruitful in all kinds of grain; but in the west, beyond the Derwent, it is barren and mountainous, producing nothing but a little oats. There is, however, plenty of grass in the valleys, which affords pasture to a great number of sheep. This part of the country is called the *Peak*, from a Saxon word signifying an eminence. Its mountains are very bleak, high, and barren; but extremely profitable to the inhabitants. They yield great quantities of the best lead, antimony, iron, scythe-stones, grind-stones, marble, alabaster, a coarse sort of crystal, azure, spar, and pit-coal. In these mountains are two remarkable caverns, named *Pool's Hole*, and *Elden-Hole*; for a description of which, see these articles.

DEREHAM, a town of Norfolk in England, situated in E. Long. 1. 0. N. Lat. 52. 40. It is pretty large, and the market is noted for woollen yarn.

DERELICTS, (from *de*, and *relinquo*, "I leave"), in the civil law, are such goods as are wilfully thrown away, or relinquished by the owner.

DERELICT is also applied to such lands as the sea receding from leaves dry, and fit for cultivation. If they are left by a gradual recess of the sea, they are adjudged to belong to the owner of the adjoining lands; but when an island is formed in the sea, or a

large quantity of new land appears, such derelict lands belong to the king.

DERHAM (Doctor William), a very celebrated English philosopher and divine, born in 1657. In 1682, he was presented to the vicarage of Wargrave in Berkshire; and, in 1689, to the valuable rectory of Upminster in Essex; which latter lying at a convenient distance from London, afforded him an opportunity of conversing and corresponding with the greatest virtuosos of the nation. Applying himself there with great eagerness to natural and experimental philosophy, he soon became a distinguished member of the Royal Society, whose Philosophical Transactions contain a great variety of curious and valuable pieces, the fruits of his laudable industry. In his younger years he published his *Artificial Clockmaker*, which has been often printed: and in 1711, 1712, and 1714, he preached those sermons at Boyle's lecture which he afterward digested under the well-known titles of *Physico-Theology* and *Astro-Theology*, and enriched with valuable notes and copper-plates. The last thing he published of his own composition was *Christo-Theology*, a demonstration of the divine authority of the Christian religion, being the substance of a sermon preached at Bath in 1729. This great good man, after spending his life in the most agreeable as well as improving study of nature, died at Upminster in 1735; and, beside many other works, left a valuable collection of curiosities, particularly specimens of birds and insects of this island.—It may be necessary just to observe, that Dr Derham was very well skilled in medical as well as in physical knowledge; and was constantly a physician to the bodies as well as the souls of his parishioners.

DERIVATION, in medicine, is when a humour which cannot conveniently be evacuated at the part affected, is attracted from thence, and discharged elsewhere; thus, a blister is applied to the neck to draw away the humour from the eyes.

DERIVATION, in grammar, the affinity one word has with another, by having been originally formed from it. See DERIVATIVE.

DERIVATIVE, in grammar, a word which takes its origin from another word, called its *primitive*.—Such is the word derivative itself, which takes its origin from the primitive *rivus*, a rivulet or channel, out of which lesser streams are drawn; and thus *manhood*, *deity*, *lawyer*, &c. are derived from *man*, *deus*, *law*, &c.

DERMESTES, in zoology, a genus of insects belonging to the order of coleoptera. The antennæ are clavated, with three of the joints thicker than the rest; the breast is convex; and the head is inflected below the breast. The species are pretty numerous.

1. The lardarius is of an oblong form and of a dim black colour, easily distinguishable by a light brown stripe that occupies transversely almost the anterior half of the elytra. That colour depends on small grey hairs situated on that part. The stripe is irregular at its edges, and intersected through the middle by a small transversal streak of black spots, three in number on each of the elytra, the middlemost of which is somewhat lower than the rest, which gives the black streak a serpentine form. Its larva that is oblong, somewhat

Derham
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Dermestes.

Dermestes
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Dertosa.

hairy, and divided into segments alternately dark and light coloured, gnaws and destroys preparations of animals preserved in collections, and even feeds upon the insects; it is also to be found in old bacon. 2. The domesticus varies greatly in size and colour, some being found of a dark brown, others of a much lighter hue. The form of it is oblong, almost cylindrical. The elytra are striated, the thorax is thick and rather gibbous. This little animal, when touched, draws in its head under its thorax and its feet beneath its abdomen, remaining so motionless that one would think it dead. This is the same insect which makes in wooden furniture those little round holes that reduce it to powder. 3. The violaceus is a beautiful little insect: its elytra are of a deep violet blue. The thorax is covered with greenish hairs, the legs are black. The whole animal being of a glittering brilliancy renders it a pleasing object. The larva, as well as the perfect insect, inhabits the bodies of dead animals. 4. The fumatus is of a light brown, except the eyes, which are black. It is however sometimes more or less deep. The thorax is margined, and the insect has the whole carriage of a scarabæus; but its antennæ have the character of those of the dermestæ. This little creature is found in dung. It also frequently finds its way into houses. 5. The ferrugineus is the largest of the genus; its colour is a rusty iron, having many oblong, velvety, black spots upon the elytra, which gives the insect a gloomy, yet elegant appearance. The antennæ differ from the preceding species; the three last articulations being considerably longer, thicker, and not perfoliated.

There are 25 other species, distinguished by their colour.—Many varieties of this genus, as well as the larvæ, are to be met with in dried skins, bark of trees, wood, seeds, flowers, the carcases of dead animals, &c.—The lardarius, so destructive to birds, insects, and other subjects of natural history preserved in cabinets, is to be killed by arsenic.

DERNIER RESSORT. See RESSORT.

DEROGATION, an act contrary to a preceding one, and which annuls, destroys, and revokes it, either in whole or in part.

DEROGATORY, a clause importing derogation. A derogatory clause in a testament, is a certain sentence, cipher, or secret character, which the testator inserts in his will, and of which he reserves the knowledge to himself alone, adding a condition, that no will he may make hereafter is to be reckoned valid, if this derogatory clause is not inserted expressly and word for word. It is a precaution invented by lawyers against latter-wills extorted by violence, or obtained by suggestion.

DERP, a town of Livonia, and capital of a palatinate of the same name, with a bishop's see, and an university. It is subject to the Russians, and lies near the river Ambeck. E. Long. 31. 55. N. Lat. 30. 40.

DETRONA, DERTON, or DERTON (anc. geog.), a colony of the Cispadana; called *Julia Augusta*, on inscriptions and coins; midway between Genoa and Placentia, and situated to the east of the Tanarus in Liguria. Now Tortona, a city of Milan. E. Long. 9. 12. N. Lat. 45.

DETROSA, (anc. geog.); the capital of the Ilercaones, in Tarraconensis, or the Hither Spain: a mu-

nicipum and colony; furnamed *Julia Ilergavonia* (Coin.) *Dertofani*, the people. Now Tortosa, in Catalonia, on the Ebro. E. Long. 15. N. Lat. 40. 45.

Derventio
Dervis.

DERVENTIO, (anc. geog.); a river of the Brigantes in Britain. Now the Darwent, in the east of Yorkshire, falling into the Ouse. Also a town of the Brigantes on the same river. Now called *Auldby*, seven miles from York, to the north-east (Camden).

DERVIS, or DERVICH, a name given to a sort of monks among the Turks, who lead a very austere life, and profess extreme poverty; though they are allowed to marry. The word is originally Persian, *درویش* signifying a "beggar," or person who has nothing: and because the religious, and particularly the followers of Mevelava, profess not to possess any thing, they call both the religious in general, and the Mevelavites in particular, *Dervises* or *Derviches*.

The dervises, called also *Mevelavites*, are a Mahometan order of religious; the chief or founder whereof was one Mevelava. They are now very numerous. Their chief monastery is that near Cognia in Natolia, where the general makes his residence, and where all the assemblies of the order are held; the other houses being all dependent on this, by a privilege granted to this monastery under Ottoman I.

The dervises affect a great deal of modesty, patience, humility, and charity. They always go bare-legged and open-breasted, and frequently burn themselves with hot irons, to inure themselves to patience. They always fast on Wednesdays, eating nothing on those days till after sun-set. Tuesdays and Fridays they hold meetings, at which the superior of the house presides. One of them plays all the while on a flute, and the rest dance, turning their bodies round and round with the greatest swiftness imaginable. Long custom to this exercise from their youth has brought them to such a habitude, that it does not discompose them at all. This practice they observe with great strictness, in memory of Mevelava their patriarch's turning miraculously round, as they pretend, for the space of four days, without any food or refreshment; his companion Hamsa playing all the while on the flute: after which he fell into an ecstasy, and therein received wonderful revelations for the establishment of his order. They believe the flute an instrument consecrated by Jacob and the shepherds of the Old Testament, because they sang the praises of God upon them. They profess poverty, chastity, and obedience, and really observe them while they remain dervises; but if they choose to go out and marry, they are always allowed.

The generality of dervises are mountebanks: some apply themselves to legerdemain, postures, &c. to amuse the people; others give in to forcery and magic: but all of them, contrary to Mahomet's precept, are said to drink wine, brandy, and other strong liquors, to give them the degree of gaiety their order requires.

Beside their great saint Mevelava, there are particular saints honoured in some particular monasteries: as Kiderle, greatly revered in the monasteries of Egypt, and held by some to be St George; and by others, with more probability, the prophet Elias.

The dervises are great travellers; and, under pretence of preaching, and propagating their faith, are continually passing from one place to another: on which account they have been frequently used as spies.

There

Desaguliers
 Descant.

There are also dervises in Persia, called in that country *Abdals*, q. d. *servants of God*. They lead a very penurious, austere life, and preach the Alcoran in the streets, coffee-houses, and wherever they can meet with auditors. The Persian dervises retail little but fables to the people, and are in the utmost contempt among the men of sense and letters.

There are in Egypt two or three kinds: those that are in convents, are in a manner of the religious order, and live retired; though there are of these some who travel and return again to their convents. Some take this character, and yet live with their families, and exercise their trades: of this kind are the dancing dervises at Damascus, who go once or twice a week to a little uninhabited convent, and perform their extraordinary exercises; these also seem to be a good people: but there is a third sort of them who travel about the country, and beg, or rather oblige people to give, for whenever they found their horn something must be given them. The people of these orders, in Egypt, wear an octagonal badge, of a greenish white alabaster, at their girdles, and a high stiff cap without any thing round it.

DESAGULIERS (John Theophilus), who introduced the practice of reading public lectures in experimental philosophy in the metropolis, and who made several improvements in mechanics; was the son of the reverend John Desaguliers, a French protestant refugee, and was born at Rochelle in 1683. His father brought him to England an infant; and at a proper age placed him at Christ-church college, Oxford: where he succeeded Dr Keil in reading lectures on experimental philosophy at Hart Hall. The magnificent duke of Chandos made Dr Desaguliers his chaplain, and presented him to the living of Edgware, near his seat at Cannons; and he was afterward chaplain to Frederic prince of Wales. He read lectures with great success to the time of his death in 1749. He communicated many curious papers printed in the Philosophical Transactions; published a valuable *Course of Experimental Philosophy*, in 2 vols 4to.; and gave an edition of *Gregory's Elements of Catoptrics and Dioptrics*, with an Appendix on reflecting telescopes, 8vo. He was a member of the Royal Society, and of several foreign academies.

DESART, a large extent of country entirely barren, and producing nothing. In this sense some are sandy deserts; as those of Lop, Xamo, Arabia, and several others in Asia; in Africa, those of Libya and Zara: others are stony, as the desert of Pharan in Arabia Petrea.

THE DESART, absolutely so called, is that part of Arabia, south of the Holy Land, where the children of Israel wandered forty years.

DESCANT, in music, the art of composing in several parts. See COMPOSITION.

Descant is three-fold, viz. plain, figurative, and double.

Plain DESCANT is the ground-work and foundation of all musical compositions, consisting altogether in the orderly placing of many concords, answering to simple counterpoint. See COUNTERPOINT.

Figurative or Florid DESCANT, is that part of an air of music wherein some discords are concerned, as well, though not so much, as concords. This may be term-

ed the ornamental and rhetorical part of music, in regard that there are introduced all the varieties of points, syncopes, diversities of measures, and whatever is capable of adorning the composition.

DESCANT Double, is when the parts are so contrived, that the treble, or any high part, may be made the bass; and, on the contrary, the bass the treble.

DESCARTES. See CARTES.

DESCENDANT. The issue of a common parent, in infinitum, are called his descendants. See the article DESCENT.

DESCENSION, in astronomy, is either right or oblique.

Right DESCENSION, is an arch of the equinoctial, intercepted between the next equinoctial point and the intersection of the meridian, passing through the centre of the object, at its setting, in a right sphere.

Oblique DESCENSION, an arch of the equinoctial, intercepted between the next equinoctial point and the horizon, passing through the centre of the object, at its setting, in an oblique sphere.

DESCENT, in general, is the tendency of a body from a higher to a lower place; thus all bodies, unless otherwise determined by a force superior to their gravity, descend towards the centre of the earth. See GRAVITY and MECHANICS.

DESCENT, or Hereditary Succession, in law, is the title whereby a man, on the death of his ancestor, acquires his estate by right of representation, as his heir at law. An heir, therefore, is he upon whom the law casts the estate immediately on the death of the ancestor; and an estate so descending to the heir is in law called the inheritance.

Descent is either lineal or collateral. The former is that conveyed down in a right line from the grandfather to the father, and from the father to the son, and from the son to the grandson. The latter is that springing out of the side of the line or blood; as from a man to his brother, nephew, or the like.

The doctrine of descents, or law of inheritances in fee-simple, is a point of the highest importance: (See the article FEE). All the rules relating to purchases, whereby the legal course of descents is broken and altered, perpetually refer to this settled law of inheritance, as a datum or first principle universally known, and upon which their subsequent limitations are to work. Thus a gift in tail, or to a man and the heirs of his body, is a limitation that cannot be perfectly understood without a previous knowledge of the law of descents in fee-simple. One may well perceive, that this is an estate confined in its descent to such heirs only of the donee as have sprung or shall spring from his body: but who those heirs are, whether all his children both male and female, or the male only, and (among the males) whether the eldest, youngest, or other son alone, or all the sons together, shall be his heir; this is a point that we must refer back to the standing law of descents in fee-simple to be informed of.

And as this depends not a little on the nature of kindred, and the several degrees of consanguinity, it will be necessary to refer the reader to the article CONSANGUINITY, where the true notion of this kindred or alliance in blood is particularly stated.

We shall here exhibit a series of rules or canons of inheritance, with illustrations, according to which, by

Descent
 Descant.

Descent. the law of England, estates are transmitted from the ancestor to the heir.

1. "Inheritances shall lineally descend to the issue of the person last actually seized *in infinitum*, but shall never lineally ascend."

To understand both this and the subsequent rules, it must be observed, that by law no inheritance can vest, nor can any person be the actual complete heir of another, till the ancestor is previously dead. *Nemo est hæres viventis*. Before that time, the person who is next in the line of succession is called an *heir apparent* or *heir presumptive*. Heirs apparent are such whose right of inheritance is indefeasible, provided they outlive the ancestor; as the eldest son or his issue, who must, by the course of the common law, be heirs to the father whenever he happens to die. Heirs presumptive are such, who, if the ancestor should die immediately, would in the present circumstances of things be his heirs; but whose right of inheritance may be defeated by the contingency of some nearer heir being born: as a brother or nephew, whose presumptive succession may be destroyed by the birth of a child: or a daughter, whose present hopes may be hereafter cut off by the birth of a son. Nay, even if the estate hath descended, by the death of the owner, to such a brother, or nephew, or daughter; in the former cases, the estate shall be devested and taken away by the birth of a posthumous child; and, in the latter, it shall also be totally divested by the birth of a posthumous son.

We must also remember, that no person can be properly such an ancestor as that an inheritance in lands or tenements can be derived from him, unless he hath had actual seisin of such lands, either by his own entry, or by the possession of his own or his ancestor's lessee for years, or by receiving rent from a lessee of the freehold: or unless he hath what is equivalent to corporal seisin in hereditaments that are incorporeal; such as the receipt of rent, a presentation to the church in case of an advowson, and the like. But he shall not be accounted an ancestor who hath had only a bare right or title to enter or be otherwise seized. And therefore all the cases which will be mentioned in the present article, are upon the supposition that the deceased (whose inheritance is now claimed) was the last person actually seized thereof. For the law requires this notoriety of possession, as evidence that the ancestor had that property in himself, which is now to be transmitted to his heir. Which notoriety hath succeeded in the place of the ancient feudal investiture, whereby, while feuds were precarious, the vassal on the descent of lands was formerly admitted in the lord's court (as is still the practice in Scotland); and therefore received his seisin, in the nature of a renewal of his ancestor's grant, in the presence of the feudal peers: till at length, when the right of succession became indefeasible, an entry on any part of the lands within the county (which if disputed was afterwards to be tried by those peers), or other notorious possession, was admitted as equivalent to the formal grant of seisin, and made the tenant capable of transmitting his estate by descent. The seisin therefore of any person, thus understood, makes him the root or stock from which all future inheritance by right of blood must be derived; which is very briefly expressed in this maxim, *seisina facit stirpem*.

When therefore a person dies so seized, the inheritance first goes to his issue: as if there be Geoffrey, John, and Matthew, grandfather, father, and son; and John purchases land, and dies; his son Matthew shall succeed him as heir, and not the grandfather Geoffrey; to whom the land shall never ascend, but shall rather escheat to the lord.

2. "The male issue shall be admitted before the female."—Thus sons shall be admitted before daughters; or, as our male lawgivers have somewhat uncomplaisantly expressed it, the worthiest of blood shall be preferred. As if John Stiles hath two sons, Matthew and Gilbert, and two daughters, Margaret and Charlotte, and dies; first Matthew, and (in case of his death without issue) then Gilbert, shall be admitted to the succession in preference to both the daughters.

3. "Where there are two or more males in equal degree, the eldest only shall inherit; but the females all together."—As if a man hath two sons, Matthew and Gilbert, and two daughters, Margaret and Charlotte, and dies; Matthew his eldest son shall alone succeed to his estate, in exclusion of Gilbert the second son and both the daughters; but if both the sons die without issue before the father, the daughters Margaret and Charlotte shall both inherit the estate as coparceners.

4. "The lineal descendants, *in infinitum*, of any person deceased, shall represent their ancestor; that is, shall stand in the same place as the person himself would have done had he been living."—Thus the child, grandchild, or great-grandchild (either male or female), of the eldest son, succeeds before the younger son, and so *in infinitum*. And these representatives shall take neither more nor less, but just so much as their principals would have done. As if there be two sisters, Margaret and Charlotte; and Margaret dies, leaving six daughters; and then John Stiles the father of the two sisters dies without other issue: these six daughters shall take among them exactly the same as their mother Margaret would have done had she been living; that is, a moiety of the lands of John Stiles in coparcenary: so that, upon partition made, if the land be divided into twelve parts, thereof Charlotte the surviving sister shall have six, and her six nieces, the daughters of Margaret, one a-piece.

5. "On failure of lineal descendants, or issue, of the person last seized, the inheritance shall descend to the blood of the first purchaser; subject to the three preceding rules."—Thus, if Geoffrey Stiles purchases land, and it descends to John Stiles his son, and John dies seized thereof without issue; whoever succeeds to this inheritance must be of the blood of Geoffrey the first purchaser of this family. The first purchaser, *perquisitor*, is he who first acquired the estate to his family, whether the same was transferred to him by sale, or by gift, or by any other method, except only that of descent.

6. "The collateral heir of the person last seized must be his next collateral kinsman of the whole blood."

First, he must be his next collateral kinsman either personally or *jure representationis*; which proximity is reckoned according to the canonical degrees of consanguinity: See CONSANGUINITY. Therefore, the brother being in the first degree, he and his descendants shall exclude the uncle and his issue, who is only

Descent.

in the second.—Thus if John Stiles dies without issue, his estate shall descend to Francis his brother, who is lineally descended from Geoffrey Stiles his next immediate ancestor or father. On failure of brethren or sisters and their issue, it shall descend to the uncle of John Stiles, the lineal descendant of his grandfather George; and so on *in infinitum*.

But, secondly, the heir need not be the nearest kinsman absolutely, but only *sub modo*; that is, he must be the nearest kinsman of the *whole* blood: for if there be a much nearer kinsman of the *half* blood, a distant kinsman of the whole blood shall be admitted, and the other entirely excluded.—A kinsman of the whole blood is he that is derived, not only from the same ancestor, but from the same couple of ancestors. For as every man's own blood is compounded of the bloods of his respective ancestors, he only is properly of the whole or entire blood with another who hath (so far as the distance of degrees will permit) all the same ingredients in the composition of his blood that the other hath. Thus, the blood of John Stiles being composed of those of Geoffrey Stiles his father, and Lucy Baker his mother, therefore his brother Francis, being descended from both the same parents, hath entirely the same blood with John Stiles; or he is his brother of the whole blood. But if, after the death of Geoffrey, Lucy Baker the mother marries a second husband, Lewis Gay, and hath issue by him: the blood of this issue, being compounded of the blood of Lucy Baker (it is true) on the one part, but that of Lewis Gay (instead of Geoffrey Stiles) on the other part, it hath therefore only half the same ingredients with that of John Stiles; so that he is only his brother of the half blood, and for that reason they shall never inherit to each other. So also, if the father has two sons, A and B, by different venters or wives; now these two brethren are not brethren of the whole blood, and therefore shall never inherit to each other, but the estate shall rather escheat to the lord. Nay, even if the father dies, and his lands descend to his eldest son A, who enters thereon, and dies seised without issue; still B shall not be heir to this estate, because he is only of the half blood to A, the person last seised: but had A died without entry, then B might have inherited: not as heir to A his half-brother, but as heir to their common father, who was the person last actually seised.

The rule then, together with its illustration, amounts to this, That in order to keep the estate of John Stiles as nearly as possible in the line of his purchasing ancestor, it must descend to the issue of the nearest couple of ancestors that have left descendants behind them; because the descendants of one ancestor only are not so likely to be in the line of that purchasing ancestor as those who are descended from two.

But here a difficulty arises. In the second, third, fourth, and every superior degree, every man has many couples of ancestors, increasing according to the distances in a geometrical progression upwards, the descendants of all which respective couples are (representatively) related to him in the same degree. Thus, in the second degree, the issue of George and Cecilia Stiles and of Andrew and Esther Baker, the two grandfathers and grandmothers of John Stiles, are each in the same degree of propinquity; in the third degree, the respective issues of Walter and Christian Stiles, of

Luke and Francis Kempe, of Herbert and Hannah Baker, and of James and Emma Thorpe, are (upon the extinction of the two inferior degrees) all equally intitled to call themselves the next kindred of the whole blood to John Stiles. To which therefore of these ancestors must we first resort in order to find out descendants to be preferably called to the inheritance? In answer to this, and to avoid the confusion and uncertainty that might arise between the several stocks wherein the purchasing ancestor may be sought for,——

7. The seventh and last rule or canon is, “That in collateral inheritances the male stocks shall be preferred to the female (that is, kindred derived from the blood of the male ancestors shall be admitted before those from the blood of the female);—unless where the lands have in fact descended from a female.”—Thus the relations on the father's side are admitted *in infinitum*, before those on the mother's side are admitted at all; and the relations of the father's father, before those of the father's mother; and so on.

For the original and progress of the above canons, the reasons upon which they are founded, and their agreement with the laws of other nations, the curious reader may consult *Blackstone's Commentaries*, Vol. II. p. 208—237.

We shall conclude with exemplifying the rules themselves by a short sketch of the manner in which we must search for the heir of a person, as John Stiles, who dies seised of land which he acquired, and which therefore he held as a feud of indefinite antiquity. See the *Table of DESCENTS* on Plate CLVI.

In the first place succeeds the eldest son, Matthew Stiles, or his issue, (n^o 1.):—if his line be extinct, then Gilbert Stiles and the other sons respectively, in order of birth, or their issue, (n^o 2.):—in default of these, all the daughters together, Margaret and Charlotte Stiles, or their issue, (n^o 3.)—On failure of the descendants of John Stiles himself, the issue of Geoffrey and Lucy Stiles, his parents, is called in: *viz.* first, Francis Stiles, the eldest brother of the whole blood, or his issue, (n^o 4.):—then Oliver Stiles, and the other whole brothers respectively, in order of birth, or their issue, (n^o 5.):—then the sisters of the whole blood all together, Bridget and Alice Stiles, or their issue, (n^o 6.)—In defect of these, the issue of George and Cecilia Stiles, his father's parents; respect being still had to their age and sex, (n^o 7.):—then the issue of Walter and Christian Stiles, the parents of his paternal grandfather, (n^o 8.):—then the issue of Richard and Anne Stiles, the parents of his paternal grandfather's father, (n^o 9.):—and so on in the paternal grandfather's paternal line, or blood of Walter Stiles, *in infinitum*. In defect of these, the issue of William and Jane Smith, the parents of his paternal grandfather's mother, (n^o 10.):—and so on in the paternal grandfather's maternal line, or blood of Christian Smith, *in infinitum*; till both the immediate bloods of George Stiles, the paternal grandfather, are spent.—Then we must resort to the issue of Luke and Frances Kempe, the parents of John Stiles's paternal grandmother, (n^o 11.):—then to the issue of Thomas and Sarah Kempe, the parents of his paternal grandmother's father, (n^o 12.):—and so on in the paternal grandmother's paternal line, or blood of Luke Kempe, *in infinitum*. In default of which,

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which, we must call in the issue of Charles and Mary Holland, the parents of his paternal grandmother's mother, (n^o 13.): and so on in the paternal grandmother's maternal line, or blood of Frances Holland, *in infinitum*; till both the immediate bloods of Cecilia Kempe, the paternal grandmother, are also spent.— Whereby the paternal blood of John Stiles entirely failing, recourse must then, and not before, be had to his maternal relations; or the blood of the Bakers, (n^o 14, 15, 16.), Willis's (n^o 17.), Thorpe's (n^o 18, 19.), and White's (n^o 20.); in the same regular successive order as in the paternal line.

The student should bear in mind, that during this whole process, John Stiles is the person supposed to have been last actually seized of the estate. For if ever it comes to rest in any other person, as heir to John Stiles, a new order of succession must be observed upon the death of such heir; since he, by his own seisin, now becomes himself an ancestor, or *stipes*, and must be put in the place of John Stiles. The figures therefore denote the order in which the several classes would succeed to John Stiles, and not to each other: and before we search for an heir in any of the higher figures, (as n^o 8.) we must be first assured that all the lower classes (from n^o 1 to 7.) were extinct at John Stiles's decease.

DESCENT, or *Succession*, in the law of Scotland. See LAW, Part III. N^o clxxx. clxxxi.

DESCENT of the Crown. See SUCCESSION.

DESCENT of Dignities. A dignity differs from common inheritances, and goes not according to the rules of the common law: for it descends to the half-blood; and there is no coparcenership in it, but the eldest takes the whole. The dignity of peerage is personal, annexed to the blood; and so inseparable, that it cannot be transferred to any person, or surrendered even to the crown: it can move neither forward nor backward, but only downward to posterity; and nothing but corruption of blood, as if the ancestor be attainted of treason or felony, can hinder the descent to the right heir.

DESCENT, in genealogy, the order or succession of descendants in a line or family; or their distance from a common progenitor: Thus we say, one descent, two descents, &c.

DESCENT, in heraldry, is used to express the coming down of any thing from above; as, a lion *en descent* is a lion with his head towards the base points, and his heels towards one of the corners of the chief, as if he were leaping down from some high place.

DESCHAMPS (Francis), a French poet, born in Champagne, was the author of a tragedy intitled *Cato of Utica*, and a history of the French theatre. He died at Paris in 1747.

DESCRIPTION, in literary composition, is such a strong and beautiful representation of a thing, as gives the reader a distinct view and satisfactory notion of it. See NARRATION and Description.

DESEADA, or DESIDERARA, one of the Caribbee islands, subject to France, lying eastward of Guadaloupe.

DESERT, or DESART. See DESART.

DESERTER, in a military sense, a soldier who, by running away from his regiment or company, abandons the service.

A deserter is, by the articles of war, punishable by

death; which, after conviction, is executed upon him at the head of the regiment he formerly belonged to, with his crime written on his breast.

DESERTION, in law. See LAW, N^o clx. 24.

DESHABILLE, a French term, naturalized of late. It properly signifies a night-gown, and other necessaries, made use of in dressing or undressing. Mr — is not to be spoken with, he is yet in his *deshabille*, i. e. undressed or in his night-gown. The word is compounded of the privative *de* and *s'habiller*, "to dress one's self."

DESHACHE, in heraldry, is where a beast has its limbs separated from its body, so that they still remain on the escutcheon, with only a small separation from their natural places.

DESIDERATUM, is used to signify the desirable perfections in any art or science: thus, it is a desideratum with the blacksmith, to render iron fusible by a gentle heat, and yet preserve it hard enough for ordinary uses; with the glassman and looking-glass maker, to render glass malleable; with the clock-maker, to bring pendulums to be useful where there are irregular motions, &c.

DESIGN, in a general sense, the plan, order, representation, or construction of a building, book, painting, &c. See ARCHITECTURE, PAINTING, POETRY, ORATORY, and HISTORY.

DESIGN, in the manufactories, expresses the figures wherewith the workman enriches his stuff or silk, and which he copies after some painter or eminent draughtsman, as in diaper, damask, and other flowered silk and tapestry, and the like.

In undertaking of such kinds of figured stuffs, it is necessary, says Mons. Savary, that, before the first stroke of the shuttle, the whole design be represented on the threads of the warp, we do not mean in colours, but with an infinite number of little packthreads, which, being disposed so as to raise the threads of the warp, let the workmen see, from time to time, what kind of silk is to be put in the eye of the shuttle for wool. This method of preparing the work is called *reading the design*, and *reading the figure*, which is performed in the following manner: A paper is provided, considerably broader than the stuff, and of a length proportionate to what is intended to be represented thereon. This they divide lengthwise, by as many black lines as there are intended threads in the warp; and cross these lines, by others drawn breadthwise, which, with the former, make little equal squares; on the paper thus squared, the draughtsman designs his figures, and heightens them with colours as he sees fit. When the design is finished, a workman reads it, while another lays it on the simblot.

To read the design, is to tell the person who manages the loom, the number of squares or threads comprised in the space he is reading, intimating at the same time, whether it is ground or figure. To put what is read on the simblot, is to fasten little strings to the several packthreads, which are to raise the threads named; and this they continue to do till the whole design is read.

Every piece being composed of several repetitions of the same design, when the whole design is drawn, the drawer, to re-begin the design afresh, has nothing to do but to raise the little strings, with slip-knots, to the

Desertion
||
Design.

Design.

top of the simblot, which he had let down to the bottom: this he is to repeat as often as is necessary till the whole be manufactured.

The ribbon-weavers have likewise a design, but far more simple than that now described. It is drawn on paper with lines and squares, representing the threads of the warp and woof. But instead of lines, whereof the figures of the former consist, these are constituted of points only, or dots, placed in certain of the little squares formed by the intersection of the lines. These points mark the threads of the warp that are to be raised, and the spaces left blank denote the threads that are to keep their situation: the rest is managed as in the former.

DESIGN is also used, in painting, for the first idea of a large work, drawn roughly, and in little, with an intention to be executed and finished in large.

In this sense, it is the simple contour or outlines of the figures intended to be represented, or the lines that terminate and circumscribe them: such design is sometimes drawn in crayons or ink, without any shadows at all; sometimes it is hatched, that is, the shadows are expressed by sensible outlines, usually drawn across each other with the pen, crayon, or graver. Sometimes, again, the shadows are done with the crayon rubbed so as that there do not appear any lines: at other times, the grains or stroke of the crayon appear, as not being rubbed: sometimes the design is washed, that is, the shadows are done with a pencil in Indian ink, or some other liquor; and sometimes the design is coloured, that is, colours are laid on much like those intended for the grand work.

DESIGN, in music, is justly defined by Rousseau to be the invention and the conduct of the subject, the disposition of every part, and the general order of the whole.

It is not sufficient to form beautiful airs, and a legitimate harmony; all these must be connected by a principal subject, to which all the parts of the work relate, and by which they become one. Thus unity ought to prevail in the air, in the movement, in the character, in the harmony, and in the modulation. All these must indispensably relate to one common idea which unites them. The greatest difficulty is, to reconcile the observation of those precepts with an elegant variety, which, if not introduced, renders the whole piece irksome and monotonous. Without question, the musician, as well as the poet and the painter, may risk every thing in favour of this delightful variety; if, under the pretext of contrasting, they do not endeavour to cheat us with false appearances, and instead of pieces justly and happily planned, present us with a musical minced-meat, composed of little abortive fragments, and of characters so incompatible, that the whole assembled forms a heterogeneous monster.

*Non ut placidis coeant immitia, non ut
Serpentes avibus gimentur, tigribus agni.*

Translated thus:

But not that nature should revers'd appear;
Mix mild with fierce, and gentle with severe;
Profane her laws to contradiction's height;
Tygers with lambs, with serpents birds unite.

It is therefore in a distribution formed with intelligence and taste, in a just proportion between all the parts, that the perfection of design consists; and it is

above all, in this point, that the immortal Pergolesi has shown his judgment and his taste, and has left so far behind him all his competitors. His *Stabat Mater*, his *Orfeo*, his *Serva Padrona*, are, in three different species of composition, three masterpieces of design equally perfect.

This idea of the general design of a work is likewise particularly applicable to every piece of which it consists; thus the composer plans an air, a duett, a chorus, &c. For this purpose, after having invented his subject, he distributes it, according to the rules of a legitimate modulation, into all the parts where it ought to be perceived, in such a proportion, that its impression may not be lost on the minds of the audience; yet that it may never be reiterated in their ears, without the graces of novelty. The composer errs in designing who suffers his subject to be forgot; he is still more culpable who pursues it till it becomes trite and tiresome.

DESIGNATION, the act of marking or indicating, and making a thing known. The designation of such an estate is made by the tenants, butments, and boundings. Among the Romans, there were designations of the consuls and other magistrates, some time before their election.

DESIGNATOR, a Roman officer, who assigned and marked each person his place and rank in public ceremonies, shows, processions, &c. The word is formed from the verb *designare*, to design.

The designator was a kind of marshal, or master of the ceremonies, who regulated the seats, march, order, &c. There were designators at funeral solemnities, and at the games, theatres, and shows, who not only assigned every one his place, but also led him to it; as appears from the prologue to the *Pœnulus* of Plautus. Much of the same nature were the *agonothetae* of the Greeks.

DESIGNING, the art of delineating or drawing the appearance of natural objects, by lines, on a plane. To design, according to the rules of mathematics, makes the object of perspective. See PERSPECTIVE.

DESSPORTES (Francis), a French painter of the 18th century, was born in Champagne in 1661. He acquired great reputation, not only in France, but in England and Poland: he particularly excelled in still life. He was received into the academy of painting, made pictures for the tapestry of the Gobelins, and died at Paris in 1743.

DESPOT, a term sometimes used for an absolute prince: (see the next article). The word, in its first origin, signified the same with the Latin *herus*, and the English *master*: but in time it underwent the same fate on medals, as, among the Latins, Cæsar did with regard to Augustus; ΒΑΣΙΛΕΥΣ answering to Augustus, and ΔΕΣΠΟΤΗΣ, *despotes*, to Cæsar. See CÆSAR. Thus, Nicephorus having ordered his son Stauracius to be crowned, the son, out of respect, would only take the name ΔΕΣΠΟΤΗΣ, leaving to his father that of ΒΑΣΙΛΕΥΣ. For it is to be noted, that it was just about the time that the emperors began to cease to use Latin inscriptions. This delicacy, however, did not last long; for the following emperors preferred the quality of ΔΕΣΠΟΤΗΣ to that of ΒΑΣΙΛΕΥΣ, particularly Constantine, Michael Ducas, Nicephorus Botoniates, Romanus Diogenes, the Comneni, and some others. In imitation

Delight
tion
De-foot.

Despot
Defultor.

imitation of the princes, the princesses likewise assumed the title of ΔΕΣΠΟΙΝΑ.

It was the emperor Alexius, surnamed the Angel, that created the dignity of despot, and made it the first after that of emperor, above that of Augustus or Sebastocrator and Cæsar. See AUGUST.

The despots were usually the emperors sons or sons-in-law, and their colleagues or copartners in the empire, as well as their presumptive heirs. The despots that were sons of the emperors had more privileges and authority than those that were only sons-in-law. Codin. p. 38. describes the habit and ornaments of the despot. See the notes of father Goar on that author. Under the successors of Constantine the Great, the title *despot of Sparta* was given to the emperor's son or brother, who had the city of Sparta or Lacedæmon by way of apannage.

DESPOT is at present a title of quality given to Wallachia, Servia, and some of the neighbouring countries.

DESPOTICAL, in general, denotes any thing that is uncontrolled and absolute; but is particularly used for an arbitrary government, where the power of the prince is unlimited, and his will a law to his subjects: such are those of Turkey, Persia, and most of the eastern governments; and even those of Europe, if we except the republics, our own, and of late the French government.

DESPOUILLE, in heraldry, the whole case, skin, or slough of a beast, with the head, feet, tail, and all appurtenances, so that being filled and stuffed it looks like the entire creature.

DESPREAUX. See BOILEAU.

DESSAW, a city of Upper Saxony, in Germany, situated on the river Elbe, 60 miles north-west of Dresden, and subject to the prince of Anhalt Dessaw. E. Long. 12. 40. N. Lat. 51. 50.

DESSERT, or DESERT, a service of fruits and sweetmeats, usually served up last to table.

DESSICATIVE, or DESICCATIVE, in pharmacy, an epithet applied to such topical medicines as dry up the humours flowing to a wound or ulcer.

DESTINIES, in mythology. See PARCÆ.

DESTINY, among philosophers and divines. See FATE.

DESTRUCTION, in general, an alteration of any thing from its natural state to one contrary to nature; whereby it is deemed the same with CORRUPTION.

A chemical destruction, or corruption, is nothing but a resolution of the whole naturally mixt body into its parts.

DESUDATION, in medicine, a profuse and inordinate sweat, succeeded by an eruption of pustules, called *sudamina*, or *heat pimples*.

DESULTOR, in antiquity, a vaulter or leaper, who, leading one horse by the bridle, and riding another, jumped from the back of one to the other, as the custom was after they had run several courses or heats. — This practice required great dexterity, being performed before the use of either saddles or stirrups. The custom was practised in the army when necessity required it; but chiefly amongst the Numidians, who always carried with them two horses at least for that purpose, changing them as they tired. The Greeks and Romans borrowed the practice from them; but only used it at races, games, &c. The Sarmatæ were
N^o 100.

great masters of this exercise, and the Hussars have still some small remains of it.

DETACHMENT, in military affairs, a certain number of soldiers drawn out from several regiments or companies equally, to be employed as the general thinks proper, whether on an attack, at a siege, or in parties to scour the country.

DETENTION (from *detineo* "I detain"), the possession or holding of lands, or the like, from some other claimant. The word is chiefly used in an ill sense, for an unjust with-holding, &c.

DETENTS, in a clock, are those stops which, by being lifted up or let fall down, lock and unlock the clock in striking.

DETENT-Wheel, or *Hoop-wheel*, in a clock, that wheel which has a hoop almost round it, wherein there is a vacancy, at which the clock locks.

DETERGENTS, in pharmacy, such medicines as are not only softening and adhesive, but also, by a peculiar activity, conjoined with a suitable configuration of parts, are apt to abrade and carry along with them such particles as they lay hold on in their passage.

DETERIORATION, the impairing or rendering any thing worse: it is just the reverse of melioration.

DETERMINATION, in mechanics, signifies much the same with the tendency or direction of a body in motion. See MECHANICS.

DETERMINATION, among school-divines, is an act of divine power, limiting the agency of second causes, in every instance, to what the Deity predestinated concerning them. See PREDESTINATION.

DETERSIVES, the same with DETERGENTS.

DETINUE, in law, a writ or action that lies against one who has got goods or other things delivered to him to keep, and afterwards refuses to deliver them. — In this action, the thing detained is generally to be recovered, and not damages; but if one cannot recover the thing itself, he shall recover damages for the thing, and also for the detainer. Detinue lies for any thing certain and valuable, wherein one may have a property or right; as for a horse, cow, sheep, hens, dogs, jewels, plate, cloth, bags of money, sacks of corn, &c. It must be laid so certain, that the thing detained may be known and recovered: and therefore, for money out of a bag, or corn out of a sack, &c. it lies not; for the money or corn cannot in this case be known from other money or corn; so that the party must have an action on the case, &c. Yet detinue may be brought for a piece of gold of the price of 22 s. though not for 22 s. in money.

DETONATION, in chemistry, signifies an explosion with noise made by the sudden inflammation of some combustible body: Such are the explosions of *gun-powder*, *fulminating gold*, and *fulminating powder*. As nitre is the cause of most explosions, the word *detonation* has been appropriated to the inflammation of the acid of this salt with bodies containing phlogiston; and it is frequently given to those inflammations of nitrous acid which are not accompanied with explosion. Thus nitre is said to detonate with sulphur, with coals, with metals; although in the ordinary method of making these operations, that is, in open crucibles, and with small quantities of detonating substances, the nitre does not truly explode. See NITRE.

DETRANCHE, in heraldry, a line bend-wise, pro-

Detach-
ment
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Detranche.

Dettingen
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Deucalion.

proceeding always from the dexter-side, but not from the very angle diagonally athwart the shield.

DETTINGEN, a village of Germany, in the circle of the Upper Rhine, and in the territory of Hanau. Here the Austrians and the British, in June 1743, were attacked by the French, who met with a repulse; but as the allies were inferior in number, they could not make the advantage of it they might otherwise have done. E. Long. 8. 45. N. Lat. 50. 8.

DEVA, or DEUNA (anc. geog.), a town of the Cornavii in Britain. Now *Chester*, on the Dee. W. Long. 3. Lat. 53. 15.

DEUCALEDONIUS OCEANUS, or (which comes nearer the original pronunciation) *Duacaledonius*, so called from *Duab Gael*, the northern Highlanders: the sea on the north-west of Scotland.

DEUCALION, king of Thessaly. The flood said to have happened in his time (1500 B. C.), is supposed to have been only an inundation of that country, occasioned by heavy rains, and an earthquake that stopped the course of the river Peneus where it usually discharged itself into the sea. On these circumstances the fable of Deucalion's flood is founded.—According to the fable, he was the son of Prometheus. He governed his people with equity; but the rest of mankind being extremely wicked, were destroyed by a flood, while Deucalion and Pyrrha his queen saved themselves by ascending mount Parnassus. When the waters were decreased, they went and consulted the oracle of Themis, on the means by which the earth was to be re-peopled; when they were ordered to veil their heads and faces, to unloose their girdles, and throw behind their backs the bones of their great mother. At this advice Pyrrha was seized with horror: but Deucalion explained the mystery, by observing, that their great mother must mean the earth, and her bones the stones; when taking them up, those Deucalion threw over his head became men, and those thrown by Pyrrha, women.

Some have supposed that Deucalion, whom the Greeks have represented under a variety of characters, and concerning whom their poets have given many fabulous accounts, was the same with the patriarch Noah; and that Deucalion's flood in Thessaly, as well as that of Ogyges in Attica, and of Prometheus in Egypt, were the same with that of Noah recorded in scripture. Diodorus Siculus expressly says, that in the deluge which happened in the time of Deucalion almost all flesh died. Apollodorus having mentioned Deucalion *εν λαρυακις*, "consigned to an ark," takes notice, upon his quitting it, of his offering up an immediate sacrifice, *Διι θυζια*, "to the God who delivered him." As he was the father of all mankind, the ancients have given him great dignity and universal monarchy; though sometimes he is reduced to a petty king of Thessaly. Apollonius Rhodius makes him a native of Greece, and the son of Prometheus. We may learn, however, from their confused history, that the person represented was the first of men, through whom religious rites were renewed, cities built, and civil polity established in the world: none of which circumstances are applicable to any king of Greece. Philo assures us, that the Grecians call the person Deucalion, but the Chaldeans style him Noe, in whose time there happened the great eruption of waters.

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But as Lucian has given us the most particular history of the deluge, and that which comes nearest to the account given by Moses; and as he was a native of Samosata, a city of Commagene upon the Euphrates, a part of the world where memorials of the deluge were particularly preserved, and where an obvious reference to that history may be observed in the rites and worship of the country, we shall give the following extract of what he says on the subject. Having described Noah under the name of Deucalion, he says, that the present race of mankind are different from those who first existed; for those of the antediluvian world were all destroyed. The present world is peopled from the sons of Deucalion; having increased to so great a number from one person. In respect to the former brood, they were men of violence, and lawless in their dealings. They regarded not oaths, nor observed the rites of hospitality, nor showed mercy to those who sued for it. On this account they were doomed to destruction; and for this purpose there was a mighty eruption of waters from the earth, attended with heavy showers from above; so that the rivers swelled, and the sea overflowed, till the whole earth was covered with a flood, and all flesh drowned. Deucalion alone was preserved to repeople the world. This mercy was shown to him on account of his justice and piety. His preservation was effected in this manner: he put all his family, both his sons and their wives, into a vast ark which he had provided, and he went into it himself. At the same time animals of every species, boars, horses, lions, serpents, whatever lived upon the face of the earth, followed him by pairs; all which he received into the ark, and experienced no evil from them; for there prevailed a wonderful harmony throughout by the immediate influence of the Deity. Thus were they waisted with him as long as the flood endured. After this he proceeds to mention, that upon the disappearing of the waters Deucalion went forth from the ark and raised an altar to God.

Dr Bryant produces a variety of monuments that bear an obvious reference to the deluge in the Gentile history, besides this account of Deucalion and his flood, *Analysis of Ancient Mythology*, vol. ii. p. 193—250.

DEVENSHRING. See DEVONSHERRING.

DEVENTER, a large, strong, trading, and populous town of the United Provinces in Overyssel, with an university. It is surrounded with strong walls, flanked with several towers, and with ditches full of water. It is seated on the river Issel, 55 miles east of Amsterdam, and 42 west of Benthem. E. Long. 5. 8. N. Lat. 52. 18.

DEVEREUX (Robert), earl of Essex, the son of Walter Devereux, viscount Hereford, was born at Netherwood in Herefordshire, in the year 1567. He succeeded to the title of earl of Essex at ten years of age; and about two years after, was sent, by his guardian lord Burleigh, to Trinity-college in Cambridge. He took the degree of master of arts in 1582, and soon after retired to his seat at Lampsie in South-Wales. He did not however continue long in this retreat; for we find him, in his seventeenth year, at the court of queen Elizabeth, who immediately honoured him with singular marks of her favour. Authors seem very unnecessarily perplexed to account for this young earl's

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gracious

Deucalion
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Devereux.
De Dea Syria, vol. ii. p. 882.

Devereux. gracious reception at the court of Elizabeth. The reasons are obvious: he was her relation, the son of one of her most faithful servants, the son-in-law of her favourite Leicester, and a very handsome and accomplished youth. Towards the end of (the following year) 1585, he attended the earl of Leicester to Holland; and gave signal proofs of his personal courage during the campaign of 1586, particularly at the battle of Zutphen, where the gallant Sidney was mortally wounded. On this occasion the earl of Leicester conferred on him the honour of knight banneret.

In the year 1587, Leicester being appointed lord steward of the household, Essex succeeded him in the honourable post of master of the horse; and the year following, when the queen assembled an army at Tilbury to oppose the Spanish invasion, Essex was made general of the horse. From this time he was considered as the happy favourite of the queen. And, if there was any mark yet wanting to fix the people's opinion in that respect, it was shown by the queen's conferring on him the honour of the garter.

We need not wonder, that so quick an elevation, and to so great a height, should affect so young a man as the earl of Essex; who showed from henceforward a very high spirit, and often behaved petulantly enough to the queen herself, who yet did not love to be controlled by her subjects. His eagerness about this time to dispute her favour with Sir Charles Blunt, afterwards lord Montjoy and earl of Devonshire, cost him some blood; for Sir Charles, thinking himself affronted by the earl, challenged him, and after a short dispute, wounded him in the knee. The queen, so far from being displeased with it, is said to have sworn a good round oath, that it was fit somebody should take him down, otherwise there would be no ruling him. However, she reconciled the rivals; who, to their honour, continued good friends as long as they lived.

The gallant Essex, however, was not so entirely captivated with his situation, as to become insensible to the allurements of military glory. In 1589, Sir John Norris and Sir Francis Drake having failed on an expedition against Spain, our young favourite, without the permission or knowledge of his royal mistress, followed the fleet; which he joined as they were sailing towards Lisbon, and acted with great resolution in the repulse of the Spanish garrison of that city. The queen wrote him a very severe letter on the occasion; but she was, after his return, soon appeased. Yet it was not long before he again incurred her displeasure, by marrying the widow of Sir Philip Sidney. In 1591, he was sent to France with the command of 4000 men to the assistance of Henry IV. In 1596, he was joined with the lord high admiral Howard in the command of the famous expedition against Cadiz, the success of which is universally known. In 1597, he was appointed master of the ordnance; and the same year commanded another expedition against Spain, called the *Island voyage*, the particulars of which are also well known.

Soon after his return, he was created earl marshal of England; and on the death of the great lord Burleigh, in 1598, elected chancellor of the university of Cambridge. This is reckoned one of the last instances of this great man's felicity, who was now advanced too high to sit at ease; and those who longed for his ho-

Devereux. nours and employments, very closely applied themselves to bring about his fall. The first great shock he received, in regard to the queen's favour, arose from a warm dispute between her majesty and himself, about the choice of some fit and able persons to superintend the affairs of Ireland. The affair is related by Camden; who tells us, that nobody was preferred but the lord admiral, Sir Robert Cecil secretary, and Windbank clerk of the seal. The queen looked upon Sir William Knolls, uncle to Essex, as the most proper person for that charge: Essex contended, that Sir George Carey was a much fitter man for it. When the queen could not be persuaded to approve his choice, he so far forgot himself and his duty, as to turn his back upon her in a contemptuous manner; which insolence her majesty not being able to bear, gave him a box on the ear, and bid him go and be hanged. Essex, like a blockhead, put his hand to his sword, and swore revenge. Where was his gallantry on this occasion? Could a stroke from an angry woman tinge the honour of a gallant soldier? This violent storm, however, soon subsided: and they were again reconciled, at least apparently.

The total reduction of Ireland being brought upon the tapis soon after, the earl was pitched upon as the only man from whom it could be expected. This was an artful contrivance of his enemies, who hoped by this means to ruin him; nor were their expectations disappointed. He declined this fatal preferment as long as he could: but, perceiving that he should have no quiet at home, he accepted it; and his commission for lord lieutenant passed the great seal on the 12th of March 1598. His enemies now began to insinuate, that he had sought this command, for the sake of greater things which he then was meditating; but there is a letter of his to the queen, preserved in the Harleian collections, which shows, that he was so far from entering upon it with alacrity, that he looked upon it rather as a banishment, and a place assigned him for a retreat from his sovereign's displeasure, than a potent government bestowed upon him by her favour.

To the Queen. From a mind delighting in sorrow;
 " from spirits wasted with passion; from a heart torn in
 " pieces with care, grief, and travail; from a man that
 " hateth himself, and all things else that keep him alive;
 " what service can your majesty expect, since any ser-
 " vice past deserves no more than banishment and pro-
 " scription to the cursedest of all islands? It is your
 " rebels pride and succession must give me leave to ran-
 " som myself out of this hateful prison, out of my
 " loathed body; which, if it happen so, your majesty
 " shall have no cause to dislike the fashion of my death,
 " since the course of my life could never please you.

" Happy he could finish forth his fate,
 " In some unhaunted desert most obscure
 " From all society, from love and hate
 " Of worldly folk; then should he sleep secure.
 " Then wake again, and yield God ever praise,
 " Content with hips, and hawes, and brambleberry;
 " In contemplation passing out his days,
 " And change of holy thoughts to make him merry.
 " Who, when he dies, his tomb may be a bush
 " Where harmless robin dwells with gentle thrust.

" Your Majesty's exiled servant,

" ROBERT ESSEX."
 The

Devereux.

The earl met with nothing in Ireland but ill success and crosses: in the midst of which, an army was suddenly raised in England, under the command of the earl of Nottingham; nobody well knowing why, but in reality from the suggestions of the earl's enemies to the queen, that he rather meditated an invasion on his native country, than the reduction of the Irish rebels. This and other considerations made him resolve to quit his post, and come over to England; which he accordingly did without leave. He burst into her majesty's bed-chamber as she was rising, and she received him with a mixture of tenderness and severity: but she, soon after, thought fit to deprive him of all his employments, except that of master of the horse. He was committed to the custody of the lord-keeper, with whom he continued six months. No sooner had he regained his liberty, than he was guilty of many extravagancies; to which he was instigated by knaves and fools, but perhaps more powerfully by his own passions. He first determined to obtain an audience of the queen by force. He refused to attend the council when summoned. When the queen sent the lord-keeper, the lord chief-justice, and two others, to know his grievances, he confined them; and then marched with his friends into the city, in expectation that the people would rise in his favour; but in that he was disappointed. He was at last besieged, and taken in his house in Essex-street; committed to the tower; tried by his peers, condemned, and executed. Thus did this brave man, this favourite of his queen, this idol of the people, fall a sacrifice to his want of that dissimulation, that cunning, that court-policy, by which his enemies were enabled to effect his ruin. He was a polite scholar, and a generous friend to literature.

To those who have not taken the trouble to consult and compare the several authors who have related the story of this unfortunate earl, it must appear wonderful, if, as hath been suggested, he was really beloved by queen Elizabeth, that she could consent to his execution. Now that she had conceived a tender passion for him, is proved beyond a doubt by Mr Walpole in his very entertaining and instructive *Catalogue of Noble Authors*.—"I am aware (says that author) that it is become a mode to treat the queen's passion for him as a romance. Voltaire laughs at it; and observes, that when her struggle about him must have been the greatest (the time of his death), she was sixty-eight.—Had he been sixty-eight, it is probable she would not have been in love with him."—"Whenever Essex acted a fit of sickness, not a day passed without the queen's sending often to see him; and once went so far as to sit long by him, and order his *broths and things*. It is recorded by a diligent observer of that court, that in one of his sick moods, he took the liberty of going up to the queen in his night-gown. In the height of these fretful fooleries, there was a mask at Black Fryars on the marriage of lord Herbert and Mrs Ruffel. Eight lady-masks chose eight more to dance the measures. Mrs Fitton, who led them, went to the queen, and wooed her to dance. Her majesty asked what she was? *Affection*, she said. *Affection!* said the queen; *Affection is false*. Were not these the murmurs of a heart ill at ease? Yet her majesty rose, and danced. She was then sixty-eight. Sure it was as natural for her to be in love."

Devereux.

Mr Walpole farther observes, that her court and contemporaries had an uniform opinion of her passion for Essex, and quotes several instances from a letter written by Sir Francis Bacon to the earl; in which, among other things, he advises him to consult her taste in his very apparel and gestures, and to give way to any other inclination she may have. Sir Francis advised the queen herself, knowing her inclination, to keep the earl about her for *society*. What Henry IV. of France thought of the queen's affection for Essex, is evident from what he said to her ambassador—"Que sa majesté ne laisseroit jamais son cousin d'Essex estoigner de son cotillon."—After his confinement, on hearing he was ill, she sent him word, with tears in her eyes, that if she might with her honour, she would visit him.

"If (says Mr Walpole) these instances are problematic, are the following so? In one of the curious letters of Rowland White, he says, *the queen hath of late used the fair Mrs Bridges with words and blows of anger*. In a subsequent letter, he says, *the earl is again fallen in love with his fairest B. It cannot choose but come to the queen's ear, and then he is undone*."—Essex himself says, that her fond parting with him when he set out for Ireland, pierced his very soul.

Probably the reader has now very little doubt as to queen Elizabeth's affection for the unfortunate Essex; but, in proportion to our belief of the existence of this affection, her motives for consenting to his execution become more inexplicable. Queen Elizabeth had a very high opinion of her beauty and personal attractions, and probably expected more entire adoration than the earl's passion for variety would suffer him to pay. Towards the latter end of her life, she was certainly an object of disgust. He had too much honest simplicity in his nature, to feign a passion which he did not feel. She foolishly gave credit to the stories of his ambitious projects incompatible with her safety; and was informed that he had once inadvertently said, that *she grew old and cankered, and that her mind was become as crooked as her carcase*. If this be true, was it the woman that would not sacrifice such a lover to her resentment?

It is said, however, that, concerning his execution, her majesty was irresolute to the last, and sent orders to countermand it; but, considering his obstinacy in refusing to ask her pardon, afterwards directed that he should die. It is reported, that the queen, in the height of her passion for the earl of Essex, had given him a ring, ordering him to keep it, and that whatever crime he should commit, she would pardon him when he should return that pledge. The earl, upon his condemnation, applied to admiral Howard's lady, his relation, desiring her, by a person whom she could trust, to return it into the queen's own hands; but her husband, who was one of the earl's greatest enemies, and to whom she had imprudently told the circumstance, would not suffer her to acquit herself of the commission; so that the queen consented to the earl's death, being full of indignation against so proud and haughty a spirit, who chose rather to die than implore her mercy. Some time after, the admiral's lady fell sick, and being near her death, she sent word to the queen that she had something of great consequence to communicate before she died. The queen came to her bedside, and having ordered all her attendants to withdraw, the lady returned,

Devise
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Devise.

turned, but too late, the ring, desiring to be excused that she did not return it sooner: on which, it is said, the queen immediately retired, overwhelmed with grief.

The earl of Effex died in the thirty-fourth year of his age; leaving by his lady one son and two daughters.

DEVICE, among painters. See DEVISE.

DEVIL (*Diabolus*), an evil angel, one of those celestial spirits cast down from heaven for pretending to equal himself with God. The Ethiopians paint the devil white, to be even with the Europeans who paint him black.

There is no mention of the word *devil* in the Old Testament, but only of the word *Satan* and *Belial*: nor do we meet with it in any heathen authors, in the sense it is taken among Christians, that is, as a creature revolted from God. Their theology went no farther than to evil genii or dæmons.

Some of the American idolaters have a notion of two collateral independent beings, one of whom is good, and the other evil; which last they imagine has the direction and superintendance of this earth, for which reason they chiefly worship him; whence those that give us an account of the religion of these savages give out, with some impropriety, that they worship the devil. The Chaldeans, in like manner, believed both a good principle and an evil one; which last they imagined was an enemy to mankind.

Isaiah, speaking, according to some commentators, of the fall of the devil, calls him *Lucifer*, from his former elevation and state of glory: but others explain this passage of Isaiah in reference to the king of Babylon, who had been precipitated from his throne and glory. The Arabians call *Lucifer*, *Ellis*; which some think is only a diminutive or corruption of the word *Diabolus*.

Devil on the Neck, a tormenting engine made of iron, straitening and wincing the neck of a man, with his legs together, in a horrible manner; so that the more he stirreth in it, the straiter it presseth him; formerly in use among the persecuting papists.

DEVINCTION (*Devinctio*), in antiquity, was used to signify a love-charm or incantation to gain the affection of a person beloved.

It was done by tying knots; and is thus described by Virgil in his eighth Eclogue:

*Necte tribus nodis ternos, Amarylli, colores:
Necte, Amarylli, modo; et Veneris, dic, vincula necto.*

DEVISE, or DEVICE, in heraldry, painting, and sculpture, any emblem used to represent a certain family, person, action, or quality; with a suitable motto, applied in a figurative sense. See MOTTO.

The essence of a device consists in a metaphorical similitude between the things representing and represented: thus, a young nobleman, of great courage and ambition, is said to have borne for his devise, in a late earousal at the court of France, a rocket mounted in the air, with this motto in Italian, "*poco duri purche m'inalzi*;" expressing, that he preferred a short life, provided he might thereby attain to glory and eminence.

The Italians have reduced the making of devises into an art, some of the principal laws of which are these,

Devise
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Devotion.

1. That there be nothing extravagant or monstrous in the figures. 2. That figures be never joined which have no relation or affinity with one another; excepting some whimsical unions established in ancient fables, which custom has authorized. 3. That the human body be never used. 4. The fewer figures the better. 5. The motto should be every way suitable.

DEVISE, in law, the act whereby a person bequeaths his lands or tenements to another by his last will or testament.

DEUNX, in Roman antiquity, 11 ounces, or $\frac{1}{2}$ of the LIBRA.

DEVOLVED, something acquired by right of devolution. Such a right is devolved to the crown: such an estate devolved on M— by the death of N—.

The word is also used for a right, acquired by a superior, of conferring a benefice, when the inferior and ordinary collator has neglected to confer, or has conferred it on an unqualified person.

If a patron neglects to present to a benefice in six months, the presentation lapses or devolves upon the bishop, from thence to the primate, and from thence to the king.

DEVOLUTION, in law, a right acquired by succession from one to another.

DEVONSHEERING, a term used by the farmers to express the burning of land by way of manure: the method is to cut off the turf about four inches thick, and burn it in heaps, and then spread the ashes upon the land. The name is probably derived from its having been earliest practised in Devonshire.

DEVONSHIRE, a county of England, bounded on the south by the English channel, on the north by the Bristol channel, on the east by Somersetshire, and on the west by Cornwall. It is about 69 miles long and 66 broad. The soil is various; in the western parts of the country it is coarse and moorish, bad for sheep, but proper for black cattle. In the northern parts, the dry soil and downs are well adapted to sheep, with numerous flocks of which they are well covered. Tolerable crops of corn are also produced there when the land is well manured. The soil of the rest of the country is rich and fertile both in corn and pasture, yielding also in some places plenty of marle for manuring it. In other places they pare off and burn the surface, making use of the ashes as a manure. Dr Campbell styles it a rich and pleasant country; as in different parts it abounds with all sorts of grain, produces abundance of fruit, has mines of lead, iron, and silver, in which it formerly exceeded Cornwall, though now it is greatly inferior. On the coast also they have herring and pilchard fisheries. Devonshire sends two members to parliament, and gives title of Duke to the noble family of Cavendish.

DEVOTION, DEVOTIO, a sincere ardent worship of the Deity.

Devotion, as defined by Jurieu, is a softening and yielding of the heart, with an internal consolation, which the souls of believers feel in the practice or exercise of piety. By devotion is also understood certain religious practices, which a person makes it a rule to discharge regularly; and with reason, if the exactitude be founded on solid piety, otherwise it is vanity or superstition,

Devotion. perfition. That devotion is vain and trifling, which would accommodate itself both to God and to the world. *Trevoux.*

The character of devotion has frequently suffered from the forbidding air which has been thrown over it, by the narrowness of bigotry on one hand, or the gloom of superstition on the other. When freer and more cheerful minds have not had occasion to see it accompanied with those feelings of delight and benevolence which naturally attend it, they are apt to be prejudiced against piety at large, by mistaking this ungracious appearance for its genuine form. Nor has the rant of vulgar enthusiasts contributed a little to beget or strengthen the same aversion, in persons of a cool and speculative temper; who have happened to meet with such images and phrases among religionists of a certain strain, as ill suit the rational, pure, and spiritual nature of true devotion. It may likewise be remarked on the other side, that people of taste and sensibility have not seldom been disgusted with the insipid style too often employed on such subjects, by those who possess neither, or who purposely avoid every thing of that kind, from an aim at simplicity misunderstood, or perhaps from a fear of being thought too warm, in an age of fashionable indifference and false refinement.

Wherever the vital and unadulterated spirit of Christian devotion prevails, its immediate object will be to please Him whom we were made to please, by adoring his perfections; by admiring his works and ways; by entertaining with reverence and complacence the various intimations of his pleasure, especially those contained in holy writ; by acknowledging our absolute dependence, and infinite obligations; by confessing and lamenting the disorders of our nature, and the transgressions of our lives; by imploring his grace and mercy through Jesus Christ; by interceding for our brethren of mankind; by praying for the propagation and embellishment of truth, righteousness, and peace on earth; in fine, by longing for a more entire conformity to the will of God, and breathing after the everlasting enjoyment of his friendship. The effects of such a spirit habitually cherished, and feelingly expressed before him, with conceptions more or less enlarged and elevated, in language more or less emphatical and accurate, sententious or diffuse, must surely be important and happy. Among these effects may be reckoned, a profound humility in the sight of God, a high veneration for his presence and attributes, an ardent zeal for his worship and honour, an affectionate faith in the Saviour of the world, a constant imitation of his divine example, a diffusive charity for men of all denominations, a generous and unwearied self-denial for the sake of virtue and society, a total resignation to Providence, an increasing esteem for the gospel, with clearer and firmer hopes of that immortal life which it has brought to light.

DEVOTION, among the Romans, was a kind of sacrifice or ceremony, whereby they consecrated themselves to the service of some person. The ancients had a notion, that the life of one might be ransomed by the death of another; whence those devotions became frequent for the lives of the emperors. Devotion to any particular person was unknown among the Romans till the time of Augustus. The very day after

the title of Augustus had been conferred upon Octavianus, Pacuvius, a tribune of the people, publicly declared, that he would devote himself to Augustus, and obey him at the expence of his life (as was the practice among barbarous nations), if he was commanded. His example was immediately followed by all the rest; till at length it became an established custom never to go to salute the emperor, without declaring that they were devoted to him.—Before this, the practice of the Romans was that of devoting themselves to their country. See DECIVS.

DEUTEROCANONICAL, in the school-theology, an appellation given to certain books of holy scripture, which were added to the canon after the rest; either by reason they were not wrote till after the compilation of the canon, or by reason of some dispute as to their canonicity. The word is Greek, being compounded of δευτερος *second*, and κανονικος *canonical*.

The Jews, it is certain, acknowledged several books in their canon, which were put there later than the rest. They say, that under Esdras, a great assembly of their doctors, which they call by way of eminence the *great Synagogue*, made the collection of the sacred books which we now have in the Hebrew Old Testament. And they agree that they put books therein which had not been so before the Babylonish captivity; such are those of Daniel, Ezekiel, Haggai, &c. and those of Esdras and Nehemiah.

And the Romish church has since added others to the canon, that were not, nor could not be, in the canon of the Jews; by reason some of them were not composed till after. Such is the book of Ecclesiasticus; with several of the apocryphal books, as the Maccabees, Wisdom, &c. Others were added still later, by reason their canonicity had not been yet examined; and till such examen and judgment they might be set aside at pleasure.—But since that church has pronounced as to the canonicity of these books, there is no more room now for her members to doubt of them, than there was for the Jews to doubt of those of the canon of Esdras. And the deuterocanonical books are with them as canonical as the proto-canonical; the only difference between them consisting in this, that the canonicity of the one was not generally known, examined, and settled, so soon as that of the others.

The deuterocanonical books in the modern canon, are the book of Esther, either the whole, or at least the seven last chapters thereof; the epistle to the Hebrews; that of James; and that of Jude; the second of St Peter; the second and third of St John; and the Revelation. The deuterocanonical parts of books, are, in Daniel, the hymn of the three children; the prayer of Azariah; the histories of Susannah, of Bel and the Dragon; the last chapter of St Mark; the bloody sweat, and the appearance of the angel, related in St Luke, chap. xxii; and the history of the adulterous woman in St John, chap. viii.

DEUTERONOMY, one of the sacred books of the Old Testament; being the last of those written by Moses: (See PENTATEUCH). The word is Greek, compounded of δευτερος *second*, and νομος *law*.

Deuteronomy was written the 40th year after the delivery from Egypt, in the country of the Moabites beyond Jordan; Moses being then in the 120th year of

Deutero-
potmi
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Dew.

of his age. It contains, in Hebrew, 11 paraches, though only 10 in the edition of the rabbins at Venice; XX chapters, and 955 verses. In the Greek, Latin, and other versions, it contains XXXIV chapters. The last is not of Moses. Some say it was added by Joshua immediately after Moses's death; which is the most probable opinion. Others will have it added by Esdras.

DEUTEROPOTMI, in Grecian antiquity, a designation given to such of the Athenians as had been thought dead, and, after the celebration of the funeral rites, unexpectedly recovered. It was unlawful for the deuteropotmi to enter into the temple of the Eumenides, or to be admitted to the holy rites, till after they were purified, by being let through the lap of a woman's gown, that they might seem to be new born.

DEUTEROSIS, the Greek name by which the Jews called their Mischnah, or second law. See MISCHNAH.

DEW, a dense, moist vapour, found on the earth in spring and summer mornings, in form of a misting rain, being collected there chiefly while the sun is below the horizon.

It hath been disputed whether the dew is formed from the vapours *ascending* from the earth during the night-time, or from the *descent* of such as have been already raised through the day. The most remarkable experiments adduced in favour of the first hypothesis are those of Mr Dufay of the Royal Academy of Sciences at Paris. He supposed, that if the dew *ascended*, it must wet a body placed low down sooner than one placed in a higher situation: and, if a number of bodies were placed in this manner, the lowermost would be wetted first; and the rest in like manner, gradually up to the top.

To determine this, he placed two ladders against one another, meeting at their tops, spreading wide asunder at the bottom, and so tall as to reach 32 feet high. To the several steps of these he fastened large squares of glass like the panes of windows, placing them in such a manner that they should not overshadow one another. On the trial it appeared exactly as Mr Dufay had apprehended. The lower surface of the lowest piece of glass was first wetted, then the upper, then the lower surface of the pane next above it; and so on, till all the pieces were wetted to the top. Hence it appeared plain to him, that the dew consisted of the vapours ascending from the earth during the night-time; which, being condensed by the coldness of the atmosphere, are prevented from being dissipated as in the day-time by the sun's heat. He afterwards tried a similar experiment with pieces of cloth instead of panes of glass, and the result was quite conformable to his expectations. He weighed all the pieces of cloth next morning, in order to know what quantity of water each had imbibed, and found those that had been placed lowermost considerably heavier than such as had been placed at the top; tho' he owns that this experiment did not succeed so perfectly as the former.

M. Muschenbroek, who embraced the contrary opinion, thought he had invalidated all Mr Dufay's proofs, by repeating his experiments, with the same success, on a plane covered with sheet-lead. But to this Mr Dufay replied, that there was no occasion for suppo-

sing the vapour to rise through the lead, nor from that very spot; but that as it arose from the adjoining open ground, the continual fluctuation of the air could not but spread it abroad, and carry it thither in its ascent.

But though this experiment of M. Muschenbroek's is not sufficient to overthrow those of Mr Dufay, it must still remain dubious whether the dew rises or falls. One thing which seems to favour the hypothesis of its descent is, that in cloudy weather there is little or no dew to be observed. From this M. de Luc brings an argument in favour of the hypothesis just now mentioned. He accounts for it in the following manner. When there were no clouds in the air, the heat of the inferior air and that which rises from the earth dissipates itself into the superior regions; and then the vapours which are dispersed throughout the air, condense, and fall down in dew: But, when the clouds continue, they separate the inferior from the superior part of the atmosphere, and thus prevent the dissipation of the heat, by which means the vapours remain suspended. When the sky grows cloudy, some hours after sun-set, although the heat has been sensibly diminished, it is again increased; because, continuing to rise out of the earth, it is accumulated in the inferior air. But neither can this be reckoned a positive proof of the descent of the dew; since we may as well suppose the heat of the atmosphere to be great enough to dissipate it in its ascent, as to keep it suspended after its ascent through the day.

On the other hand, its being found in greater quantities on bodies placed low down than on such as are high up, is no proof of the ascent of the dew; because the same thing is observed of rain. A body placed low down receives more rain than one placed in an elevated situation; and yet the rain certainly descends from the atmosphere. The reason why the dew appears first on the lower parts of bodies may be, that, in the evening, the lower part of the atmosphere is first cooled, and consequently most disposed to part with its vapour. It is also certain, that part of the water contained in the air may be condensed at any time on the sides of a glass, by means of cold, so as to run down its sides in small drops like dew. It seems, therefore, that this subject is not sufficiently determined by such experiments as have yet been made; nor indeed does it appear easy to make such experiments as shall be perfectly decisive on the matter.

Several substances, exposed to the same dew, receive and charge themselves with it in a very different manner; some more, others less, and some even not at all. The drops seem to make a sort of choice of what bodies they shall affix themselves to: glass and crystals are those to which they adhere in the most ready manner, and in the largest quantity; but metals of all kinds never receive them at all, nor do the drops ever adhere to them. The reason of this is probably because metals promote evaporation more than glass does. Thus, if a piece of metal and a piece of glass are both made equally moist, the former will be found to dry in much less time than the latter. Hence it would seem, that there is between metals and water some kind of repulsion: and this may be sufficient to keep off the very small quantity that falls in dew; for whatever tends to make water evaporate after it is actually in contact

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with

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with any substance, also tends to keep the water from ever coming into contact with it. On this subject several curious particulars are mentioned by Dr Percival, relative to the attraction and repulsion between dew and glass or metalline vessels. The experiments were made by M. du Fay, who, in order to determine with certainty whether the difference between vitrified substances and metals was the same in all cases, set a china saucer in the middle of a silver plate, and on one side, adjoining to it, was placed a china plate, with a silver dish very much resembling the saucer in the middle. In this experiment the china saucer was covered with dew, but the plate, though extending four inches round it, was not moistened in the least. The china plate also had become quite moist, while the silver vessel in the middle had not received the smallest drop. M. du Fay next endeavoured to ascertain whether a china saucer set upon a plate of metal, as already described, did not receive more dew than it would have done if exposed alone. To accomplish this design, he took two watch crystals of equal dimensions, and placed the one upon a plate of silver, the other upon a plate of china, each with its concavity uppermost. That which was upon the silver plate he surrounded with a ferrel of the same metal, well polished, that no watery particles might attach themselves to the convex surface of the glass. In this situation he exposed the crystals for several days successively, and always found five or six times more dew in that which was on the china plate than on the other placed on the silver. The repulsion between the dew and silver is further confirmed by the following experiment of M. du Fay, with regard to the crystal on the silver plate. He informs us, that the small quantity of dew on the inside near the centre, was in minute drops; and that round the border there was a space of five or six lines perfectly dry; towards which the drops regularly decreased in magnitude, as if the silver ferrel had driven away the dew from that part of the glass which was contiguous to it. These experiments were repeated thirty times with invariable success. M. du Fay's experiments have received a remarkable confirmation from some lately made by Dr Watson, now bishop of Landaff, with a view to determine the quantity of vapour that ascends from a given surface of earth. "By means of a little bees-wax (says he), I fastened a half-crown very near, but not quite contiguous, to the side of the glass; and, setting the glass with its mouth downward on the grass, it presently became covered with vapour, except that part of it which was next the half-crown. Not only the half-crown itself was free from vapour, but it had hindered any from settling on the glass which was near it; for there was a little ring of glass surrounding the half-crown, to the distance of a quarter of an inch, which was quite dry, as well as that part of the glass which was immediately under the half-crown; it seemed as if the silver had repelled the water to that distance. A large red wafer had the same effect as the half-crown; it was neither wetted itself, nor was the ring of glass contiguous to it wetted. A circle of white paper produced the same effect, so did several other substances, which it would be too tedious to enumerate."

SUBSTANCES of a very different kind from the usual dew are said to have sometimes fallen from the atmosphere. In the Phil. Trans. we are told, that in

the year 1695 there fell in Ireland, in the provinces of Leinster and Munster, for a considerable part of the winter and spring, a fatty substance resembling butter, instead of the common dew. It was of a clammy texture, and dark yellow colour; and was, from its great resemblance, generally called *dew-butter* by the country people. It always fell in the night, and chiefly in the moorish low grounds; and was found hanging on the tops of the grass, and on the thatch of the houses of the poor people. It was seldom observed to fall twice in the same place; and usually, wherever it fell, it lay a fortnight upon the ground before it changed colour; but after that it gradually dried up, and became black. The cattle fed in the fields where it lay as well as in others, and received no harm by it. It fell in pieces of the bigness of one's finger-end; but they were dispersed scatteringly about, and it had an offensive smell like a church-yard. There were in the same places very stinking fogs during the winter, and some people supposed this no other than a sediment from the fog. It would not keep very long, but never bred worms.

May-Dew whitens linen and wax; the dew of autumn is converted into a white frost. Out of dew putrified by the sun, arise divers insects, which change apace from one species into another: what remains is converted into a fine white salt, with angles like those of salt-petre, after a number of evaporations, calcinations, and fixations.

There is a spirit drawn from May-dew, which has wonderful virtues attributed to it. The method of collecting and preparing it, is prescribed by Hanneman, physician at Kiel. It is to be gathered in clean linen cloths; exposed to the sun in close vials; then distilled, and the spirit thrown upon the caput mortuum; this is to be repeated till the earth unite with the spirit, and become liquid; which happens about the seventh or eighth cohobation or distillation. By such means you gain a very red, odoriferous spirit. Stouterfoht, a physician of Lubec, thinks May-dew may be gathered in glass-plates, especially in still weather, and before sun-rise. And Etmuller is of the same sentiment. It might likewise be collected with a glass funnel, exposed to the air, having a crooked neck to bring the dew into a vial in a chamber. See Phil. Trans. n^o 3. Hoffman, and others. It is apparently from the preparation of this dew, that the brothers of the Rosy-Cross took their denomination. See ROSICRUCIANS.

Dew-Born, in country affairs, a distemper in cattle, being a swelling in the body, as much as the skin can hold, so that some beasts are in danger of bursting. This distemper proceeds from the greediness of a beast to feed, when put into a rank pasture: but commonly when the grass is full of water. In this case the beast should be stirred up and down, and made to purge well: but the proper cure is bleeding in the tail; then take a grated nutmeg, with an egg, and breaking the top of the shell, put out so much of the white as you may have room to slip the nutmeg into the shell; mix them together, and then let shell and all be put down the beast's throat; that done, walk him up and down, and he will soon mend.

Dew-Worm. See LUMBRICUS.

DE WIT (John), the famous pensionary, was born in 1625, at Dort; where he prosecuted his studies so diligently, that, at the age of 23, he published *Elementa*

May-Dew
De Wit.

De Wit.

menta Curvarum Linearum, one of the deepest books in mathematics at that time. After taking his degrees, and travelling, he, in 1650, became pensionary of Dort, and distinguished himself very early in the management of public affairs. He opposed with all his power the war between the English and the Dutch; and when the event justified his predictions, he was unanimously chosen pensionary of Holland. In this capacity he laboured to procure a peace with Cromwell; in which peace a secret article was introduced by one side or other, for the exclusion of the house of Orange. In the war with England after the king's restoration, when it was thought expedient, on Opdam's defeat and death, that some of their own deputies should command the fleet, he was one of the three put in commission; and wrote an accurate relation of all that happened during the expedition he was engaged in, for which, at his return, he received the solemn thanks of the States-General. In 1667, he established the perpetual edict for abolishing the office of Stadtholder, to fix the liberty of the republic, as it was hoped, on a firm basis; which produced seditions and tumults, that restored the office, on pretence that the De Wits were enemies to the house of Orange, and plundered the state. The pensionary begged dismissal from his post; which was granted, with thanks for his faithful services. But the invasion of the French, and the internal divisions among the Hollanders themselves, spread every where terror and confusion; which the Orange party heightened to ruin the De Wits. Cornelius, the pensionary's brother, was imprisoned and condemned to exile; and a report being raised that he would be rescued, the mob armed, and surrounded the prison where the two brothers then were together, dragged them out, barbarously murdered them, hung the bodies on the gallows, and cut them to pieces, which many of them even broiled, and ate with savage fury. Such was the end of one of the greatest geniuses of his age; of whom Sir William Temple, who was well acquainted with him, writes with the greatest esteem and admiration. He observes, that when he was at the head of the government, he differed nothing in his manner of living from an ordinary citizen. His office, for the first ten years, brought him in little more than 300*l.* and in the latter part of his life, not above 700*l.* *per annum.* He refused a gift of 10,000*l.* from the States-General, because he thought it a bad precedent in the government. With great reason, therefore, Sir William Temple, speaking of his death, observes, "He was a person that deserved another fate, and a better return from his country; after 18 years spent in their ministry, without any care of his entertainments or ease, and little of his fortune. A man of unwearied industry, inflexible constancy, sound, clear, and deep understanding, and untainted integrity; so that whenever he was blinded, it was by the passion he had for that which he esteemed the good and interest of his state. This testimony is justly due to him from all that were well acquainted with him; and is the more willingly paid, since there can be as little interest to flatter, as honour to reproach, the dead."

Besides the works already mentioned, he wrote a book containing those maxims of government upon which he acted; which will be a never-fading monument

N^o 100.

to his immortal memory. A translation of it from the original Dutch, intitled, *The true interest and political maxims of the republic of Holland*, has been printed in London; to the last edition of which, in 1646, are prefixed historical memoirs of the illustrious brothers Cornelius and John de Witt, by John Campbell, Esq.

DEXTANS, in Roman antiquity, ten ounces, or $\frac{1}{2}$ of their libra. See LIBRA.

DEXTER, in heraldry, an appellation given to whatever belongs to the right side of a shield or coat of arms: thus we say, *bend-dexter*, *dexter point*, &c.

DEXTROCHERE, or DESTROCHERE, in heraldry, is applied to the right arm painted in a shield, sometimes naked; sometimes clothed, or adorned with a bracelet; and sometimes armed, or holding some moveable or member used in the arms.

DEY, the title of the sovereign of Algiers, under the protection of the grand seignor. A prince under this title was appointed by the sultan, at the request of the Turkish soldiers, in the year 1710. The term *dey*, in the Turkish language, signifies an *uncle* by the mother's side; and the reason of the denomination is this: that the Turkish military consider the grand seignor as their father; the republic as their mother, by which they are nourished and maintained; and the dey as the brother of the republic, and consequently the uncle of all who are under his dominion. Besides the age, experience, and valour, which are necessary qualifications of a person to be elected, he must also be a native Turk, and have made the voyage to Mecca. He has no guards nor considerable retinue. He resides at the divan, and is most distinguished by the respect and submission which are paid him.

DIABETES, in phyfic, an excessive discharge of urine, which comes away crude, and exceeds the quantity of liquids drank. See (the *Index* subjoined to) MEDICINE.

DIABOLUS. See DEVIL.

DIABOLUS Marinus. See RAIA.

DIABOLUS Metallorum, a title given by chemists to jupiter or tin; because, when incorporated with other metals, it renders them incapable of reduction, or at least very difficult to undergo that operation.

DIACAUSTIC CURVE, a species of the caustic curves formed by refraction.

DIACHYLON, in pharmacy, an emollient digestive plaster, composed of mucilages or viscid juices drawn from certain plants. See PHARMACY.

DIACODIUM, in pharmacy, a syrup prepared from poppy-heads. It is also called the *syrupus de meconio*. See PHARMACY.

DIACOUSTICS, called also DIAPHONICS, the consideration of the properties of refracted sound, as it passes through different mediums: (See ACOUSTICS.) The word is formed from the Greek *διαπερ*, "thru," which intimates a passage; and *ακουω* "I hear," *q. d.* the consideration of the passage of the sounds we hear. See SOUND.

DIACRII, in antiquity, was the name of a party or faction at Athens.—That city, we read, was divided into two parties: the one favourers of an oligarchy, who would only have a few persons employed in the government; the other consisted of such as were for a demæcratical or popular government, wherein the

whole

Dextans
||
Diacrii.

Diadelphia
||
Diagnosis.Diagnostic
||
Dialect.

whole people should have a share. The first were called *diacrii*, and the latter *pediaci*; the latter inhabiting the lower, and the former the *αγορα*, or upper quarter or part of the city.—The laws of Solon imported, that Pistratus should be chief of the *diacrii*; though the scholiast on Aristophanes's comedy *The Wasps*, affirms, that Pandion distributed the quarter of the *diacrii* among his sons, and put Lycus at their head.

DIADELPHIA (*dis* “twice,” and *adelphos* “a brother”), class the 17th in the sexual system, comprehending those plants which bear hermaphrodite flowers with two sets of united stamina; but this circumstance must not be absolutely depended on. They are the *papilionacei* of Tournefort, the *irregulares tetrapetali* of Rivinus, and the *leguminosa* of Ray. See BOTANY, the *Scheme*, p. 430, and Plate CII. fig. 17.

DIADEM, in antiquity, a head-band or fillet, worn by kings as a badge of their royalty. It was made of silk, thread, or wool, and tied round the temples and forehead, the ends being tied behind, and let fall on the neck. It was usually white, and quite plain; tho' sometimes embroidered with gold, and set with pearls and precious stones. In latter times, it came to be twisted round crowns, laurels, &c. and even appears to have been worn on divers parts of the body. See CROWN.—The word comes from the Latin *diadema*; of the Greek *διαδημα* “a little band encompassing the head,” of the verb *διαδηω*, *cingo*, “I gird.”

DIADEM, in heraldry, is applied to certain circles or rims serving to inclose the crowns of sovereign princes, and to bear the globe and cross, or the flower de luces, for their crest. The crowns of sovereigns are bound, some with a greater, and some with a less number of diadems.—The bandage about the heads of Moors on shields is also called *diadem*, in blazoning.

DIÆRESIS, in surgery, an operation serving to divide and separate the part when the continuity is a hindrance to the cure.

DIÆRESIS, in medicine, is the consuming of the vessels of an animal body, when from some corroding cause certain passages are made, which naturally ought not to have been; or certain natural passages are dilated beyond their ordinary dimensions, so that the humours which ought to have been contained in the vessels extravasate or run out.

DIÆRESIS, in grammar, the division of one syllable into two, which is usually noted by two points over a letter, as *aulai* instead of *aula*, *dissolvienda* for *dissolvenda*.

DIÆTETÆ, in Grecian antiquity, a kind of judges, of which there were two sorts, the *cleroti* and *diallacterii*. The former were public arbitrators, chosen by lot to determine all causes exceeding ten drachms, within their own tribe, and from their sentence an appeal lay to the superior courts.

The *diallacterii*, on the contrary, were private arbitrators from whose sentence there lay no appeal, and accordingly they always took an oath to administer justice without partiality.

DIAGLYPHICE, the art of cutting or engraving figures on metals, such as seals, intaglios, matrices of letters, &c. or coins for medals. See ENGRAVING.

DIAGNOSIS (from *διαγνωω* to discern or distinguish), the diagnostics or the signs of a disease. They

are of two kinds, *viz.* the adjunct and pathognomonic; the first are common to several diseases, and serve only to point out the difference between diseases of the same species; the latter are those which always attend the disease, and distinguish it from all others.

DIAGNOSTIC, in medicine, a term given to those signs which indicate the present state of a disease, its nature and cause.

DIAGONAL, in geometry, a right line drawn across a quadrilateral figure, from one angle to another; by some called the *diameter*, and by others the *diametral*, of the figure. See GEOMETRY.

DIAGORAS, surnamed the *Atheist*, lived in the 91st Olympiad. He was not a native of Athens, but he philosophized there. He delighted in making verses, and had composed a poem which a certain poet stole from him. He sued the thief, who swore it was his own, and got glory by it. This tempted Diagoras to deny a Providence. The Athenians summoned him to give an account of his doctrine. He fled, and they set a price upon his head, promising a reward to any who should kill him; but he took shipping, and was cast away.

DIAGRAM, in geometry, a scheme for explaining and demonstrating the properties of any figure, whether triangle, square, circle, &c. See GEOMETRY.

DIAGRAM, among ancient musicians, the same with the scale of the moderns. See SCALE.

DIAH, DIAT, a name given by the Arabs to the punishment of retaliation. By the Mahometan law, a brother, or the next relation of a murdered person, ought to take part against the murderer, and demand his blood in reparation for that which he has shed. Before the time of Mahomet, the Arabs had a custom of putting a freeman of their prisoners to death in lieu of every slave they lost in battle, and a man for every woman that was killed. But Mahomet regulated the laws of reprisal; directing in the Alcoran, by the diat, that a freeman should be required for a freeman, and a slave for a slave. The Turks, probably in consequence of this law, formerly massacred almost all their prisoners of war, but they now content themselves with enslaving and selling them.

DIAHEXAPLA, or DIAHEXAPTE, among farrriers, a compound medicine, so called from its containing six ingredients, *viz.* birthwort and gentian roots, juniper-berries, bay-berries, myrrh, and ivory shavings. It is commended for colds, consumptions, purfiness, and many other disorders in horses.

DIAL, an instrument serving to measure time; which if effected by the aid of the sun, is called a *sun dial*. The word is from the Latin *dies* “day,” because indicating the hour of the day. The ancients also called it *sciatherium*, from its effect by the shadow. See the article DIALING.

DIALECT, an appellation given to the language of a province, in so far as it differs from that of the whole kingdom. The term, however, is more particularly used in speaking of the ancient Greek, whereof there were four dialects, the Attic, Ionic, Æolic, and Doric; each of which was a perfect language in its kind, that took place in certain countries, and had peculiar beauties.

In Great Britain, besides the grand diversity of Eng-

Dialectics,
Dialing.

lish and Scotch, almost every county has a dialect of its own, all differing considerably in pronunciation, accent, and tone, although one and the same language.

DIALECTICS, in the literary history of the ancients; that branch of logics which taught the rules and modes of reasoning. See **LOGIC**, Part III.

Zeno Eleates was the first who discovered the natural series of principles and conclusions observed in reasoning, and formed an art thereof in form of a dialogue; which, for this reason, was called *dialectica*.

The dialectica of the ancients is usually divided into several kinds: the first was the *eleatica*, that of Zeno Eleates, which was threefold; viz. *consecutionum*, *colloquutionum*, and *contentionum*. The first consisting of rules for deducing or drawing conclusions. The second, the art of dialogue; which became of such universal use in philosophy, that all reasoning was called *interrogation*: then, syllogism being laid aside, the philosophers did all by dialogue; it lying on the respondent to conclude and argue from the several concessions made. The last part of Zeno's dialectics, *Egisixn*, was contentious, or the art of disputing and contradicting; though some, particularly Laertius, ascribe this part to Protagoras a disciple of Zeno.

The second is the *dialectica megarica*, whose author is Euclid, not the mathematician, but another of Megara. He gave much into the method of Zeno and Protagoras; though there are two things appropriated to him: the first, that he impugned the demonstrations of others, not by assumptions, but conclusions; continually making illations, and proceeding from consequence to consequence: the second, that he set aside all arguments drawn from comparisons of similitude as invalid.

He was succeeded by Eubulides, from whom the sophistic way of reasoning is said to be derived. In his time the art is described as manifold: *mentiens*, *fallens*, *electra*, *obelata*, *arcevalis*, *cornuta*, and *calva*. See **SOPHISM**.

The third is the dialectics of Plato, which he proposes as a kind of analysis to direct the human mind, by dividing, defining, and bringing things to the first truth; where being arrived, and stopped there a little, it applies itself to explain sensible things, but with a

view to return to the first truth, where alone it can rest. Such is the idea of Plato's analysis

The fourth is Aristotle's dialectics; containing the doctrine of simple words, delivered in his book of *Predicaments*; the doctrine of propositions, in his book *De Interpretatione*; and that of the several kinds of syllogism, in his books of *Analytics*, *Topics*, and *Elenchuses*.

The fifth is the dialectics of the Stoics; which they call a part of philosophy, and divide into rhetoric and dialectic; to which some add the definitive, whereby things are justly defined; comprehending likewise the canons or criterions of truth.

The Stoics, before they come to treat of syllogisms, have two principal places; the one about the signification of words, the other about the things signified. On occasion of the first, they consider abundance of things belonging to the grammarian's province: what, and how many letters; what is a word, diction, speech, &c. On occasion of the latter, they consider things themselves, not as without the mind, but as in it, received in it by means of the senses. Accordingly, they first teach, that *nil sit in intellectu, quod non prius fuerit in sensu*; "whatever is in the mind came thither by the senses;" and that *aut incurusione sui*, as Plato, who meets the light; *aut similitudine*, as Cæsar by his effigy; *aut proportione*, either by enlarging as a giant or by diminishing as a pygmy; *aut translatione*, as a Cyclops; *aut compositione*, as a Centaur; *aut contrario*, as death; *aut privatione*, as a blind man.

The sixth is Epicurus's dialectics; for though he seems to have despised dialectic, he cultivated it with vigour. He was only averse to that of the Stoics; who he thought attributed too much to it, as pronouncing him alone wise who was well versed in dialectics. For this reason, Epicurus, seeming to set aside the common dialectics, had recourse to another way; viz. to certain canons which he substituted in their stead, the collection whereof he called *canonica*; and as all questions in philosophy are either *de re* or *de voce*, he gave separate rules for each. See **EPICUREANS**.

DIALIA, in antiquity, sacrifices performed by the flamen dialis. See **FLAMEN**.

Dialectics
||
Dialing.

D I A L I N G,

THE art of drawing dials on the surface of any given body or plane. The Greeks and the Latins called this art *gnomonica* and *sciatherica*, by reason it distinguishes the hours by the shadow of the gnomon. Some call it *photo-sciatherica*, because the hours are sometimes shown by the light of the sun. Lastly, others call it *horologigraphy*.

I
Utility of
this art.

Dialing is a most necessary art: for notwithstanding we are provided with moving machines, such as clocks and watches, to show time; yet these are apt to be out of order, go wrong, and stop: consequently they stand frequently in need of regulation by some invariable instrument, as a dial; which being rightly constructed and duly placed, will always, by means of the sun, inform us of the true solar time; which time being corrected by the equation table published annually in the epheme-

rides, almanacs, and other books, will be the mean time to which clocks and watches are to be set.

The antiquity of dials is beyond doubt. Some at-²tribute their invention to Anaximenes Milesius; and others to Thales. Vitruvius mentions one made by the ancient Chaldee historian Berosus, on a reclining plane, almost parallel to the equinoctial. Aristarchus Samius invented the hemispherical dial. And there were some spherical ones, with a needle for a gnomon. The discus of Aristarchus was an horizontal dial, with its limb raised up all around, to prevent the shadows stretching too far.

But it was late ere the Romans became acquainted with dials. The first sun-dial at Rome was set up by Papirius Cursor, about the year of the city 460; before which time, says Pliny, there is no mention of any

account.

account of time but by the sun's rising and setting: it was set up at or near the temple of Quirinus, but went ill. About 30 years after, M. Valerius Messala being consul, brought out of Sicily another dial, which he set up on a pillar near the rostrum; but for want of its being made for that latitude, it could not go true. They made use of it 99 years; till Martius Philippus set up another more exact.

But there seem to have been dials among the Jews much earlier than any of these. Witness the dial of Ahaz; who began to reign 400 years before Alexander, and within 12 years of the building of Rome; mentioned by Isaiah, chap. xxxviii. verse 8.

The first professed writer on dialing is Clavius; who demonstrates all, both the theory and the operations, after the rigid manner of the ancient mathematicians; but so intricately, that few, we dare say, ever read them all. Dechales and Ozanam give much easier demonstrations in their *Courses*, and Wolfius in his *Elements*. M. Picard has given a new method of making large dials, by calculating the hour-lines; and M. de la Hire, in his *Dialing*, printed in 1683, a geometrical method of drawing hour-lines from certain points determined by observation. Eberhardus Welperus, in 1625, published his *Dialing*, wherein he lays down a method of drawing the primary dials on a very easy foundation. The same foundation is described at length by Sebastian Munster, in his *Rudimenta Mathematica*, published in 1551. Sturmius, in 1672, published a new edition of Welperus's *Dialing*, with the addition of a whole second part, about inclining and declining dials, &c. In 1708, the same work, with Sturmius's additions, was republished with the addition of a fourth part, containing Picard's and de la Hire's methods of drawing large dials. Paterfon, Michael, and Muller, have each wrote on dialing, in the German tongue; Coetius in his *Horologiographia Plana*, printed in 1689; Gauppenius, in his *Gnomonica Mechanica*; Bion, in his *Use of Mathematical Instruments*; the late ingenious Mr Fergufon, in his *Select Lectures*; Mr Emerfon, in his *Dialing*; and Mr W. Jones, in his *Instrumental Dialing*.

³ Definitions.

A *Dial*, accurately defined, is a plane, upon which lines are described in such a manner, that the shadow of a wire, or of the upper edge of another plane, erected perpendicularly on the former, may show the true time of the day.

The edge of the plane by which the time of the day is found, is called the *stile of the dial*, which must be parallel to the earth's axis; and the line on which the said plane is erected, is called the *substile*.

The angle included between the substile and stile, is called the *elevation or height of the stile*.

Those dials whose planes are parallel to the plane of the horizon, are called *horizontal dials*; and those dials whose planes are perpendicular to the plane of the horizon, are called *vertical or erect dials*.

Those erect dials, whose planes directly front the north or south, are called *direct north or south dials*; and all other erect dials are called *decliners*, because their planes are turned away from the north or south.

Those dials whose planes are neither parallel nor perpendicular to the plane of the horizon, are called *inclining or reclining dials*, according as their planes make

acute or obtuse angles with the horizon; and if their planes are also turned aside from facing the south or north, they are called *declining-inclining* or *declining-reclining dials*.

The intersection of the plane of the dial, with that of the meridian, passing through the stile, is called the *meridian of the dial*, or the *hour-line of XII*.

Those meridians, whose planes pass through the stile, and make angles of 15, 30, 45, 60, 75, and 90 degrees with the meridian of the place (which marks the hour-line of XII.) are called *hour-circles*; and their intersections with the plane of the dial are called *hour-lines*.

In all declining dials, the substile makes an angle with the hour-line of XII.; and this angle is called the *distance of the substile from the meridian*.

The declining plane's difference of longitude, is the angle formed at the intersection of the stile and plane of the dial, by two meridians; one of which passes thro' the hour-line of XII. and the other through the substile.

Thus much being premised concerning dials in general, we shall now proceed to explain the different methods of their construction.

If the whole earth *aPcp*, were transparent, and hollow, like a sphere of glass, and had its equator divided into 24 equal parts by so many meridian semicircles, *a, b, c, d, e, f, g, &c.* one of which is the geographical meridian of any given place, as London (which is supposed to be at the point *a*;) and if the hours of XII were marked at the equator, both upon that meridian and the opposite one, and all the rest of the hours in order on the rest of the meridians, those meridians would be the hour-circles of London: then, if the sphere had an opaque axis, as *PEp*, terminating in the poles *P* and *p*, the shadow of the axis would fall upon every particular meridian and hour, when the sun came to the plane of the opposite meridian, and would consequently show the time at London, and at all other places on the meridian of London.

Plate CLVIII. fig. 1.

⁴ The universal principle on which dialing depends.

If this sphere was cut through the middle by a solid plane *ABCD*, in the rational horizon of London, one half of the axis *EP* would be above the plane, and the other half below it; and if straight lines were drawn from the centre of the plane to those points where its circumference is cut by the hour-circles of the sphere, those lines would be the hour-lines of a horizontal dial for London: for the shadow of the axis would fall upon each particular hour line of the dial, when it fell upon the like hour-circle of the sphere.

⁵ Horizontal dial.

If the plane which cuts the sphere be upright, as Fig. 2. *AFCG*, touching the given place (London) at *F*, and directly facing the meridian of London, it will then become the plane of an erect direct south-dial: and if right lines be drawn from its centre *E* to those points of its circumference where the hour-circles of the sphere cut it, these will be the hour-lines of a vertical or direct south-dial for London, to which the hours are to be set as in the figure (contrary to those on a horizontal dial), and the lower half *Ep* of the axis will cast a shadow on the hour of the day in this dial, at the same time that it would fall upon the like hour-circle of the sphere, if the dial plane was not in the way.

⁶ Vertical dial.

If the plane (still facing the meridian) be made to incline,

Plate
CLVIII.7
Inclining,
reclining,
and declin-
ing, dials.

incline, or recline, any given number of degrees, the hour-circles of the sphere will still cut the edge of the plane in those points to which the hour-lines must be drawn straight from the centre; and the axis of the sphere will cast a shadow on these lines at the respective hours. The like will still hold, if the plane be made to decline by any given number of degrees from the meridian toward the east or west: provided the declination be less than 90 degrees, or the reclination be less than the co-latitude of the place: and the axis of the sphere will be a gnomon, or stile, for the dial. But it cannot be a gnomon, when the declination is quite 90 degrees, nor when the reclination is equal to the co-latitude; because, in these two cases, the axis has no elevation above the plane of the dial.

And thus it appears, that the plane of every dial represents the plane of some great circle upon the earth; and the gnomon of the earth's axis, whether it be a small wire as in the above figures, or the edge of a thin plate, as in the common horizontal dials.

The whole earth, as to its bulk, is but a point, if compared to its distance from the sun: and therefore, if a small sphere of glass be placed upon any part of the earth's surface, so that its axis be parallel to the axis of the earth, and the sphere have such lines upon it, and such planes within it, as above described; it will show the hours of the day as truly as if it were placed at the earth's centre, and the shell of the earth were as transparent as glass.

But because it is impossible to have a hollow sphere of glass perfectly true, blown round a solid plane; or if it was, we could not get at the plane within the glass to set it in any given position; we make use of a wire-sphere to explain the principles of dialing, by joining 24 semicircles together at the poles, and putting a thin flat plate of brass within it.

Fig. 1, 2.

8
Dialing by
the com-
mon ter-
restrial globe.

A common globe of 12 inches diameter, has generally 24 meridian semicircles drawn upon it. If such a globe be elevated to the latitude of any given place, and turned about until one of these meridians cut the horizon in the north point, where the hour of XII is supposed to be marked, the rest of the meridians will cut the horizon at the respective distances of all the other hours from XII. Then if these points of distance be marked on the horizon, and the globe be taken out of the horizon, and a flat board or plate be put into its place, even with the surface of the horizon; and if straight lines be drawn from the centre of the board, to those points of distance on the horizon which were cut by the 24 meridian semicircles; these lines will be the hour-lines of a horizontal dial for that latitude, the edge of whose gnomon must be in the very same situation that the axis of the globe was, before it was taken out of the horizon: that is, the gnomon must make an angle with the plane of the dial, equal to the latitude of the place for which the dial is made.

If the pole of the globe be elevated to the co-latitude of the given place, and any meridian be brought to the north point of the horizon, the rest of the meridians will cut the horizon in the respective distances of all the hours from XII, for a direct south dial, whose gnomon must be an angle with the plane of the dial, equal to the co-latitude of the place; and the hours must be set the contrary way on this dial to what they are on the horizontal.

But if your globe have more than 24 meridian semicircles upon it, you must take the following method for making *horizontal* and *south dials*. Plate CLVIII.

Elevate the pole to the latitude of your place, and turn the globe until any particular meridian (suppose the first) comes to the north point of the horizon, and the opposite meridian will cut the horizon in the south. Then, set the hour-index to the uppermost XII on its circle; which done, turn the globe westward until 15 degrees of the equator pass under the brazen meridian, and then the hour-index will be at I (for the sun moves 15 degrees every hour), and the first meridian will cut the horizon in the number of degrees from the north point that I is distant from XII. Turn on until other 15 degrees of the equator pass under the brazen meridian, and the hour-index will then be at II, and the first meridian will cut the horizon in the number of degrees that II is distant from XII: and so, by making 15 degrees of the equator pass under the brazen meridian for every hour, the first meridian of the globe will cut the horizon in the distances of all the hours from XII to VI, which is just 90 degrees; and then you need go no farther, for the distances of XI, X, IX, VIII, VII, and VI, in the forenoon, are the same from XII, as the distances of I, II, III, IV, V, and VI, in the afternoon: and these hour-lines continued through the centre, will give the opposite hour-lines on the other half of the dial.

9
To con-
struct a ho-
rizontal
dial.

Thus, to make a horizontal dial for the latitude of London, which is $51\frac{1}{2}$ degrees north, elevate the north pole of the globe $51\frac{1}{2}$ degrees above the north point of the horizon; and then turn the globe, until the first meridian (which is that of London on the English terrestrial globe) cuts the north point of the horizon, and set the hour-index to XII at noon.

Then turning the globe westward until the index points successively to I, II, III, IV, V, and VI, in the afternoon, or until 15, 30, 45, 60, 75, and 90 degrees of the equator pass under the brazen meridian, you will find that the first meridian of the globe cuts the horizon in the following numbers of degrees from the north towards the east, viz. $11\frac{1}{3}$, $24\frac{1}{3}$, $38\frac{1}{3}$, $53\frac{1}{3}$, $71\frac{1}{3}$, and 90; which are the respective distances of the above hours from XII upon the plane of the horizon.

To transfer these, and the rest of the hours, to a horizontal plane, draw the parallel right lines *ac* and *db*, upon that plane, as far from each other as is equal to the intended thickness of the gnomon or stile of the dial, and the space included between them will be the meridian or twelve o'clock line on the dial. Cross this meridian at right angles with the six o'clock line *gh*, and setting one foot of your compasses in the intersection *a*, as a centre, describe the quadrant *ge* with any convenient radius or opening of the compasses: then, setting one foot in the intersection *b*, as a centre, with the same radius describe the quadrant *fb*, and divide each quadrant into 90 equal parts or degrees, as in the figure.

Because the hour-lines are less distant from each other about noon, than in any other part of the dial, it is best to have the centres of these quadrants at a little distance from the centre of the dial plane, on the side opposite to XII, in order to enlarge the hour-distances thereabouts, under the same angles on the plane. Thus,

the

Fig. 1.

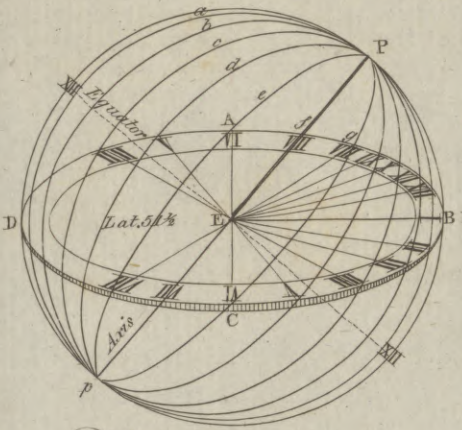


Fig. 2.

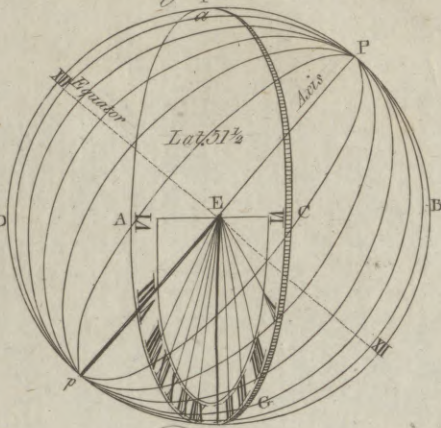


Fig. 3.

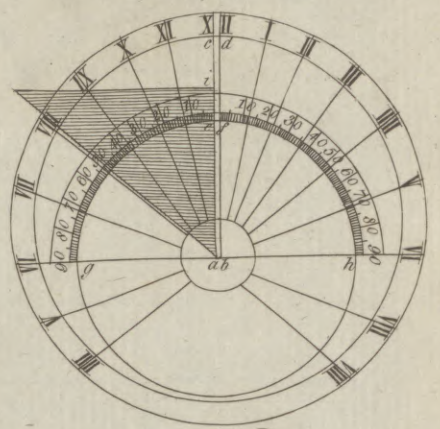


Fig. 5.

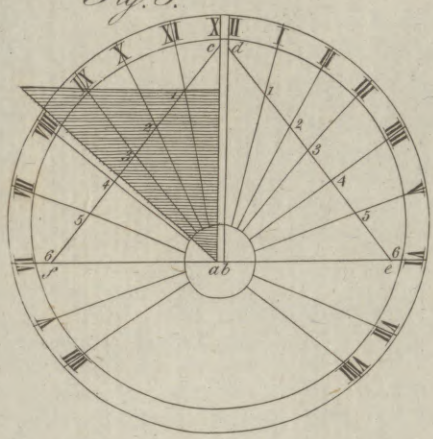


Fig. 4.

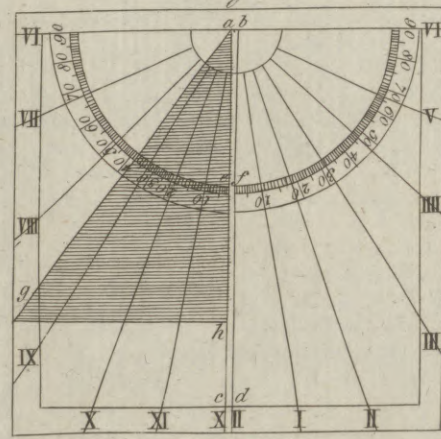
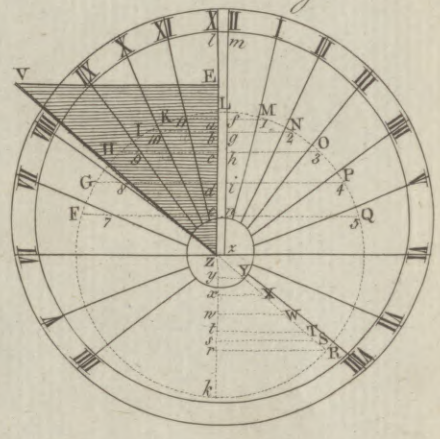


Fig. 6.



Line of Chords
0 10 20 30 40 50 60 70 80 90

Scale of Latitudes
Scale of Hours
0 10 20 30 40 50 60 70 80 90

Fig. 7.

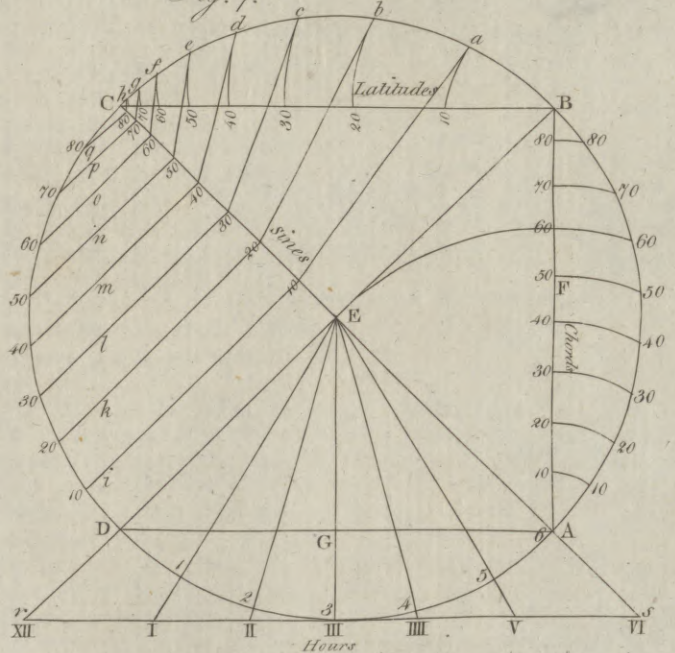
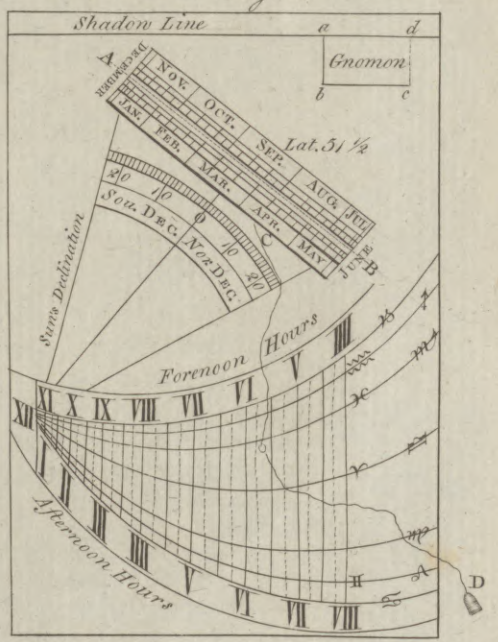


Fig. 8.



0 10 20 30 40 50 60 70 80 90 The Line of Chords
 0 10 20 30 40 50 60 70 80 The Line of Latitudes
 XII I II III IIII V VI VII VIII IX X XI XII The Line of Hours

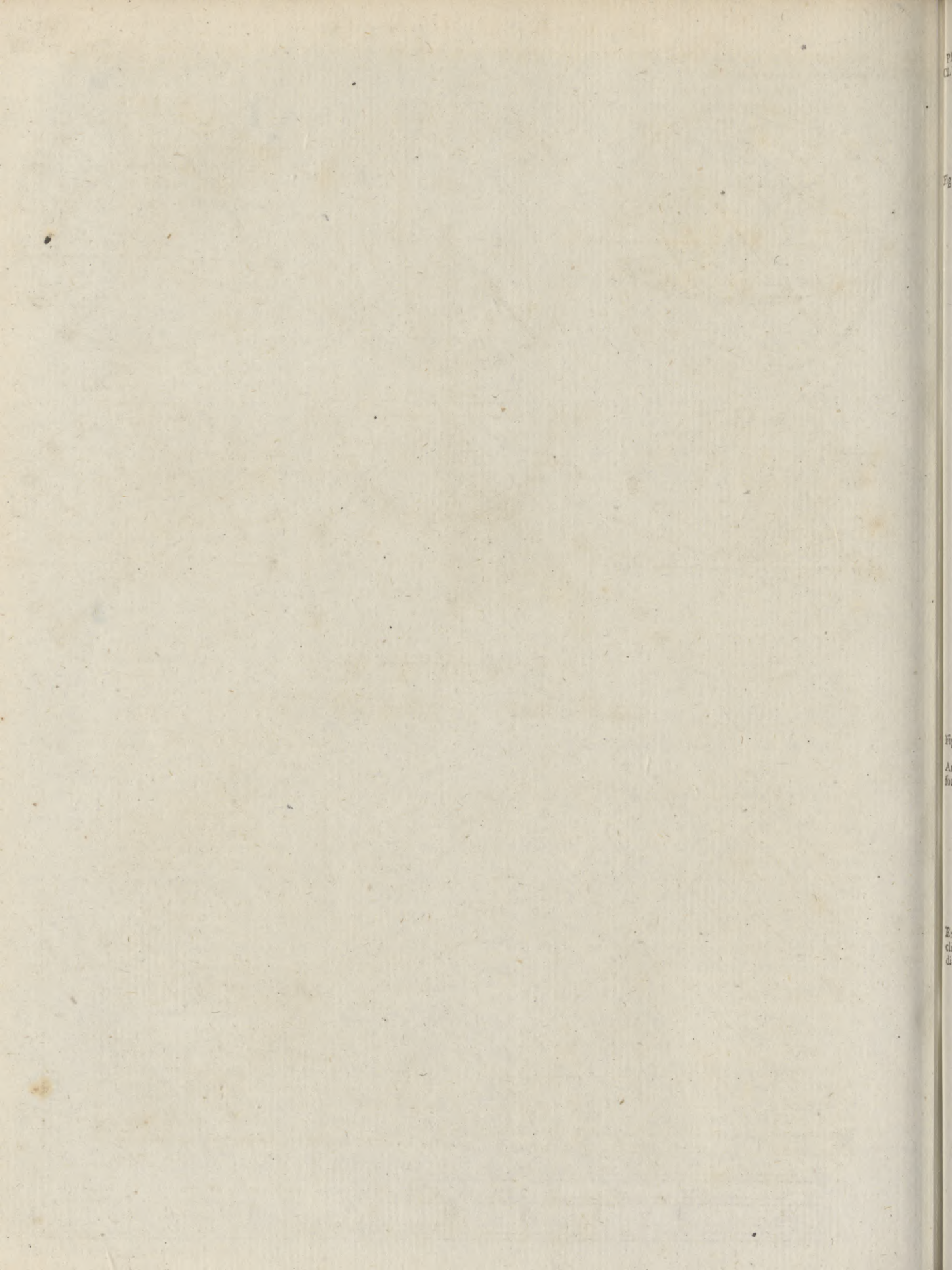


Plate LVIII.

the centre of the plane is at *C*, but the centres of the quadrants are at *a* and *b*.

Lay a ruler over the point *b* (and keeping it there for the centre of all the afternoon hours in the quadrant *f b*) draw the hour-line of I through $11\frac{1}{2}$ degrees in the quadrant; the hour-line of II, through $24\frac{1}{4}$ degrees; of III, through $38\frac{1}{2}$ degrees; IIII, through $53\frac{1}{2}$; and V, through $71\frac{1}{2}$: and because the sun rises about four in the morning, on the longest days at London, continue the hour-lines of IIII and V in the afternoon through the centre *b* to the opposite side of the dial.— This done, lay the ruler to the centre *a* of the quadrant *e g*; and through the like divisions or degrees of that quadrant, viz. $11\frac{1}{2}$, $24\frac{1}{4}$, $38\frac{1}{2}$, $53\frac{1}{2}$, and $71\frac{1}{2}$, draw the forenoon hour-lines of XI, X, IX, VIII, and VII; and because the sun sets not before eight in the evening on the longest days, continue the hour-lines of VII and VIII in the forenoon, through the centre *a*, to VII and VIII in the afternoon; and all the hour-lines will be finished on this dial; to which the hours may be set, as in the figure.

Fig. 3.

Lastly, through $51\frac{1}{2}$ degrees of either quadrant, and from its centre, draw the right line *a g* for the hypotenuse or axis of the gnomon *a g i*; and from *g*, let fall the perpendicular *g i*, upon the meridian line *a i*, and there will be a triangle made, whose sides are *a g*, *g i*, and *i a*. If a plate similar to this triangle be made as thick as the distance between the lines *a c* and *b d*, and set upright between them, touching at *a* and *b*, its hypotenuse *a g* will be parallel to the axis of the world, when the dial is truly set; and will cast a shadow on the hour of the day.

N. B. The trouble of dividing the two quadrants may be saved if you have a scale with a line of chords upon it (as represented on the plate); for if you extend the compasses from 0 to 60 degrees of the line of chords, and with that extent, as a radius, describe the two quadrants upon their respective centres, the above distances may be taken with the compasses upon the lines, and set off upon the quadrants.

To make an erect direct south dial. Elevate the pole to the co-latitude of your place, and proceed in all respects as above taught for the horizontal dial, from VI in the morning to VI in the afternoon; only the hours must be reversed, as in the figure; and the hypotenuse *a g* of the gnomon *a g f*, must make an angle with the dial-plane equal to the co-latitude of the place. As the sun can shine no longer on this dial than from six in the morning until six in the evening, there is no occasion for having any more than 12 hours upon it.

Fig. 4.
10
An erect south dial.

To make an erect dial, declining from the south towards the east or west. Elevate the pole to the latitude of your place, and screw the quadrant of altitude to the zenith. Then, if your dial declines towards the east (which we shall suppose it to do at present), count in the horizon the degrees of declination, from the east point towards the north, and bring the lower end of the quadrant to that degree of declination at which the reckoning ends. This done, bring any particular meridian of your globe (as suppose the first meridian) directly under the graduated edge of the upper part of the brazen meridian, and set the hour to XII at noon. Then, keeping the quadrant of altitude at the degree of declination in the horizon, turn the globe eastward

11
Erect declining dial.

on its axis, and observe the degrees cut by the first meridian in the quadrant of altitude (counted from the zenith) as the hour-index comes to XI, X, IX, &c. in the forenoon, or as 15, 30, 45, &c. degrees of the equator pass under the brazen meridian at these hours respectively; and the degrees then cut in the quadrant by the first meridian, are the respective distances of the forenoon hours from XII on the plane of the dial.— Then, for the afternoon hours, turn the quadrant of altitude round the zenith until it comes to the degree in the horizon opposite to that where it was placed before; namely, as far from the west point of the horizon towards the south, as it was set at first from the east point towards the north; and turn the globe westward on its axis, until the first meridian comes to the brazen meridian again, and the hour-index to XII: then, continue to turn the globe westward, and as the index point to the afternoon hours I, II, III, &c. or as 15, 30, 45, &c. degrees of the equator pass under the brazen meridian, the first meridian will cut the quadrant of altitude in the respective number of degrees from the zenith that each of these hours is from XII on the dial.— And note, that when the first meridian goes off the quadrant at the horizon in the forenoon, the hour-index shows the time when the sun will come upon this dial; and when it goes off the quadrant in the afternoon, the index will point to the time when the sun goes off the dial.

Having thus found all the hour-distances from XII, lay them down upon your dial-plane, either by dividing a semicircle into two quadrants of 90 degrees each (beginning at the hour-line of XII), or by the line of chords, as above directed.

In all declining dials, the line on which the stile or gnomon stands (commonly called the *substile-line*) makes an angle with the twelve o'clock line, and falls among the forenoon hour-lines, if the dial declines towards the east; and among the afternoon hour-lines, when the dial declines towards the west; that is, to the left hand from the twelve o'clock line in the former case, and to the right hand from it in the latter.

To find the distance of the substile from the twelve o'clock line; if your dial declines from the south toward the east, count the degrees of that declination in the horizon from the east point toward the north, and bring the lower end of the quadrant of altitude to that degree of declination where the reckoning ends: then, turn the globe until the first meridian cuts the horizon in the like number of degrees, counted from the south point toward the east; and the quadrant and first meridian will then cross one another at right angles; and the number of degrees of the quadrant, which are intercepted between the first meridian and the zenith, is equal to the distance of the substile line from the twelve o'clock line; and the number of degrees of the first meridian, which are intercepted between the quadrant and the north pole, is equal to the elevation of the stile above the plane of the dial.

If the dial declines westward from the south, count that declination from the east point of the horizon towards the south, and bring the quadrant of altitude to the degree in the horizon at which the reckoning ends; both for finding the forenoon hours, and distance of the substile from the meridian: and for the afternoon hours, bring the quadrant to the opposite degree in the hori-

zon, namely, as far from the west towards the north, and then proceed in all respects as above.

Thus we have finished our declining dial; and in so doing, we made four dials, viz.

1. A north dial, declining eastward by the same number of degrees. 2. A north dial, declining the same number west. 3. A south dial, declining east. And, 4. A south dial declining west. Only, placing the proper number of hours, and the stile or gnomon respectively, upon each plane. For (as above mentioned) in the south-west plane, the substilar-line falls among the afternoon hours; and in the south-east, of the same declination, among the forenoon hours, at equal distances from XII. And so all the morning hours on the west decliner will be like the afternoon hours on the east decliner: the south-east decliner will produce the north-west decliner; and the south-west decliner the north-east decliner, by only extending the hour-lines, stile and substilar, quite through the centre: the axis of the stile (or edge that casts the shadow on the hour of the day) being in all dials whatever parallel to the axis of the world, and consequently pointing towards the north pole of the heaven in north latitudes, and toward the south pole in south latitudes.

12
An easy
method for
construct-
ing of dials.

But because every one who would like to make a dial, may perhaps not be provided with a globe to assist him, and may probably not understand the method of doing it by logarithmic calculation; we shall show how to perform it by the plain dialing lines, or scale of latitudes and hours (as represented on the Plate), and which may be had on scales commonly sold by the mathematical instrument makers.

This is the easiest of all mechanical methods, and by much the best, when the lines are truly divided: and not only the half hours and quarters may be laid down by all of them, but every fifth minute by most, and every single minute by those where the line of hours is a foot in length.

Fig. 5.

Having drawn your double meridian line ab, cd , on the plane intended for a horizontal dial, and crossed it at right angles by the six o'clock line fe (as in fig. 3.), take the latitude of your place with the compasses, in the scale of latitudes, and set that extent from c to e , and from a to f , on the six o'clock line: then, taking the whole six hours between the points of the compasses in the scale of hours, with that extent set one foot in the point c , and let the other foot fall where it will upon the meridian line cd , as at d . Do the same from f to b , and draw the right lines ed and fb , each of which will be equal in length to the whole scale of hours. This done, setting one foot of the compasses in the beginning of the scale at XII, and extending the other to each hour on the scale, lay off these extents from d to e for the afternoon hours, and from b to f for those of the forenoon: this will divide the lines de and bf in the same manner as the hour-scale is divided at 1, 2, 3, 4, and 6; on which the quarters may also be laid down, if required. Then, laying a ruler on the point c , draw the first five hours in the afternoon, from that point, through the dots at the numeral figures 1, 2, 3, 4, 5, on the line de ; and continue the lines of IIII and V through the centre c to the other side of the dial, for the like hours of the morning: which done, lay the ruler on the point a , and draw the last five hours in the forenoon through the

dots 5, 4, 3, 2, 1, on the line fb ; continuing the hour-lines of VII and VIII through the centre a to the other side of the dial, for the like hours of the evening; and set the hours to their respective lines, as in the figure. Lastly, make the gnomon the same way as taught above for the horizontal dial, and the whole will be finished.

To make an erect south-dial, take the co-latitude of your place from the scale of latitudes, and then proceed in all respects for the hour-line as in the horizontal dial; only reversing the hours, as in fig. 4. and making the angle of the stile's height equal to the co-latitude.

But, lest the young dialist should have neither globe nor wooden scale, we shall now show him how he may make a dial without any of these helps. Only, if he has not a line of chords, he must divide a quadrant into 90 equal parts or degrees for taking the proper angle of the stile's elevation; which is easily done.

With any opening of the compasses, as ZL , de-

scribe the two femicircles LFk and LQk , upon the centres Z and z , where the six o'clock line crosses the double meridian line, and divide each femicircle into 12 equal parts, beginning at L (though, strictly speaking, only the quadrants from L to the six o'clock line need be divided); then connect the divisions which are equidistant from L , by the parallel lines KM, IN, HO, GP , and FQ . Draw VZ for the hypotenuse of the stile, making the angle VZE equal to the latitude of your place; and continue the line VZ to R . Draw the line Rr parallel to the six o'clock line, and set off the distance aK from Z to T , the distance bI from Z to X , cH from Z to W , dG from Z to T , and eF from Z to S . Then draw the lines Ss, Tt, Ww, Xx , and Yy , each parallel to Rr . Set off the distance yT from a to 11, and from f to 1; the distance xX from b to 10, and from g to 2; wW from c to 9, and from h to 3; tT from d to 8, and from i to 4; sS from e to 7, and from n to 5. Then laying a ruler to the centre Z , draw the forenoon hour-lines through the points 11, 10, 9, 8, 7; and laying it to the centre z , draw the afternoon lines through the points 1, 2, 3, 4, 5; continuing the forenoon lines of VII and VIII through the centre Z , to the opposite side of the dial, for the like afternoon hours; and the afternoon lines IIII and V through the centre z , to the opposite side, for the like morning hours. Set the hours to these lines as in the figure, and then erect the stile or gnomon, and the horizontal dial will be finished.

13
Horizontal
dial.

To construct a south dial, draw the line VZ , making an angle with the meridian ZL equal to the co-latitude of your place; and proceed in all respects as in the above horizontal dial for the same latitude, reversing the hours as in fig. 4. and making the elevation of the gnomon equal to the co-latitude.

Perhaps it may not be unacceptable to explain the method of constructing the dialing lines, and some others; which is as follows:

With any opening of the compasses, as ED , according to the intended length of the scale, describe the circle $ADCB$, and cross it at right angles by the diameters CEA and DEB . Divide the quadrant AB first into 9 equal parts, and then each part into 10; so shall the quadrant be divided into 90 equal parts or degrees.

14
Dialing
lines, how
constructed.

Fig. 7.

Plate
CLIX.fig. 1. com-
pared with
fig. 8. of
preceding
plate.

describe the arc AZH for the tropic of 15 : with the same extent, setting one foot in G , describe the arc AEO for the tropic of 26 . Next setting one foot in the point b , and extending the other to A , describe the arc ACI for the beginnings of the signs ♊ and ♋ ; and with the same extent, setting one foot in the point l , describe the arc AN for the beginnings of the signs ♌ and ♍ . Set one foot in the point i , and having extended the other to A , describe the arc AK for the beginnings of the signs ♎ and ♏ ; and with the same extent, set one foot in k , and describe the arc AM for the beginnings of the signs ♐ and ♑ . Then setting one foot in the point D , and extending the other to A , describe the curve AL for the beginnings of ♒ and ♓ ; and the signs will be finished. This done, lay a ruler from the point A over the sun's declination in the arch RST ; and where the ruler cuts the line FDG , make marks: and place the days of the months right against these marks, in the manner shown by fig. 2. Lastly, draw the shadow-line PQ parallel to the occult line AB ; make the gnomon, and set the hours to their respective lines, as in fig. 2. and the dial will be finished.

16
Universal
dials.Plate
CLIX.
fig. 2.

There are several kinds of dials called *universal*, because they serve for all latitudes. One, of Mr Pardie's construction, was formerly considered as the best. It consists of three principal parts; the first whereof is called the horizontal plane (A), because in practice it must be parallel to the horizon. In this plane is fixed an upright pin, which enters into the edge of the second part BD , called the meridional plane; which is made of two pieces, the lowest whereof (B) is called the *quadrant*, because it contains a quarter of a circle, divided into 90 degrees; and it is only into this part, near B , that the pin enters. The other piece is a femicircle (D) adjusted to the quadrant, and turning in it by a groove, for raising or depressing the diameter (EF) of the femicircle, which diameter is called the *axis of the instrument*. The third piece is a circle (G), divided on both sides into 24 equal parts, which are the hours. This circle is put upon the meridional plane so, that the axis (EF) may be perpendicular to the circle, and the point C be the common centre of the circle, femicircle, and quadrant. The straight edge of the femicircle is chamfered on both sides to a sharp edge, which passes through the centre of the circle. On one side of the chamfered part, the first six months of the year are laid down, according to the sun's declination for their respective days, and on the other side the last six months. And against the days on which the sun enters the signs, there are straight lines drawn upon the femicircle, with the characters of the signs marked upon them. There is a black line drawn along the middle of the upright edge of the quadrant, over which hangs a thread (H), with its plummet (I), for levelling the instrument. *N. B.* From the 23d of September to the 20th of March, the upper surface of the circle must touch both the centre C of the femicircle, and the line of ♒ and ♓ ; and from the 20th of March to the 23d of September, the lower surface of the circle must touch that centre and line.

To find the time of the day by this dial. Having set it on a level place in sun-shine, and adjusted it by the levelling screws k and l , until the plumb-line hangs over the back line upon the edge of the quadrant, and

N^o 100.

parallel to the said edge; move the femicircle in the quadrant, until the line of ♒ and ♓ (where the circle touches) comes to the latitude of your place in the quadrant: then turn the whole meridional plane BD , with its circle G , upon the horizontal plane A , until the edge of the shadow of the circle falls precisely on the day of the month in the femicircle; and then the meridional plane will be due north and south, the axis EF will be parallel to the axis of the world, and will cast a shadow upon the true time of the day among the hours on the circle.

N. B. As, when the instrument is thus rectified, the quadrant and femicircle are in the plane of the meridian, so the circle is then in the plane of the equinoctial. Therefore, as the sun is above the equinoctial in summer (in northern latitudes), and below it in winter; the axis of the femicircle will cast a shadow on the hour of the day, on the upper surface of the circle, from the 20th of March till the 23d of September; and from the 23d of September to the 20th of March the hour of the day will be determined by the shadow of the femicircle upon the lower surface of the circle. In the former case, the shadow of the circle falls upon the day of the month, on the lower part of the diameter of the femicircle; and in the latter case, on the upper part.

The method of laying down the months and signs upon the femicircle is as follows. Draw the right line ACB equal to the diameter of the femicircle ADB , and cross it in the middle at right angles with the line ECD , equal in length to ADB ; then EC will be the radius of the circle FCC , which is the same as that of the femicircle. Upon E , as a centre, describe the circle FCC , on which set off the arcs Ch and Ci , each equal to $23\frac{1}{2}$ degrees, and divide them accordingly into that number for the sun's declination. Then laying the edge of a ruler over the centre E , and also over the sun's declination for every fifth day of each month (as in the card-dial), mark the points on the diameter AB of the femicircle from a to g , which are cut by the ruler; and there place the days of the months accordingly, answering to the sun's declination. This done, setting one foot of the compasses in C , and extending the other to a or g , describe the femicircle $abcdefg$; which divide into six equal parts, and through the points of division draw right lines parallel to CD , for the beginning of the signs (of which one half are on one side of the femicircle and the other half on the other), and set the characters of the signs to their proper lines, as in the figure.

A universal dial of a very ingenious construction, has lately been invented by Mr G. Wright of London. The hour-circle or arch E , and latitude arch C , are the portions of two meridian circles; one fixed, and the other moveable. The hour or dial plate SEN at top is fixed to the arch C , and has an index that moves with the hour-circle E ; therefore the construction of this dial is perfectly similar to the construction of the meridians and hour-circle upon a common globe. The peculiar problems to be performed by this instrument are, 1. To find the latitude of any place. 2. The latitude of the place being known, to find the time by the sun and stars. 3. To find the sun or star's azimuth and altitude.

Previous to use, this instrument should be in a well-adjusted

Plate
CLIX.17
A new one
by Mr G.
Wright.
Plate CLIX
fig. 1.

Fig. 1.

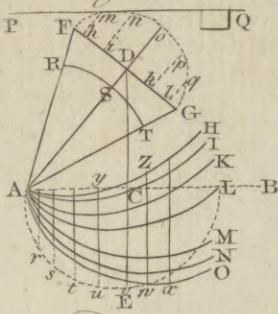


Fig. 2.

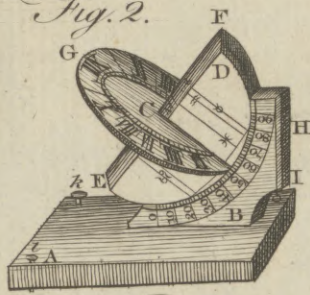


Fig. 4.

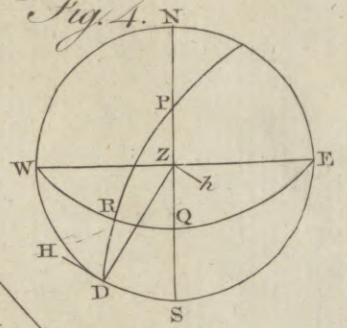


Fig. 3.

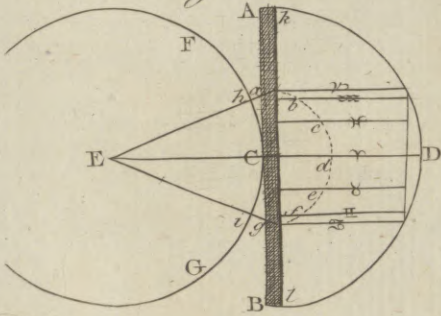


Fig. 8.

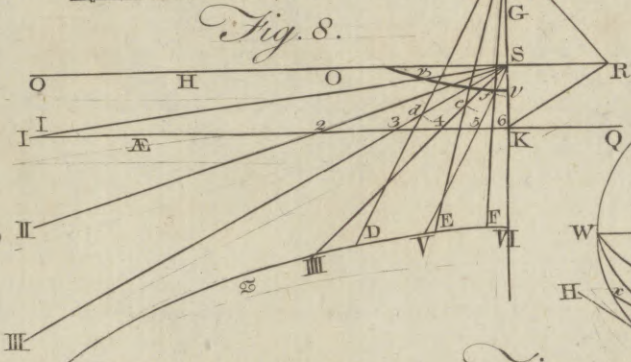


Fig. 6.

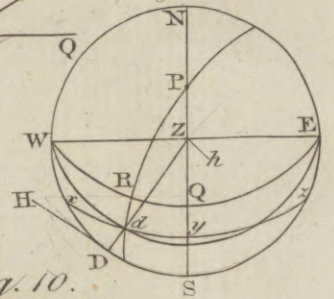


Fig. 5.

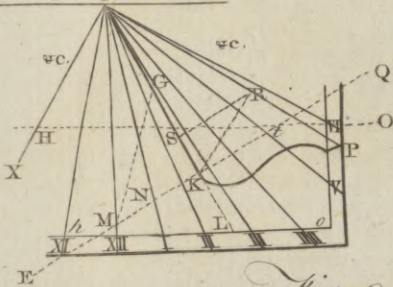


Fig. 7.

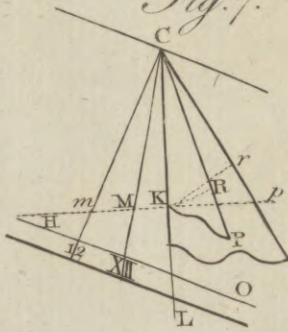


Fig. 10.

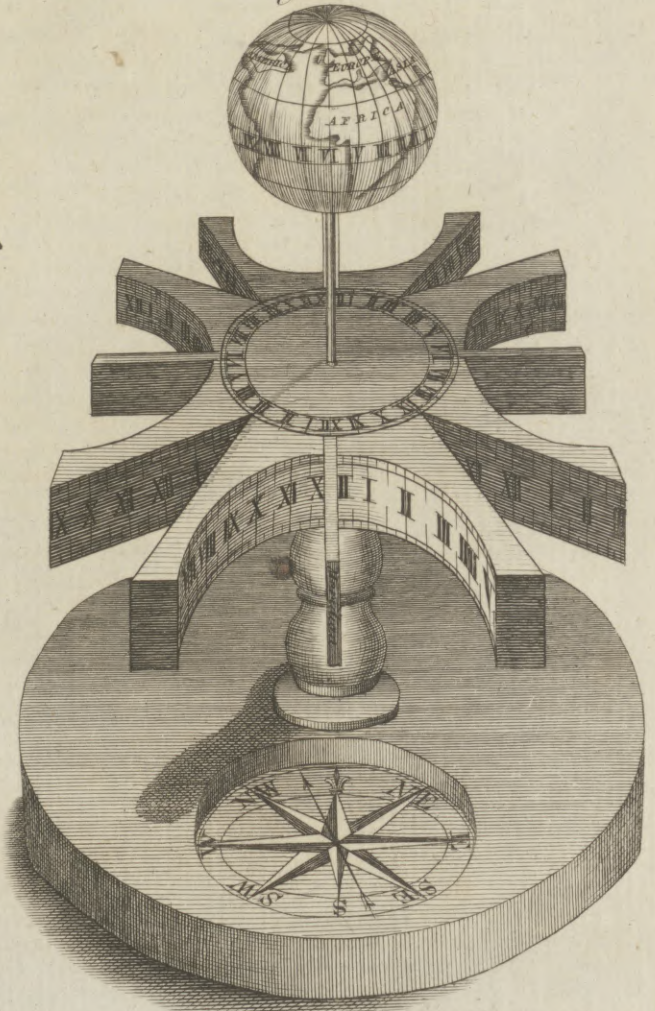
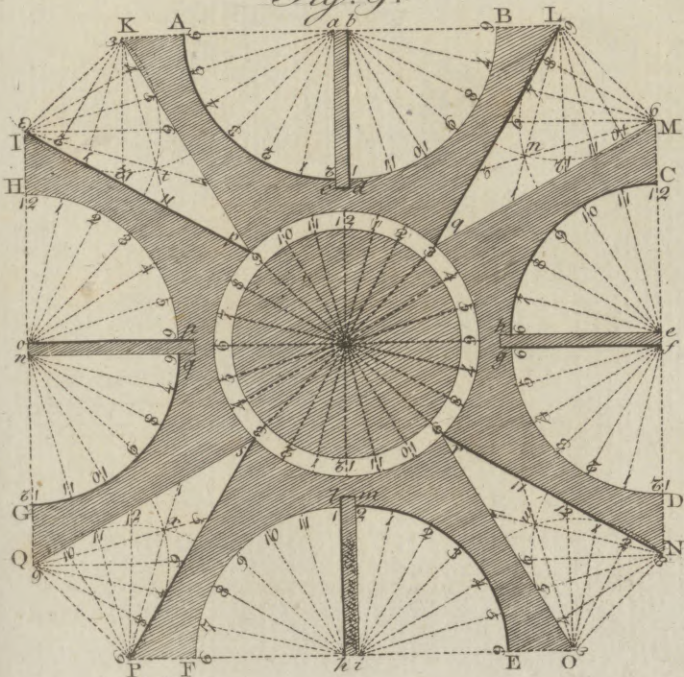


Fig. 9.



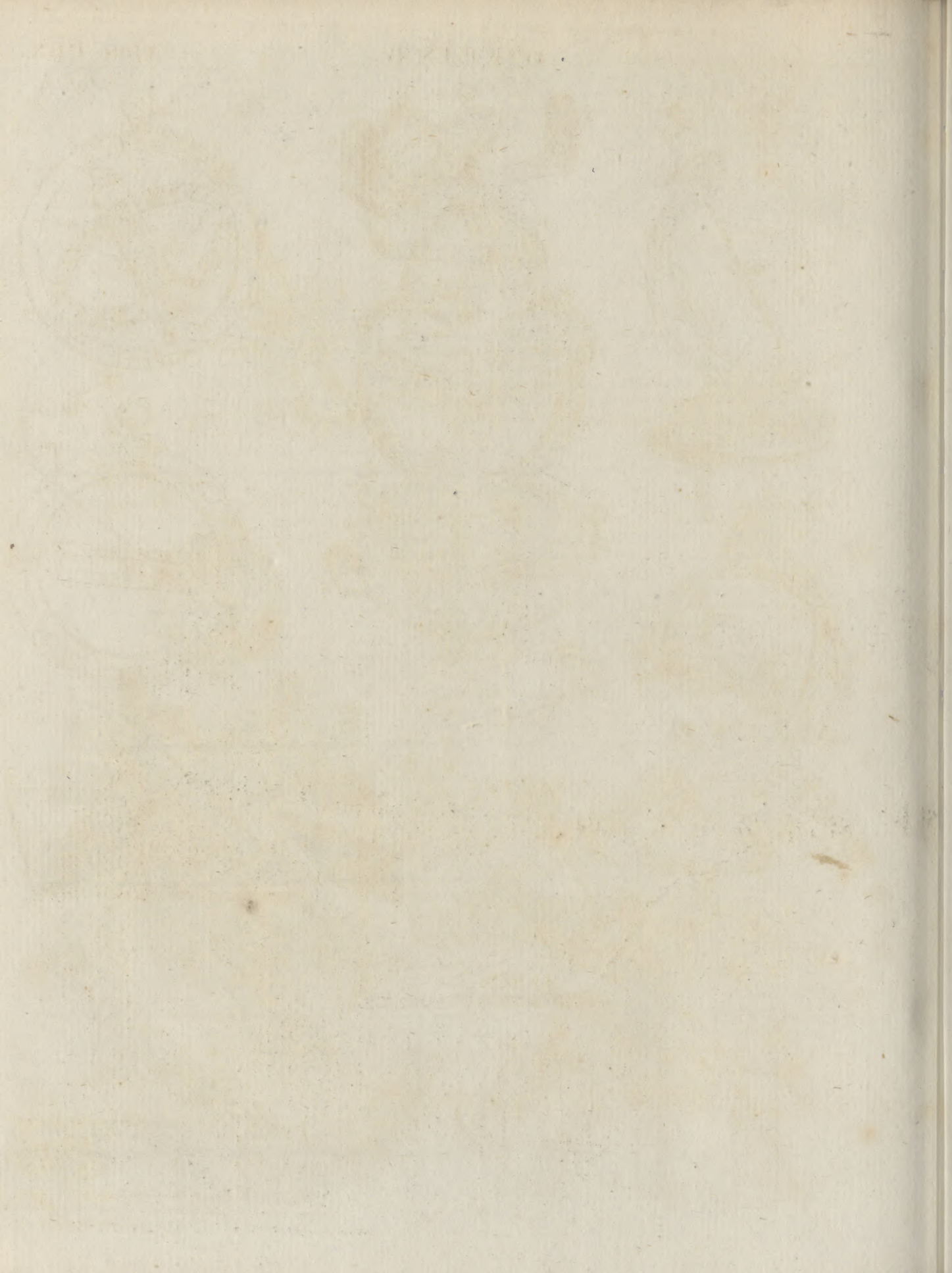


Fig. 1.

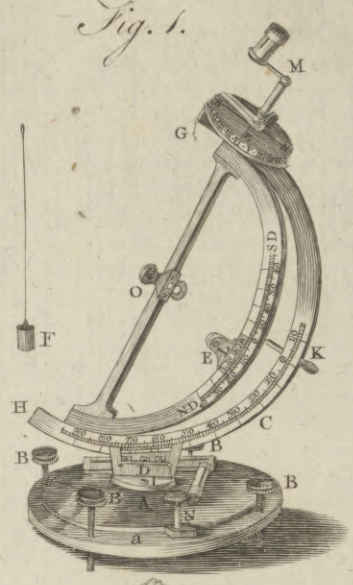


Fig. 2.

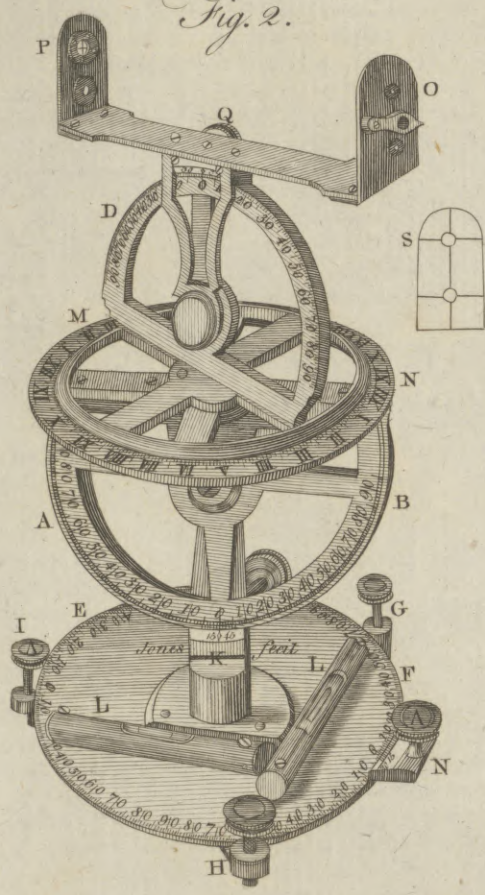


Fig. 3.

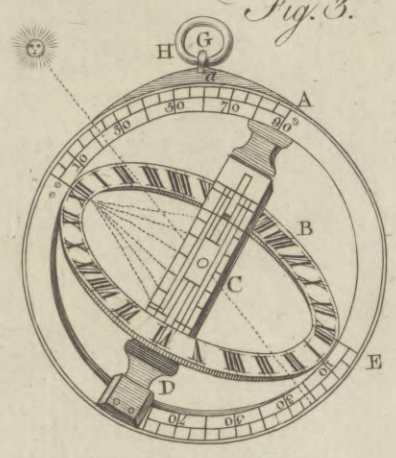


Fig. 5.

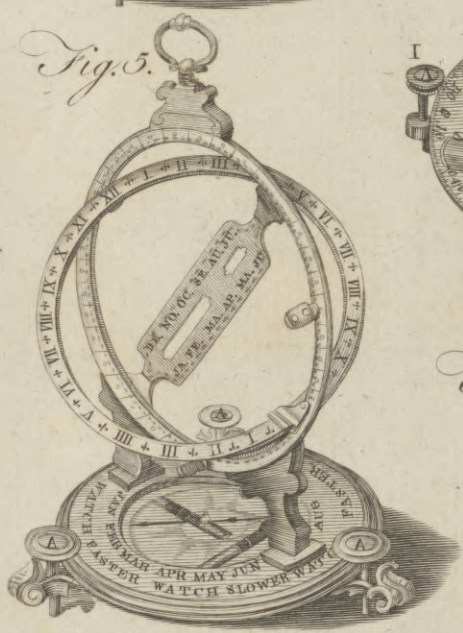


Fig. 4.

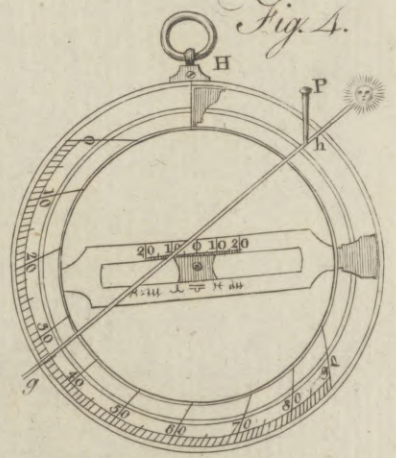


Fig. 10.

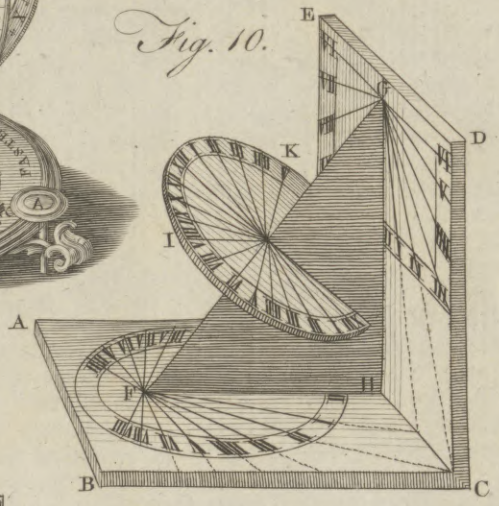


Fig. 9.

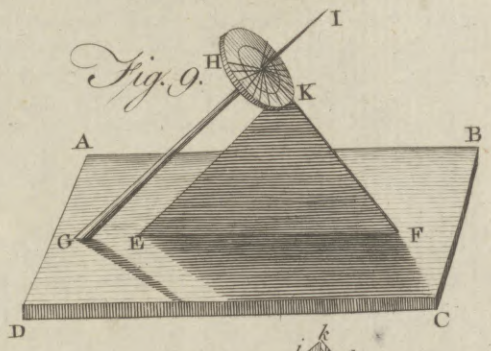


Fig. 8.

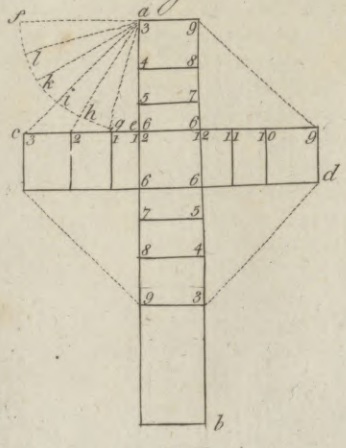


Fig. 7.

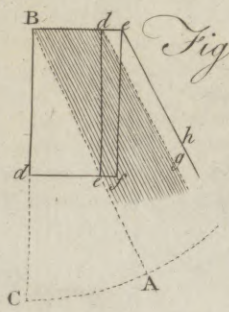


Fig. 6.

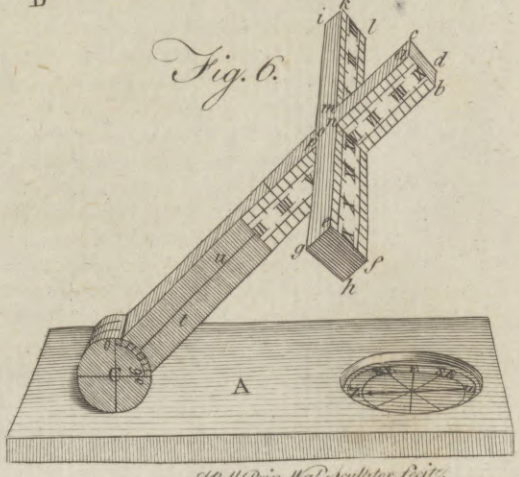


Plate
CLX.
fig. 1.

adjusted state: to perform which, you try the levels of the horizontal plates *Aa*, by first turning the screws *BBBB* till the bubbles of air on the glass tubes of the spirit-levels (levels are at right angles to each other) which are central or in the middle, and remain so when you turn the upper plate *A* half round its centre; but if they should not keep so, there are small screws at the end of each level, which admit of being turned one way or the other as may be requisite till they are so. The plates *Aa* being thus made horizontal, set the latitude arch or meridian *C* steadily between the two-grooved sides that hold it (one of which is seen at *D*), by the screw behind. On this side *D* is divided the nonius or vernier, corresponding with the divisions on the latitude arch *C*, and which may be subdivided into 5 minutes of a degree, and even less if required. The latitude arch *C* is to be so placed in *D*, that the pole *M* may be in a vertical position; which is done by making 90° on the arch at bottom coincide with the 0 of the nonius. The arch is then fixed by the tightening screw at the back of *D*. Hang a silken plumb-line on the hook at *G*: which line is to coincide with a mark at the bottom of the latitude arch at *H*, all the while you move the upper plate *A* round its centre. If it does not so, there are four screws to regulate this adjustment, two of which pass through the base *I* into the plate *A*: the other two screws fasten the nonius piece *D* together; which when unscrewed a thread or two, the nonius piece may be easily moved to the right or left of 90° as may be found requisite.

Prob. 1. *To find the latitude of the place.* Fasten the latitude and hour circles together, by placing the pin *K* into the holes; slide the nonius piece *E* on the hour-circle to the sun's declination for the given day: the sun's declination you may know in the ephemeris by White, or other almanacs, for every day in the year. The nonius piece *E* must be set on that portion of the hour-circle marked *ND* or *SD*, according as the sun has north or south declination. About 20 minutes or a quarter of an hour before noon, observe the sun's shadow or spot that passes through the hole at the axis *O*, and gently move the latitude arch *C* down in its groove at *D* till you observe the spot exactly fall on the cross line on the centre of the nonius piece at *L*; and by the falling of this spot, so long as you observe the sun to increase in altitude, you depress the arch *C*: but at the instant of its stationary appearance the spot will appear to go no lower; then fix the arch by the screw at the back of *D*, and the degrees thereby cut by the nonius on the arch will be the latitude of the place required: if great exactness is wanted, allowance should be made for the refraction of the atmosphere, taken from some nautical or astronomical treatise.

Prob. 2. *The latitude of the place being given, to find the time by the sun or stars.* From an ephemeris as before, you find the sun's declination for the day north or south, and set the nonius piece *E* on the arch accordingly. Set the latitude arch *C*, by the nonius at *D*, to the latitude of the place; and place the magnifying glass at *M*, by which you will very correctly set the index carrying a nonius to the upper XII at *S*. Take out the pin *K*, slacken the horizontal screw *N*, and gently move, either to the right or left as you see necessary, the hour-circle *E*, at the same time with the other hand moving the horizontal plate *A* round its axis

to the right and left, till the latitude-arch *C* falls into the meridian; which you will know by the sun's spot falling exactly in the centre of the nonius piece, or where the lines intersect each other. The time may be now read off exactly to a minute by the nonius on the dial-plate at top, and which will be the time required. The horizontal line drawn on the nonius piece *L*, not seen in the figure, being the parallel of declination or path that the sun-dial makes, it therefore can fall on the centre of that line at no other time but when the latitude arch *C* is in the meridian or due north and south. Hence the hour-circle, on moving round with the pole, must give the true time on the dial-plate at top. There is a hole to the right, and cross hairs to the left, of the centre axis hole *O*, where the sun's rays pass through; whence the sun's shadow or spot will also appear on the right and left of the centre on the nonius piece *L*, the holes of which are occasionally used as sights to observe through. If the sun's rays are too weak for a shadow, a dark glass to screen the eye is occasionally placed over the hole. The most proper time to find a true meridian is three or four hours before or after noon; and take the difference of the sun's declination from noon at the time you observe. If it be the morning, the difference is that and the preceding day; if afternoon, that and the following day: and the meridian being once found exact, the hour-circle *E* is to be brought into this meridian, a fixed place made for the dial, and an object to observe by it also fixed for it at a great distance. The sights *LO* must at all times be directed against this fixed object, to place the dial truly in the meridian, proper for observing the planets, moon, or bright stars by night.

Prob. 3. *To find the sun's azimuth and altitude.* The latitude-arch *C* being in the meridian, bring the pole *M* into the zenith, by setting the latitude-arch to 90° . Fasten the hour-circle *E* in the meridian, by putting in the pin *K*; fix the horizontal plates by the screw *N*; and set the index of the dial-plate to XII, which is the south point: Now take out the pin *K*, and gently move the hour-circle *E*; leaving the latitude arch fixed, till the sun's rays or spot passing through the centre-hole in the axis *O* fall on the centre line of the hour-circle *E*, made for that purpose. The azimuth in time may be then read off on the dial-plate at top by the magnifying glass. This time may be converted into degrees, by allowing at the rate of 15 for every hour. By sliding the nonius piece *E*, so that the spot shall fall on the cross line thereon, the altitude may be taken at the same time if it does not exceed 45 degrees. Or the altitude may be taken more universally, by fixing the nonius piece *E* to the 0 on the divisions, and sliding down the latitude arch in such a manner in the groove at *D*, till the spot falls exactly on the centre of the nonius *E*. The degrees and minutes then shown by the nonius at *D*, taken from 90° , will be the altitude required. By looking through the sight holes *L, O*, the altitude of the moon, planets, and stars, may be easily taken. Upon this principle it is somewhat adapted for levelling also: by lowering the nonius piece *E*, equal altitudes of the sun may be had; and by raising it higher, equal depressions.

More completely to answer the purposes of a good theodolite, of levelling, and the performance of problems

Plate
CLX.

Plate
CLX.

blems in practical astronomy, trigonometry, &c. Mr W. Jones of Holborn divides the horizontal plate *D* into 368° , and an opposite nonius on the upper plate *A*, subdividing the degrees into 5 or more minutes. A telescope and spirit-level applies on the latitude arch at *HG* by two screws, making the latitude arch a vertical arch; and the whole is adapted to triangular staffs with parallel plates, similar to those used with the best theodolites.

18
An equi-
noctial dial
more uni-
versal.

Fig. 2.

A dial more universal for the performance of problems than the above, though in some particulars not so convenient and accurate, is made by Mr Jones and other instrument-makers in London. It consists of the common equatorial circles reduced to a portable size, and instead of a telescope carries a plain sight. Its principal parts consist of the sight-piece *OP*, moveable over the declination's semicircle *D*. It has a nonius *Q* to the semicircle. A dark glass to screen the eye applies occasionally over either of the holes at *O*: these holes on the inner side of the piece are intersected by cross lines, as seen in the figure below; and to the sight *P* two pieces are screwed, the lower having a small hole for the sun's rays or shadow, and the upper two cross hairs or wires.

The declination circle or arch *D* is divided into two, 90° each; and is fixed perpendicularly on a circle with a chamfered edge, containing a nonius division that subdivides into single minutes the under equatorial circle *MN*, which in all cases represents the equator, and is divided into twice 12 hours, and each hour into five minutes. At right angles below this equatorial circle is fixed the semicircle of altitude *AB*, divided into two quadrants of 90° each. This arch serves principally to measure angles of altitude and depression; and it moves centrally on an upright pillar fixed in the horizontal circle *EF*. This circle *EF* is divided into four quadrants of 90° each, and against it there is fixed a small nonius plate at *N*. The horizontal circle may be turned round its centre or axis; and two spirit levels *LL* are fixed on it at right angles to one another.

We have not room to detail the great variety of astronomical and trigonometrical problems that may be solved by this general instrument, as described in Jones's *Instrumental Dialing*. One example connected with our present purpose may here suffice, viz. *To find the time when the latitude is given*. Supposing the instrument to be well adjusted by the directions hereafter given. The meridian of the place should be first obtained to place the instrument in, which is settled by a distant mark, or particular cavities to receive the screws at *IGH*, made in the base it stands on. The meridian is best found by equal altitudes of the sun. In order to take these, you set the middle mark of the nonius on the declination arch *D* at *o*, and fix it by the screw behind; then set the horary or hour circle to *XII*. The circle *EF* being next made horizontal, you direct the sights to the sun, by moving the horizontal circle *EF* and altitude semicircle *AB*: the degrees and minutes marked by the nonius on the latter will be the altitude required. To take equal altitudes, you observe the sun's altitude in the morning two or three hours before noon by the semicircle *AB*: leave the instrument in the same situation perfectly unaltered till the afternoon, when by moving the horizontal circle *EF*, only find the direction of the sight or the sun's spot to be just

the same, which will be an equal altitude with the morning. The place of the horizontal circle *EF* against the nonius at each time of observation is to be carefully noted; and the middle degree or part between each will be the place where the semicircle *AB*, and sight *OP*, will stand or coincide with, when directed to the south or north, according to the sun's situation north or south at noon at the place of observation. Set the index or sight-piece *OP* very accurately to this middle point, by directing the sight to some distant object; or against it, let one be placed up: this object will be the meridian mark, and will always serve at any future time. To find the time, the meridian being thus previously known by equal altitudes of the sun (or star), and determined by the meridian mark made at a distance, or by the cavities in the base to set the screw in: Place the equatorial accordingly, and level the horizontal circle *EF* by the spirit-levels thereon. Set the semicircle *AB* to the latitude of the place, and the index of the sights *OP* to the declination of the sun, found by the ephemeris, as before directed. Turn the semicircle *D* till the sight-holes are accurately directed to the sun, when the nonius on the hour circle *MN* will show the time. It may easily be known when the sun's rays are direct through, by the spot falling on the lower intersectors of the marks across the hole at *O*. See the figure *S* adjoining.

The adjustments of this equatorial dial are to be made from the following trials. 1st, To adjust the levels *LL* on *EF*: Place the *o* of any of the divisions on *EF* to the middle mark or stroke on the nonius at *N*; bring the air-bubbles in the levels in the centres of each case, by turning the several screws at *IGH*: this being exactly done, turn the circle *EF* two 90° or half round: if the bubble of air then remains in the centre, they are right, and properly adjusted for use; but if they are not, you make them so by turning the necessary screws placed for that purpose at the ends of the level-cases by means of a turn-screw, until you bring them to that fixed position, that they will return when the plate *EF* is turned half round. 2^{dly}, To adjust the line of sight *OP*: Set the nonius to *o* on the declination arch *D*, the nonius on the hour-circle to *VI*, and the nonius on the semicircle *AB* to 90° . Direct to some part of the horizon where there may be a variety of fixed objects. Level the horizontal circle *EF* by the levels *LL*, and observe any object that may appear on the centre of the cross wires. Reverse the semicircle *AB*, viz. so that the opposite 90° of it be applied to the nonius, observing particularly that the other nonii preserve their situation. If then the remote object formerly viewed still continues in the centre of the cross wires, the line of sight *OP* is truly adjusted; but if not, unscrew the two screws of the frame carrying the cross wires, and move the frame till the intersection appears against another or new object, which is half way between the first and that which the wires were against on the reversion. Return the semicircle *AB* to its former position: when, if the intersection of the wires be found to be against the half way-object, or that to which they were last divided, the line of sight is adjusted; if not, the operation of observing the interval of the two objects, and applying half way, must be repeated.

It is necessary to observe, that one of the wires should

Plate
CLX.

Plate
CLX.

Plate
CLX.

should be in the plane of the declination circle, and the other wire at right angles; the frame containing the wires is made to shift for that purpose.

The hole at *P* which forms the sun's spot is also to be adjusted by directing the sight to the sun, that the centre of the shadow of the cross hairs may fall exactly on the upper hole: the lower frame with the hole is then to be moved till the spot falls exactly on the lower sight-hole.

Lastly, it is generally necessary to find the correction always to be applied to the observations by the semicircle of altitude *AB*. Set the nonius to 0 on the declination arch *D*, and the nonius to XII on the equator or hour-circle: Turn the sight to any fixed and distinct object, by moving the arch *AB* and circle *EF* only: Note the degree and minute of the angle of altitude or depression: Reverse the declination semicircle by placing the nonius on the hour-circle to the opposite XII: Direct the sight to the same object again as before. If the altitude or depression now given be the same as was observed in the former position, no correction is wanted; but if not the same, half the difference of the two angles is the correction to be added to all observations or rectifications made with that quadrant by which the least angle was taken, or to be subtracted from all observations made with the other quadrant. These several adjustments are absolutely necessary previous to the use of the instrument; and when once well done, will keep so, with care, a considerable time.

19
Universal
ring-dial.
Fig. 3, 4, 5.

The *Universal or Astronomical Equinoctial Ring-Dial*, is an instrument of an old construction, that also serves to find the hour of the day in any latitude of the earth (see fig. 3.). It consists of two flat rings or circles, usually from 4 to 12 inches diameter, and of a moderate thickness; the outward ring *AE* representing the meridian of the place it is used at, contains two divisions of 90° each opposite to one another, serving to let the sliding piece *H*, and ring *G* (by which the dial is usually suspended), be placed on one side from the equator to the north pole, and on the other side to the south, according to the latitude of the place. The inner ring *B* represents the equator, and turns diametrically within the outer by means of two pivots inserted in each end of the ring at the hours XII.

Across the two circles is screwed to the meridian a thin pierced plate or bridge, with a cursor *C*, that slides along the middle of the bridge: this cursor has a small hole for the sun to shine through. The middle of this bridge is conceived as the axis of the world, and its extremities as the poles: on the one side are delineated the 12 signs of the zodiac, and sometimes opposite the degrees of the sun's declination; and on the other side the days of the month throughout the year. On the other side of the outer ring *A* are the divisions of 90°, or a quadrant of altitude: It serves, by the placing of a common pin *P* in the hole *b* (see fig. 4.), to take the sun's altitude or height, and from which the latitude of the place may easily be found.

20
Its use.

Use of the dial. Place the line *a* in the middle of the sliding piece *H* over the degree of latitude of the place. Suppose, for example, 51½ for London; put the line which crosses the hole of the cursor *C* to the day of the month or the degree of the sign. Open

the instrument till the two rings be at right angles to each other, and suspend it by the ring *G*; that the axis of the dial represented by the middle of the bridge be parallel to the axis of the earth, viz. the north pole to the north, and *vice versa*. Then turn the flat side of the bridge towards the sun, so that his rays passing through the small hole in the cursor may fall exactly in a line drawn through the middle of the concave surface of the inner ring or hour-circle, the bright spot by which shows the hour of the day in the said concave surface of the dial. *Note*, The hour XII cannot be shown by this dial, because the outer ring being then in the plane of the meridian, excludes the sun's rays from the inner; nor can this dial show the hour when the sun is in the equinoctial, because his rays then falling parallel to the plane of the inner circle or equinoctial, are excluded by it.

To take the altitude of the sun by this dial, and with the declination thereby to find the latitude of the place: Place a common pin *p* in the hole *b* projecting in the side of the meridian where the quadrant of altitude is: then bring the centre mark of the sliding piece *H* to the 0 or middle of the two divisions of latitude on the other side, and turn the pin towards the sun till it cuts a shadow over the degree of the quadrant of altitude; then what degree the shadow cuts is the altitude. Thus, in fig. 4. the shadow *bg* appears to cut 33°, the altitude of the sun.

The sun's *declination* is found by moving the cursor in the sliding piece till the mark across the hole stands just against the day of the month; then, by turning to the other side of the bridge, the mark will stand against the sun's declination.

In order to find the *latitude* of the place, observe that the latitude and declination be the same, viz. both north or south; subtract the declination from the meridian or greatest daily altitude of the sun, and the remainder is the complement of the latitude; which subtracted from 90°, leaves the latitude. *Example:*

	Deg. min.
The meridian altitude may be	57 48
The sun's declination for the day	19 18
	<hr/>
Complement of latitude	38 30
	<hr/>
	90 0
	<hr/>

The latitude - - - 51 30

But if the latitude and declination be contrary, add them together, and the sum is the complement of the latitude. This dial is sometimes mounted on a stand, with a compass, two spirit-levels, and adjusting screws, &c. &c. (see fig. 5.), by which it is rendered more useful and convenient for finding the sun's azimuth, altitudes, variation of the needle, declinations of planes, &c. &c.

An *Universal Dial on a plain cross*, is described by ²¹Universal
Mr Ferguson. It is moveable on a joint *C*, for ele-
vating it to any given latitude on the quadrant *C* 0 90, ^{cross-dial.} Fig. 6, 7, 8.
as it stands upon the horizontal board *A*. The arms
of the cross stand at right angles to the middle part;
and the top of it, from *a* to *n*, is of equal length with
either of the arms *ne* or *mk*. See fig. 6.

This dial is rectified by setting the middle line *tu* to
5 H 2 the

Plate
CLX.

the latitude of the place on the quadrant, the board A level, and the point N northward by the needle; thus, the plane of the cross will be parallel to the plane of the equator. Then, from III o'clock in the morning till VI, the upper edge kl of the arm io will cast a shadow on the time of the day on the side of the arm cm ; from VI till IX, the lower edge i of the arm io will cast a shadow on the hours on the side eq . From IX in the morning to XII at noon, the edge ab of the top part an will cast a shadow on the hours on the arm nef ; from XII to III in the afternoon, the edge cd of the top part will cast a shadow on the hours on the arm klm ; from III to VI in the evening, the edge gb will cast a shadow on the hours on the part pq ; and from VI till IX, the shadow of the edge ef will show the time on the top part an . The breadth of each part, ab , ef , &c. must be so great, as never to let the shadow fall quite without the part or arm on which the hours are marked, when the sun is at his greatest declination from the equator.

To determine the breadth of the sides of the arms which contain the hours, so as to be in just proportion to their length; make an angle ABC (fig. 7.) of $23\frac{1}{2}$ degrees, which is equal to the sun's greatest declination; and suppose the length of each arm, from the side of the long middle part, and also the length of the top part above the arms, to be equal to Bd . Then, as the edges of the shadow, from each of the arms, will be parallel to Be , making an angle of $23\frac{1}{2}$ degrees with the side Bd of the arm, when the sun's declination is $23\frac{1}{2}^\circ$; it is plain, that if the length of the arm be Bd , the least breadth that it can have, to keep the edge Be of the shadow $Begd$ from going off the side of the arm de before it comes to the end of it ed , must be equal to ed or dB . But in order to keep the shadow within the quarter divisions of the hours, when it comes near the end of the arm, the breadth of it should be still greater, so as to be almost doubled, on account of the distance between the tips of the arms.

The hours may be placed on the arms, by laying down the cross $abcd$ (fig. 8.) on a sheet of paper; and with a black-lead pencil held close to it, drawing its shape and size on the paper. Then take the length ae in the compasses, and with one foot in the corner a , describe with the other the quadrant ef . Divide this arc into six equal parts, and through the points of division draw light lines ag , ah , &c. continuing three of them to the arm ce , which are all that can fall upon it; and they will meet the arm in those points through which the lines that divide the hours from each other, as in fig. 6. are to be drawn right across it. Divide each arm, for the three hours contained in it, in the same manner; and set the hours to their proper places, on the sides of the arms, as they are marked in fig. 33. Each of the hour spaces should be divided into four equal parts, for the half hours and quarters, in the quadrant ef ; and right lines should be drawn through these division-marks in the quadrant, to the arms of the cross, in order to determine the places thereon where the subdivisions of the hours must be marked.

This is a very simple kind of universal dial; it is easily made and has a pretty, uncommon appearance in a garden.

Fig. 9. is called a *Universal Mechanical Dial*, as by its equinoctial circle an easy method is had of describing a dial on any kind of plane. For example: Suppose a dial is required on an horizontal plane. If the plane be immovable, as $ABCD$, find a meridian line as GF ; or if moveable, assume the meridian at pleasure: then by means of the triangle EKF , whose base is applied on the meridian line, raise the equinoctial dial H till the index GI becomes parallel to the axis of the earth, (which is so, if the angle KEF be equal to the elevation of the pole), and the 12 o'clock line on the dial hang over the meridian line of the plane or the base of the triangle. If then, in the night-time or a darkened place, a lighted candle be successively applied to the axis GI , so as the shadow of the index or style GI fall upon one hour-line after another, the same shadow will mark out the several hour-lines on the plane $ABCD$. Noting the points therefore on the shadow, draw lines through them to G ; then an index being fixed on G , according to the angle IGF , its shadow will point out the several hours by the light of the sun. If a dial were required on a vertical plane, having raised the equinoctial circle as directed, push forward the index GI till the tip thereof I touch the plane. If the plane be inclined to the horizon, the elevation of the pole should be found on the same; and the angle of the triangle KEF should be made equal thereto.

Mr Ferguson describes a method of making three dials on three different planes, so that they may all show the time of the day by one gnomon. On the flat board ABC describe an horizontal dial, with its gnomon FGH , of the edge of the shadow of which shows the time of the day. To this horizontal board join the upright board EDC , touching the edge GH of the gnomon; then making the top of the gnomon at G the centre of the vertical south dial, describe it on the board EDC . Besides, on a circular plate IK describe an equinoctial dial, and, by a slit cd in the XII o'clock line from the edge to the centre, put it on the gnomon EG as far as the slit will admit. The same gnomon will show the same hour on each of these dials.

An *Universal Dial*, showing the hours of the day by a terrestrial globe, and by the shadows of several gnomons, at the same time: together with all the places of the earth which are then enlightened by the sun; and those to which the sun is then rising, or on the meridian, or setting. This dial is made of a thick square piece of wood, or hollow metal. The sides are cut into semicircular hollows, in which the hours are placed; the stile of each hollow coming out from the bottom thereof, as far as the ends of the hollows project. The corners are cut out into angles, in the insides of which the hours are also marked; and the edge of the end of each side of the angle serves as a stile for casting a shadow on the hours marked on the other side.

In the middle of the uppermost side, or plane, there is an equinoctial dial; in the centre whereof an upright wire is fixed, for casting a shadow on the hours of that dial, and supporting a small terrestrial globe on its top.

The whole dial stands on a pillar, in the middle of a round horizontal board, in which there is a compass and magnetic needle, for placing the meridian stile toward

Plate
CLX.Easy method of drawing a dial by the universal mechanical dial.
Fig. 9.23
Dials on three different planes, so that they may all show the time of the day by one gnomon.
Fig. 10.Plate
CLIX.
Fig. 10.

Plate
CLIX

ward the south. The pillar has a joint with a quadrant upon it, divided into 90 degrees (supposed to be hid from sight under the dial in the figure) for setting it to the latitude of any given place.

The equator of the globe is divided into 24 equal parts, and the hours are laid down upon it at these parts. The time of the day may be known by these hours, when the sun shines upon the globe.

To rectify and use this dial, set it on a level table, or sole of a window, where the sun shines, placing the meridian stile due south, by means of the needle; which will be, when the needle points as far from the north fleur-de-lis toward the west, as it declines westward, at your place. Then bend the pillar in the joint, till the black line on the pillar comes to the latitude of your place in the quadrant.

The machine being thus rectified, the plane of its dial part will be parallel to the equator, the wire or axis that supports the globe will be parallel to the earth's axis, and the north pole of the globe will point toward the north pole of the heavens.

The same hour will then be shown in several of the hollows, by the ends of the shadows of their respective stiles: the axis of the globe will cast a shadow on the same hour of the day, in the equinoctial dial, in the centre of which it is placed, from the 20th of March to the 23d of September; and, if the meridian of your place on the globe be set even with the meridian stile, all the parts of the globe that the sun shines upon, will answer to those places of the real earth which are then enlightened by the sun. The places where the shade is just coming upon the globe, answer to all those places of the earth to which the sun is then setting; as the places where it is going off, and the light coming on, answer to all the places of the earth where the sun is then rising. And lastly, if the hour of VI be marked on the equator in the meridian of your place (as it is marked on the meridian of London in the figure) the division of the light and shade on the globe will show the time of the day.

The northern stile of the dial (opposite to the southern or meridian one) is hid from the sight in the figure, by the axis of the globe. The hours in the hollow to which that stile belongs, are also supposed to be hid by the oblique view of the figure: but they are the same as the hours in the front-hollow. Those also in the right and left hand semicircular hollows are mostly hid from sight; and so also are all those on the sides next the eye of the four acute angles.

The construction of this dial is as follows:

Fig. 9.

On a thick square piece of wood, or metal, draw the lines $a c$ and $b d$, as far from each other as you intend for the thickness of the stile $a b c d$; and in the same manner, draw the like thickness of the other three stiles, $e f g b$, $i k l m$, and $n o p q$, all standing outright as from the centre.

With any convenient opening of the compasses, as $a A$, (so as to leave proper strength of stuff when $K I$ is equal to $a A$), set one foot in a , as a centre, and with the other foot describe the quadrantal arc $A c$. Then, without altering the compasses, set one foot in b as a centre, and with the other foot describe the quadrant $d B$. All the other quadrants in the figure must be described in the same manner, and with the same open-

ing of the compasses, on their centres $e f i k$, and $n o$; and each quadrant divided into six equal parts, for as many hours, as in the figure; each of which parts must be subdivided into 4, for the half-hours and quarters.

At equal distances from each corner, draw the right lines $I p$ and $K p$, $L q$ and $M q$, $N r$ and $O r$, $P s$ and $Q s$; to form the four angular hollows $I p K$, $L q M$, $N r O$, and $P s Q$; making the distances between the tips of these hollows, as $I K$, $L M$, $N O$, and $P Q$, each equal to the radius of the quadrants; and leaving sufficient room within the angular points $p q r$ and s , for the equinoctial in the middle.

To divide the insides of these angles properly for the hour-spaces thereon, take the following method.

Set one foot of the compasses in the point I as a centre, and open the other to K ; and with that opening describe the arc $K t$: then, without altering the compasses, set one foot in K , and with the other foot describe the arc $I t$. Divide each of these arcs, from I and K to their intersection at t , into four equal parts; and from their centres I and K , through the points of division, draw the right lines $I 3$, $I 4$, $I 5$, $I 6$, $I 7$; and $K 2$, $K 1$, $K 12$, $K 11$; and they will meet the sides $K p$ and $I p$ of the angle $I p K$ where the hours thereon must be placed. And these hour-spaces in the arcs must be subdivided into four equal parts, for the half hours and quarters.—Do the like for the other three angles, and draw the dotted lines, and set the hours in the insides where those lines meet them, as in the figure: and the like hour-lines will be parallel to each other in all the quadrants and in all the angles.

Mark points for all these hours on the upper side: and cut out all the angular hollows, and the quadrantal ones quite through the places where their four gnomons must stand; and lay down the hours on their insides, (as in fig. 10.), and set in their gnomons, which must be as broad as the dial is thick; and this breadth and thickness must be large enough to keep the shadows of the gnomons from ever falling quite out at the sides of the hollows, even when the sun's declination is at the greatest.

Lastly, draw the equinoctial dial in the middle, all the hours of which are equidistant from each other; and the dial will be finished.

As the sun goes round, the broad end of the shadow of the stile $a c b d$ will show the hours in the quadrant $A c$, from sun-rise till VI in the morning; the shadow from the end M will show the hours on the side $L q$ from V to IX in the morning; the shadow of the stile $e f g b$ in the quadrant $D g$ (in the long days) will show the hours from sun-rise till VI in the morning; and the shadow of the end N will show the morning-hours, on the side $O r$, from III to VII.

Just as the shadow of the northern stile $a b c d$ goes off the quadrant $A c$, the shadow of the southern stile $i k l m$ begins to fall within the quadrant $F l$, at VI in the morning; and shows the time, in that quadrant, from VI till XII at noon; and from noon till VI in the evening in the quadrant $m E$. And the shadow of the end O shows the time from XI in the forenoon till III in the afternoon, on the side $r N$; as the shadow of the end P shows the time from

from IX in the morning till I o'clock in the afternoon, on the side Qs .

At noon, when the shadow of the eastern stile $efgb$ goes off the quadrant bC (in which it showed the time from VI in the morning till noon, as it did in the quadrant gD from sun-rise till VI in the morning), the shadow of the western stile $nopq$ begins to enter the quadrant Hp ; and shows the hours thereon from XII at noon till VI in the evening; and after *that* till sunset, in the quadrant qG : and the end Q casts a shadow on the side Ps from V in the evening till IX at night, if the sun be not set before that time.

The shadow of the end I shows the time on the side Kp from III till VII in the afternoon; and the shadow of the stile $abcd$ shows the time from VI in the evening till the sun sets.

The shadow of the upright central wire, that supports the globe at top, shows the time of the day, in the middle or equinoctial dial, all the summer half-year, when the sun is on the north side of the equator.

Having shown how to make sun-dials by the assistance of a good globe, or of a dialing scale, we shall now proceed to the method of constructing dials arithmetically; which will be more agreeable to those who have learned the elements of trigonometry, because globes and scales can never be so accurate as the logarithms in finding the angular distances of the hours. Yet as a globe may be found exact enough for some other requisites in dialing, we shall take it in occasionally.

The construction of sun-dials on all planes whatever may be included in one general rule: intelligible, if that of a horizontal-dial for any given latitude be well understood. For there is no plane, however obliquely situated with respect to any given place, but what is parallel to the horizon of some other place; and therefore if we can find that other place by a problem on the terrestrial globe, or by a trigonometrical calculation, and construct a horizontal dial for it; that dial applied to the plane where it is to serve will be a true dial for that place.—Thus, an erect direct south dial in $51\frac{1}{2}$ degrees north latitude, would be a horizontal-dial on the same meridian, 90 degrees southward of $51\frac{1}{2}$ degrees north latitude: which falls in with $38\frac{1}{2}$ degrees of south latitude. But if the upright plane declines from facing the south at the given place, it would still be a horizontal plane 90 degrees from that place, but for a different longitude, which would alter the reckoning of the hours accordingly.

CASE I. I. LET us suppose that an upright plane at London declines 36 degrees westward from facing the south, and that it is required to find a place on the globe to whose horizon the said plane is parallel; and also the difference of longitude between London and that place.

Rectify the globe to the latitude of London, and bring London to the zenith under the brass meridian; then that point of the globe which lies in the horizon at the given degree of declination (counted westward from the south point of the horizon) is the place at which the abovementioned plane would be horizontal.—Now, to find the latitude and longitude of that place, keep your eye upon the place, and turn the globe eastward until it comes under the graduated edge of the

brass meridian; then the degree of the brass meridian that stands directly over the place is its latitude; and the number of degrees in the equator, which are intercepted between the meridian of London and the brass meridian, is the place's difference of longitude.

Thus, as the latitude of London is $51\frac{1}{2}$ degrees north, and the declination of the place is 36 degrees west; elevate the north pole $51\frac{1}{2}$ degrees above the horizon, and turn the globe until London comes to the zenith, or under the graduated edge of the meridian; then count 36 degrees on the horizon westward from the south point, and make a mark on that place of the globe over which the reckoning ends, and bringing the mark under the graduated edge of the brass meridian, it will be found to be under $30\frac{1}{4}$ degrees in south latitude: keeping it there, count in the equator the number of degrees between the meridian of London and the brass meridian (which now becomes the meridian of the required place), and you will find it to be $42\frac{3}{4}$. Therefore an upright plane at London, declining 36 degrees westward from the south, would be a horizontal plane at that place, whose latitude is $30\frac{1}{4}$ degrees south of the equator, and longitude $42\frac{3}{4}$ degrees west of the meridian of London.

Which difference of longitude being converted into time, is 2 hours 51 minutes.

The vertical-dial declining westward 36 degrees at London, is therefore to be drawn in all respects as a horizontal-dial for south latitude $30\frac{1}{4}$ degrees; save only that the reckoning of the hours is to anticipate the reckoning on the horizontal-dial by 2 hours 51 minutes: for so much sooner will the sun come to the meridian of London, than to the meridian of any place whose longitude is $42\frac{3}{4}$ degrees west from London.

2. But to be more exact than the globe will show us, we shall use a little trigonometry.

Let $NESW$ be the horizon of London, whose zenith is Z , and P the north pole of the sphere; and let Zb be the position of a vertical plane at Z , declining westward from S (the south) by an angle of 36 degrees; on which plane an erect-dial for London at Z is to be described. Make the femidiameter ZD perpendicular to Zb ; and it will cut the horizon in D , 36 degrees west of the south S . Then a plane, in the tangent HD , touching the sphere in D , will be parallel to the plane Zb ; and the axis of the sphere will be equally inclined to both these planes.

Let WQE be the equinoctial, whose elevation above the horizon of Z (London) is $38\frac{1}{2}$ degrees; and PRD be the meridian of the place D , cutting the equinoctial in R . Then it is evident, that the arc RD is the latitude of the place D (where the plane Zb would be horizontal) and the arc RQ is the difference of longitude of the planes Zb and DH .

In the spherical triangle WDR , the arc WD is given, for it is the complement of the plane's declination from S to south; which complement is 54° (*viz.* $90^\circ - 36^\circ$;) the angle at R , in which the meridian of the place D cuts the equator, is a right angle; and the angle RWD measures the elevation of the equinoctial above the horizon of Z , namely $38\frac{1}{2}$ degrees. Say therefore, As radius is to the co-sine of the plane's declination from the south, so is the co-sine of the latitude of Z to the sine of RD the latitude of D : which is of a different denomination

Plate
CLIX.

denomination from the latitude of *Z*, because *Z* and *D* are on different sides of the equator.

As radius - - - - 10.00000
To co-sine $36^{\circ} 0' = RQ$ 9.90796
So co-sine $51^{\circ} 30' = QZ$ 9.79415

To sine $30^{\circ} 14' = DR$ (9.70211) = the lat. of *D*, whose horizon is parallel to the vertical plane *Zb* at *Z*.

N. B. When radius is made the first term, it may be omitted; and then by subtracting it mentally from the sum of the other two, the operation will be shortened. Thus, in the present case,

To the logarithmic sine of $WR = * 54^{\circ} 0'$ 9.90796
Add the logarithmic sine of $RD = † 38^{\circ} 30'$ 9.79415

Their sum—radius - - - - - 9.70211
gives the same solution as above. And we shall keep to this method in the following part of this article.

To find the difference of longitude of the places *D* and *Z*, say, As radius is to the co-sine of $38\frac{1}{2}$ degrees, the height of the equinoctial at *Z*, so is the co-tangent of 36 degrees, the plane's declination, to the co-tangent of the difference of longitudes. Thus,

To the logarithmic sine of $‡ 51^{\circ} 30'$ 9.89354
Add the logarithmic tang. of $§ 54^{\circ} 0'$ 10.13874

Their sum—radius - - - - - 10.03228
is the nearest tangent of $47^{\circ} 8' = WR$; which is the co-tangent of $42^{\circ} 52' = RQ$, the difference of longitude sought. Which difference, being reduced to time, is 2 hours $51\frac{1}{2}$ minutes.

3. And thus having found the exact latitude and longitude of the place *D*, to whose horizon the vertical plane at *Z* is parallel, we shall proceed to the construction of a horizontal dial for the place *D*, whose latitude is $30^{\circ} 14'$ fourth; but anticipating the time at *D* by 2 hours 51 minutes (neglecting the $\frac{1}{2}$ min. in practice), because *D* is so far westward in longitude from the meridian of London; and this will be a true vertical dial at London, declining westward 36 degrees.

Fig. 5.

Assume any right line *CSL* for the substile of the dial, and make the angle *KCP* equal to the latitude of the place (*viz.* $30^{\circ} 14'$), to whose horizon the plane of the dial is parallel; then *CRP* will be the axis of the stile, or edge that casts the shadow on the hours of the day, in the dial. This done, draw the contingent line *EQ*, cutting the substilar line at right angles in *K*; and from *K* make *KR* perpendicular to the axis *CRP*. Then *KG* (= *KR*) being made radius, that is, equal to the chord of 60° or tangent of 45° on a good sector, take $42^{\circ} 52'$ (the difference of longitude of the places *Z* and *D*) from the tangents, and having set it from *K* to *M*, draw *CM* for the hour-line of XII. Take *KN*, equal to the tangent of an angle less by 15 degrees than *KM*; that is, the tangent of $27^{\circ} 52'$: and through the point *N* draw *CN* for the hour-line of I. The tangent of $12^{\circ} 52'$ (which is 15° less than $27^{\circ} 42'$), set off the same way, will give a point between *K* and *N*, through which the hour-line of II is to be drawn. The tangent of $2^{\circ} 8'$ (the difference between 45° and $52^{\circ} 52'$) placed on the other side of *CL*, will determine the point through which

Plate
CLIX.

the hour-line of III is to be drawn: to which $2^{\circ} 8'$, if the tangent of $15'$ be added, it will make $17^{\circ} 8'$; and this set off from *K* towards *Q* on the line *EQ*, will give the point for the hour-line of IV: and so of the rest.—The forenoon hour-lines are drawn the same way, by the continual addition of the tangents 15° , 30° , 45° , &c. to $42^{\circ} 52'$ (= the tangent of *KM*) for the hours of XI, X, IX, &c. as far as necessary; that is, until there be five hours on each side of the substile. The sixth hour, accounted from that hour or part of the hour on which the substile falls, will be always in a line perpendicular to the substile, and drawn through the centre *C*.

4. In all erect dials, *CM*, the hour-line of XII, is perpendicular to the horizon of the place for which the dial is to serve; for that line is the intersection of a vertical plane with the plane of the meridian of the place, both which are perpendicular to the plane of the horizon: and any line *HO*, or *ho*, perpendicular to *CM*, will be a horizontal line on the plane of the dial, along which line the hours may be numbered; and *CM* being set perpendicular to the horizon, the dial will have its true position.

5. If the plane of the dial had declined by an equal angle toward the east, its description would have differed only in this, that the hour-line of XII would have fallen on the other side of the substile *CL*, and the line *HO* would have a subcontrary position to what it has in this figure.

6. And these two dials, with the upper points of their stiles turned toward the north pole, will serve for other two planes parallel to them; the one declining from the north toward the east, and the other from the north toward the west, by the same quantity of angle. The like holds true of all dials in general, whatever be their declination and obliquity of their planes to the horizon.

CASE II. 7. If the plane of the dial not only declines, but also reclines, or inclines. Suppose its declination from fronting the south *S* be equal to the arc *SD* on the horizon; and its reclination be equal to the arc *Dd* of the vertical circle *DZ*: then it is plain, that if the quadrant of altitude *ZdD* on the globe cuts the point *D* in the horizon, and the reclination is counted upon the quadrant from *D* to *d*; the intersection of the hour circle *PRd*, with the equinoctial *WQE*, will determine *Rd*, the latitude of the place *d*, whose horizon is parallel to the given plane *Zb* at *Z*; and *RQ* will be the difference in longitude of the places at *d* and *Z*.

Fig. 6.

Trigonometrically thus: Let a great circle pass thro' the three points, *W*, *d*, *E*; and in the triangle *WDD*, right-angled at *D*, the sides *WD* and *Dd* are given; and thence the angle *DWd* is found, and so is the hypotenuse *Wd*. Again, the difference, or the sum, of *DWd* and *DWR*, the elevation of the equinoctial above the horizon of *Z*, gives the angle *dWR*; and the hypotenuse of the triangle *WRd* was just now found; whence the sides *Rd* and *WR* are found, the former being the latitude of the place *d*, and the latter the complement of *RQ*, the difference of longitude sought.

Thus,

* The co-sine of 36.0 , or of *RQ*. † The co-sine of 51.30 , or of *QZ*. ‡ The co-sine of 38.30 , or of *WDR*. § The co-tangent of 36.0 , or of *DW*.

Plate CLIX.

Thus, if the latitude of the place *Z* be $52^{\circ} 10'$ north; the declination *SD* of the plane *Zh* (which would be horizontal at *d*) be 36° , and the reclination be 15° , or equal to the arc *Dd*; the south latitude of the place *d*, that is, the arc *Rd*, will be $15^{\circ} 9'$; and *RQ*, the difference of the longitude, $36^{\circ} 2'$. From these data, therefore, let the dial (fig. 7.) be described, as in the former example.

8. There are several other things requisite in the practice of dialing; the chief of which shall be given in the form of arithmetical rules, simple and easy to those who have learned the elements of trigonometry. For in practical arts of this kind, arithmetic should be used as far as it can go; and scales never trusted to, except in the final construction, where they are absolutely necessary in laying down the calculated hour-distances on the plane of the dial.

Rule I. To find the angles which the hour-lines on any dial make with the substile. To the logarithmic sine of the given latitude, or of the stile's elevation above the plane of the dial, add the logarithmic tangent of the hour (*) distance from the meridian, or from the (†) substile; and the sum minus radius will be the logarithmic tangent of the angle sought.

Fig. 5.

For *KC* is to *KM* in the ratio compounded of the ratio of *KC* to *KG* (= *KR*) and of *KG* to *KM*; which making *CK* the radius 10,000,000, or 10,0000, or 10, or 1, are the ratio of 10,000,000, or of 10,0000, or of 10, or of 1, to *KG* × *KM*.

Thus, in a horizontal dial, for latitude $51^{\circ} 30'$, to find the angular distance of *XI* in the forenoon, or *I* in the afternoon, from *XII*.

To the logarithmic sine of $51^{\circ} 30'$ 9.89354†
Add the logarithmic tang. of $51^{\circ} 0'$ 9.42805

The sum—radius is - - - 9.32159 = the logarithmic tangent of $11^{\circ} 50'$, or of the angle which the hour-line of *XI* or *I* makes with the hour of *XII*.

And by computing in this manner, with the sine of the latitude, and the tangents of $30, 45, 60,$ and 75° , for the hours of *II, III, IIII,* and *V* in the afternoon; or of *X, IX, VIII,* and *VII* in the forenoon; you will find their angular distances from *XII* to be $24^{\circ} 18', 38^{\circ} 3', 53^{\circ} 35',$ and $71^{\circ} 6'$; which are all that there is occasion to compute for.—And these distances may be set off from *XII* by a line of chords; or rather, by taking 1000 from a scale of equal parts, and setting that extent as a radius from *C* to *XII*; and then, taking 209 of the same parts (which are the natural tangent of $11^{\circ} 50'$), and setting them from *XII* to *XI* and *I*, on the line *ba*, which is perpendicular to *CXII*: and so for the rest of the hour-lines, which in the table of natural tangents, against the above distances, are 451, 782, 1355, and 2920, of such equal parts from *XII*, as the radius *CXII* contains 1000.
N^o 100.

And, lastly, set off 1257 (the natural tangent of $51^{\circ} 30'$) for the angle of the stile's height, which is equal to the latitude of the place.

Plate CLIX.

Rule II. The latitude of the place, the sun's declination, and his hour distance from the meridian, being given, to find (1.) his altitude, (2.) his azimuth. (1.) Let *d* be the sun's place, *dR* his declination; and, in the triangle *PZd*, *Pd* the sum, or the difference, of *dR*, and the quadrant *PR*, being given by the supposition, as also the complement of the latitude *PZ*, and the angle *dPZ*, which measures the horary distance of *d* from the meridian; we shall (by Case 4. of Keill's oblique spheric Trigonometry) find the base *Zd*, which is the sun's distance from the zenith, or the complement of his altitude.

Fig. 6.

And (2.) as sine *Zd* : sine *Pd* : : sine *dPZ* : *dZP*, or of its supplement *DZS*, the azimuthal distance from the south.

Or the practical rule may be as follows.

Write *A* for the sign of the sun's altitude, *L* and *l* for the sine and co-sine of the latitude, *D* and *d* for the sine and co-sine of the sun's declination, and *H* for the sine of the horary distance from *VI*.

Then the relation of *H* to *A* will have three varieties.

1. When the declination is toward the elevated pole, and the hour of the day is between *XII* and *VI*; it is

$$A = LD + Hld, \text{ and } H = \frac{A - LD}{ld}$$

2. When the hour is after *VI*, it is $A = LD - Hld$, and $H = \frac{LD + A}{ld}$

3. When the declination is toward the depressed pole, we have $A = Hld - LD$, and $H = \frac{A + LD}{ld}$

Which theorems will be found useful, and expeditious enough for solving those problems in geography and dialing which depend on the relation of the sun's altitude to the hour of the day.

Example I. Suppose the latitude of the place to be $51\frac{1}{2}$ degrees north: the time five hours distant from *XII*, that is, an hour after *VI* in the morning, or before *VI* in the evening; and the sun's declination 20° north. Required the sun's altitude?

Then to log. *L* = log. sin. $51^{\circ} 30'$ 1.89354**
add log. *D* = log. sin. $20^{\circ} 0'$ 1.53405

Their sum 1.42759 gives

LD = logarithm of 0.267664, in the natural sines.

And, to log. *H* = log. sin. $15^{\circ} 0'$ 1.41300

add \int log. *l* = log. sin. $38^{\circ} 0'$ 1.79414

ζ log. *d* = log. sin. $70^{\circ} 0'$ 1.97300

Their sum 1.18014 gives

Hld = logarithm of 0.151408, in the natural sines.

And

(*) That is, of $15, 30, 45, 60, 75^{\circ}$, for the hours of *I, II, III, IIII, V*, in the afternoon; and *XI, X, IX, VIII, VII*, in the afternoon.

(†) In all horizontal dials, and erect north or south dials, the substile and meridian are the same: but in all declining dials, the substile line makes an angle with the meridian.

(‡) In which case, the radius *CK* is supposed to be divided into 10,000 equal parts.

** Here we consider the radius as unity, and not 10,00000; by which, instead of the index 9, we have — 1 as above; which is of no farther use than making the work a little easier.

†† The distance of one hour from *VI*.

‡‡ The co-latitude of the place.

§§ The co-declination of the sun.

Plate
CLIX.

And these two numbers (0.267664 and 0.151408) make $0.419072 = A$; which, in the table, is the nearest natural sine of $24^{\circ} 47'$, the sun's altitude sought.

The same hour-distance being assumed on the other side of VI, then $LD - Hld$ is 0.116256, the sine of $6^{\circ} 40\frac{1}{2}'$; which is the sun's altitude at V in the morning, or VII in the evening, when his north declination is 20° .

But when the declination is 20° south (or towards the depressed pole) the difference $Hld - LD$ becomes negative; and thereby shows, that an hour before VI in the morning, or past VI in the evening, the sun's centre is $6^{\circ} 40\frac{1}{2}'$ below the horizon.

Examp. 2. From the same data, to find the sun's azimuth. If $H, L,$ and $D,$ are given, then (by par. 2. of Rule II.) from H having found the altitude and its complement Zd : and the arc Pd (the distance from the pole) being given; say, As the co-sine of the altitude is to the sine of the distance from the pole, so is the sine of the hour-distance from the meridian to the sine of the azimuth distance from the meridian.

Let the latitude be $51^{\circ} 30'$ north, the declination $15^{\circ} 9'$ south, and the time II h. 24 m. in the afternoon, when the sun begins to illuminate a vertical wall, and it is required to find the position of the wall.

Then, by the foregoing theorems, the complement of the altitude will be $81^{\circ} 32\frac{1}{2}'$, and Pd the distance from the pole being $109^{\circ} 5'$, and the horary distance from the meridian, or the angle dPZ , 36° .

To log. sin. $74^{\circ} 51'$	1.98464
Add log. sin. $36^{\circ} 0'$	1.76922

And from the sum	1.75386
Take the log. sin. $81^{\circ} 32\frac{1}{2}'$	1.99525

Remains 1.75861 = log. sin.

35° , the azimuth distance sought.

When the altitude is given, find from thence the hour, and proceed as above.

This praxis is of singular use on many occasions; in finding the declination of vertical planes more exactly than in the common way, especially if the transits of the sun's centre are observed by applying a ruler with sights, either plain or telescopic, to the wall or plane whose declination is required. In drawing a meridian line, and finding the magnetic variation. In finding the bearings of places in terrestrial surveys; the transits of the sun over any place, or his horizontal distance from it, being observed, together with the altitude and hour. And thence determining small differences of longitude. In observing the variations at sea, &c.

The declination, inclination, and reclinacion, of planes, are frequently taken with a sufficient degree of accuracy by an instrument called a declinator or declinator.

The construction of this instrument, as somewhat improved by Mr Jones, is as follows: On a mahogany board $ABIK$, is inserted a semicircular arch $AGEB$ of ivory or box-wood, divided into two quadrants of 90° each, beginning from the middle G . On the centre C turns a vertical quadrant DPE , divided into 90° , beginning from the base E ; on which is a moveable index CF , with a small hole at F for the sun's rays to pass thro', and form a spot on a

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mark at C . The lower extremity of the quadrant at E is pointed, to mark the linear direction of the quadrant when applied to any other plane; as this quadrant takes off occasionally, and a plumb-line P hangs at the centre on G , for taking the inclinations and reclinations of planes. At H , on the plane of the board, is inserted a compass of points and degrees, with a magnetical needle turning on a pivot over it. The addition of the moveable quadrant and index considerably extend the utility of the declinator, by rendering it convenient for taking equal altitudes of the sun, the sun's altitude, and bearing, at the same time, &c.

To apply this instrument in taking the declination of a wall or plane: Place the side ACB in an horizontal direction to the plane proposed, and observe what degree or point of the compass the N part of the needle stands over from the north or the south, and it will be the declination of the plane from the north or south accordingly. In this case, allowance must be made for the variation of the needle (if any) at the place; and which, if not previously known, will render this operation very inaccurate. At London it is now $22^{\circ} 30'$ to the west.

Another way more exact may be used, when the sun shines out half an hour before noon. The side ACB being placed against the plane, the quadrant must be so moved on the semicircle AGB , and the index CF on DE , till the sun's rays passing through the hole at F fall exactly on the mark at G , and continued so till the sun requires the index to be raised no higher: you will then have the meridian or greatest altitude of the sun; and the angle contained between G and E will be the declination required. The position of CE is the meridian or 12 o'clock line. But the most exact way for taking the declination of a plane, or finding a meridian line, by this instrument, is, in the forenoon, about two or three hours before 12 o'clock, to observe two or three heights or altitudes EF of the sun; and at the same time the respective angular polar distances GE from G : write them down; and in the afternoon watch for the same, or one of the same altitudes, and mark the angular distances or distance on the quadrant AG : Now, the division or degree exactly between the two noted angular distances will be the true meridian, and the distance at which it may fall from the C of the divisions at G will be the declination of the plane. The reason for observing two or three altitudes and angles in the morning is, that in case there should be clouds in the afternoon, you may have the chance of one corresponding altitude.

The quadrant occasionally takes off at C , in order to place it on the surface of a pedestal or plane intended for an horizontal dial; and thereby from equal altitudes of the sun, as above, draw a meridian or 12 o'clock line to set the dial by.

The base $ABIK$ serves to take the inclination and reclinacion of planes. In this case, the quadrant is taken off, and the plummet P is fitted on a pin at the centre C : then the side IGK being applied to the plane proposed, as QL (fig. 7.) of the plumb-line cuts the semicircle in the point G , the plane is horizontal; or if it cut the quadrant in any point at S , then will GCS be the angle of inclination. Lastly, if applying

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Plate
CLXI.

25
To take by
it the de-
clination,
&c. and to
find a me-
ridian line.

24
Improved
declinator.

Plate
CLXI.
fig. 6.

the

Plate
CLXI.

the side ACB (fig. 7.) to the plane, the plummet cuts G , the plane is vertical; or if it cuts either of the quadrants, it is accordingly the angle of inclination. Hence, if the quantity of the angle of inclination be compared with the elevation of the pole and equator, it is easily known whether the plane be inclined or reclined.

Of the double Horizontal Dial, and the Babylonian and Italian Dials.

To the *gnomonic* projection, there is sometimes added a *stereographic* projection of the hour-circles, and the parallels of the sun's declination, on the same horizontal plane; the upright side of the gnomon being sloped into an edge, standing perpendicularly over the centre of the projection: so that the dial, being in its due position, the shadow of that perpendicular edge is a vertical circle passing through the sun, in the stereographic projection.

The months being duly marked on this dial, the sun's declination, and the length of the day at any time, are had by inspection (as also his altitude, by means of a scale of tangents). But its chief property is, that it may be placed true, whenever the sun shines, without the help of any other instrument.

Fig. 6.

Let d be the sun's place in the stereographic projection, xyz the parallel of the sun's declination, Zd a vertical circle through the sun's centre, Pd the hour-circle; and it is evident, that the diameter NS of this projection being placed duly north and south, these three circles will pass through the point d . And therefore, to give the dial its due position, we have only to turn its gnomon toward the sun, on a horizontal plane, until the hour on the common gnomonic projection coincides with that marked by the hour-circle Pd , which passes through the intersection of the shadow Zd with the circle of the sun's present declination.

The Babylonian and Italian dials reckon the hours, not from the meridian as with us, but from the sun's rising and setting. Thus, in Italy, an hour before sun-set is reckoned the 23d hour; two hours before sun-set the 22d hour; and so of the rest. And the shadow that marks them on the hour-lines, is that of the point of a stile. This occasions a perpetual variation between their dials and clocks, which they must correct from time to time, before it arises to any sensible quantity, by setting their clocks so much faster or slower. And in Italy, they begin their day, and regulate their clocks, not from sun-set, but from about mid-twilight, when the *Ave-Maria* is said; which corrects the difference that would otherwise be between the clock and the dial.

The improvements which have been made in all sorts of instruments and machines for measuring time, have rendered such dials of little account. Yet, as the theory of them is ingenious, and they are really, in some respects, the best contrived of any for vulgar use, a general idea of their description may not be unacceptable.

Fig. 8.

Let fig. 8. represent an erect direct south wall, on which a Babylonian dial is to be drawn, showing the hours from sun-rising; the latitude of the place, whose horizon is parallel to the wall, being equal to the angle KCR . Make, as for a common dial, $KG = KR$ (which

is perpendicular to CR) the radius of the equinoctial \mathcal{AEQ} , and draw RS perpendicular to CK for the stile of the dial; the shadow of whose point R is to mark the hours, when SR is set upright on the plane of the dial.

Plate
CLXI.

Then it is evident, that, in the contingent line \mathcal{AEQ} , the spaces K_1, K_2, K_3 , &c. being taken equal to the tangents of the hour-distances from the meridian, to the radius KG , one, two, three, &c. hours after sun rising, on the equinoctial day; the shadow of the point R will be found, at these times, respectively in the points 1, 2, 3, &c.

Draw, for the like hours after sun-rising, when the sun is in the tropic of Capricorn \mathcal{WV} , the like common lines CD, CE, CF , &c. and at these hours the shadow of the point R will be found in those lines respectively. Find the sun's altitudes above the plane of the dial at these hours; and with their co-tangents Sd, Se, Sf , &c. to radius SR , describe arcs intersecting the hour-lines in the points d, e, f , &c. so shall the right lines $1d, 2e, 3f$, &c. be the lines of I, II, III, &c. hours after sun-rising.

The construction is the same in every other case; due regard being had to the difference of longitude of the place at which the dial would be horizontal, and the place for which it is to serve: and likewise, taking care to draw no lines but what are necessary; which may be done partly by the rules already given for determining the time that the sun shines on any plane; and partly from this, that on the tropical days, the hyperbola described by the shadow of the point R limits the extent of all the hour-lines.

Of the right placing of Dials, and having a true Meridian Line for the regulating of Clocks and Watches.

THE plane on which the dial is to rest being duly prepared, and every thing necessary for fixing it, you may find the hour tolerably exact by a large equinoctial ring-dial, and set your watch to it. And then the dial may be fixed by the watch at your leisure.

If you would be more exact, take the sun's altitude by a good quadrant, noting the precise time of observation by a clock or watch. Then compute the time for the altitude observed; and set the watch to agree with that time, according to the sun. A Hadley's quadrant is very convenient for this purpose: for by it you may take the angle between the sun and his image reflected from a basin of water; the half of which angle, subtracting the refraction, is the altitude required. This is best done in summer; and the nearer the sun is to the prime vertical (the east or west azimuth) when the observation is made, so much the better.

Or, in summer, take two equal altitudes of the sun in the same day; one any time between 7 and 10 in the morning, the other between 2 and 5 in the afternoon; noting the moments of these two observations by a clock or watch: and if the watch shows the observations to be at equal distances from noon, it agrees exactly with the sun: if not, the watch must be corrected by half the difference of the forenoon and afternoon intervals; and then the dial may be set true by the watch.

Thus, for example, suppose you had taken the sun's altitude when it was 20 minutes past VIII in the morning

Plate
CLXI.

ing by the watch; and found, by observing in the afternoon, that the sun had the same altitude 10 minutes before III; then it is plain, that the watch was 5 minutes too fast for the sun: for 5 minutes after XII is the middle time between VIII h. 20m. in the morning, and III h. 50m. in the afternoon; and therefore to make the watch agree with the sun, it must be set back five minutes.

26
meridian
ne.

A good *meridian line*, for regulating clocks or watches, may be had by the following method.

Make a round hole, almost a quarter of an inch diameter, in a thin plate of metal; and fix the plate in the top of a fourth window, in such a manner, that it may recline from the zenith at an angle equal to the co-latitude of your place, as nearly as you can guess: for then the plate will face the sun directly at noon on the equinoctial days. Let the sun shine freely thro' the hole into the room; and hang a plumb-line to the ceiling of the room, at least five or six feet from the window, in such a place as that the sun's rays, transmitted through the hole, may fall upon the line when it is noon by the clock; and having marked the said place on the ceiling, take away the line.

Having adjusted a sliding bar to a dove-tail groove, in a piece of wood about 18 inches long, and fixed a hook into the middle of the bar, nail the wood to the above-mentioned place on the ceiling, parallel to the side of the room in which the window is; the groove and bar being towards the floor: Then hang the plumb-line upon the hook in the bar, the weight or plummet reaching almost to the floor; and the whole will be prepared for farther and proper adjustment.

This done, find the true solar time by either of the two last methods, and thereby regulate your clock. Then, at the moment of next noon by the clock, when the sun shines, move the sliding-bar in the groove, until the shadow of the plumb-line bisects the image of the sun (made by his rays transmitted thro' the hole) on the floor, wall, or on a white screen placed on the north-side of the line; the plummet or weight at the end of the line hanging freely in a pail of water placed below it on the floor.—But because this may not be quite correct for the first time, on account that the plummet will not settle immediately, even in water; it may be farther corrected on the following days, by the above method, with the sun and clock; and so brought to a very great exactness.

N. B. The rays transmitted through the hole will cast but a faint image of the sun, even on a white screen, unless the room be so darkened that no sunshine may be allowed to enter but what comes thro' the small hole in the plate. And always, for some time before the observation is made, the plummet ought to be immersed in a jar of water, where it may hang freely; by which means the line will soon become steady, which otherwise would be apt to continue twinging.

Description of two New Instruments for facilitating the practice of Dialing.

I. *The DIALING Sector*, contrived by the late Mr Benjamin Martin, is an instrument by which dials are drawn in a more easy, expeditious, and accurate manner. It is represented on the plate as now made by Mr

Jones of Holborn. The principal lines on it are the *line of latitudes* and the *line of hours*. They are found on most of the common plane scales and sectors; but in a manner that greatly confines and diminishes their use: for, first, they are of a *fixed length*; and, secondly, *too small* for any degree of accuracy. But in this new *sector*, the *line of latitudes* is laid down, as it is called, *sector-wise*, viz. one line of latitudes upon each leg of the sector, beginning in the centre of the joint, and diverging to the end (as upon other sectors), where the extremes of the two lines at 90° and 90° are nearly one inch apart, and their length $11\frac{1}{2}$ inches: which length admits of great exactness; for at the 70th degree of latitude, the divisions are to quarters of a degree or 15 minutes. This accuracy of the divisions admits of a peculiar advantage, namely, that it may be equally communicated to any length from 1 to 23 inches, by taking the *parallel* distances (see fig. 5.), viz. from 10 to 10, 20 to 20, 30 to 30, and so on as is done in like cases on the lines of sines, tangents, &c. Hence its universal use for drawing dials of any prepared size. The line of hours for this end is adapted and placed contiguous to it on the sector, and of a size large enough for the very minutes to be distinct on the part where they are smallest, which is on each side of the hour of III.

From the construction of the line of hours before shown, the divisions on each side of the hour III are the same to each end, so that the hour-line properly is only a *double line of three hours*. Hence a line of 3 hours answers all the purposes of a line of 6, by taking the double extent of 3, which is the reason why upon the sector the line of hours extends only to $4\frac{1}{2}$.

To make use of the *line of latitude* and *line of hours* on the sector: As single scales only, they will be found more accurate than those placed on the common scales and sectors, in which the hours are usually subdivided, but into 5 minutes, and the line of latitudes into whole degrees. But it is shown above how much more accurately these lines are divided on the *dialing sector*. As an example of the great exactness with which horizontal and other dials may be drawn by it, on account of this new *sectoral* disposition of these scales, and how all the advantages of their great length are preserved in any lesser length of the VI o'clock line *ce* and *af*: Apply either of the distances of *ce* or *af* to the line of latitude at the given latitude of London, suppose $51^\circ 32'$ on one line to $51^\circ 32'$ on the other, in the manner shown in fig. 5. and then taking all the hours, quarters, &c. from the hour-scale by similar parallel extents, you apply them upon the lines *ed* and *fb* as before described.

As the hour-lines on the sector extend to but $4\frac{1}{2}$, the *double distance* of the hour 3, when used either *singly* or *sectorally*, must be taken, to be first applied from $51^\circ 32'$ on the latitudes, to its contact on the XII o'clock line, before the several hours are laid off. The method of drawing a vertical north or south dial is perfectly the same as for the above horizontal one; only reversing the hours as in fig. 1. and making the angle of the stile's height equal to the complement of the latitude $38^\circ 28'$.

The method of drawing a *vertical declining dial* by the sector, is almost evident from what has been already said in dialing. But more fully to comprehend the

Plate
CLXI.
fig. 4.

Fig. 2.

the matter, it must be considered there will be a variation of particulars as follow: 1. Of the *substile* or line over which the stile is to be placed; 2. The height of the stile above the plane; 3. The difference between the meridian of the place and that of the plane, or their difference of longitude. From the given *latitude of the place*, and *declination of the plane*, you calculate the three requisites just mentioned, as in the following example. Let it be required to make an *erect south dial*, declining from the meridian *westward* $28^{\circ} 43'$, in the latitude of London $51^{\circ} 32'$. The first thing to be found is the distance of the substilar line GB (fig. 3.) from the meridian of the plane $G XII$. The analogy from this is: *As radius is to the sine of the declination, so is the co-tangent of the latitude to the tangent of the distance sought.* viz. As radius: $28^{\circ} 43'$: : tang. $38^{\circ} 28'$: tang. $20^{\circ} 55'$. This and the following analogy may be as accurately worked on the Gunter's line of sines, tangents, &c. properly placed on the sector, as by the common way from logarithms. Next, To find the plane's difference of longitude. *As the sine of the latitude is to radius, so is the tangent of the declination to the tangent of the difference of longitude,* viz. As $s 51^{\circ} 32'$: radius: : tang. $28^{\circ} 43'$: tang. $35^{\circ} 0'$. Lastly, to find the height of the stile: *As radius is to the co-sine of the latitude, so is the co-sine of the declination to the sine of the stile's height,* viz. Radius: $s 38^{\circ} 28'$: : $s 61^{\circ} 17'$: $s 33^{\circ} 5'$.

Fig. 3.

The three requisites thus obtained, the dial is drawn in the following manner: Upon the meridian line $G XII$, with any radius GC describe the arch of a circle, upon which set off $20^{\circ} 55'$ from C to B , and draw GB , which will be the substilar line, over which the stile of the dial must be placed.

At right angles to this line GB , draw $A Q$ indefinitely through the point G : then from the scale of latitudes take the height of the stile $33^{\circ} 5'$, and set it each way from G to A and Q . Lastly, take the double length of 3 on the hour-line in your compasses, and setting one foot in A or Q , with the other foot mark the line GB in D , and join $AD QD$, and then the triangle $AD Q$ is completed upon the substilar line GB .

To lay off the hours, the plane's difference of longitude being 35° , equal to 2h. 20 min. in time, allowing 15° to an hour, so that there will be 2h. 20' between the point D and the meridian $G XII$, in the line AD . Therefore, take the first 20' of the hour-scale in your compasses, and set off from D to 2; then take 1h. 20', and set off from D to 1; 2h. 20', and set off from D to 12; 3h. 20', from D to 11; 4h. 20' from D to 10; and 5h. 20' from D to 9, which will be 40' from A .

Then, on the other side of the substilar line GB , you take 40' from the beginning of the scale, and set off from D to 3; then take 1h. 40', and set off from D to 4; also 2h. 40', and set off from D to 5; and so on to 8, which will be 20' from Q . Then from G the centre, through the several points 2, 1, 12, 11, 10, 9, on one side, and 3, 4, 5, 6, 7, 8, on the other, you draw the hour-lines, as in the figure they appear. The hour of VIII need only be drawn for the morning; for the sun goes off from this *west decliner* 20' before VIII in

the evening.—The quarters, &c. are all set off in the same manner from the hour-scale as the above hours were.

The next thing is fixing the stile or gnomon, which is always placed in the substilar line GB , and which is already draw. The stile above the plane has been found to be $33^{\circ} 5'$: therefore with any radius GB describe an obscure arch, upon which set off $33^{\circ} 5'$ from B to S , and drawn GS , and the angle $SG B$ will be the true height of the gnomon above the substilar line GB .

II. The *DIALING Trigon* is another new instrument of great utility in the practice of dialing; and was also contrived by the late Mr Martin. It is composed of two graduated scales and a plane one. On the scale AB is graduated the line of latitudes; and on the scale AC , the line of hours: these properly conjoined with the plane scale BD , as shown in the figure, truly represent the gnomonical triangle, and is properly called a *dialing trigon*. The hour-scale AC is here of its full length; so that the hours, halves, quarters, &c. and every single minute (if required) may be immediately set off by a steel point; and from what has before been observed in regard to the sector, it must appear that this method by the trigon is the most expeditious way of drawing dials that any mechanism of this sort can afford. As an example of the application of this trigon in the construction of an horizontal dial for the latitude of London $51^{\circ} 32'$, you must proceed as follows: Apply the trigon to the 6 o'clock line af (fig. 1.) on the morning side, so that the line of latitudes may coincide with the 6 o'clock line, and the beginning of the divisions coincide with the centre a ; and at $51^{\circ} 32'$ of the line of latitudes place the 6 o'clock edge of the line of hours, and the other end or beginning of the scale close against the plane scale cd , as by the figure at d ; and fastening these bars down by the several pins placed in them to the paper and board, then the hours, quarters, &c. are all marked off with a steel point instantly, and the hour-lines drawn through them as before, and as shown in the figure. When this is done for the side af or morning hours, you move the scale of latitudes and hours to the other side ce , or afternoon side, and place the hour-scale to $51^{\circ} 32'$ as before, and push down the hours, quarters, &c. and draw the lines through them for the afternoon hours, which is clearly represented in the figure.

In like manner is an *erect north* or *south dial* drawn (see fig 2.), the operation being just the same, only reversing the hours as in the figure, and marking the angles of the stile's height equal to the complement of the latitude.

This trigon may be likewise used for drawing *vertical declining dials* (fig. 3), as it is with the same facility applied to the lines $A Q$, GB , and the hours and quarters marked off as before directed.

Mr Jones graduates on the scale BD of the trigon a line of chords, which is found useful for laying off the necessary angles of the stile's height. The scales of this trigon, when not in use, lie very close together, and pack up into a portable case for the pocket.

Fig. 1.

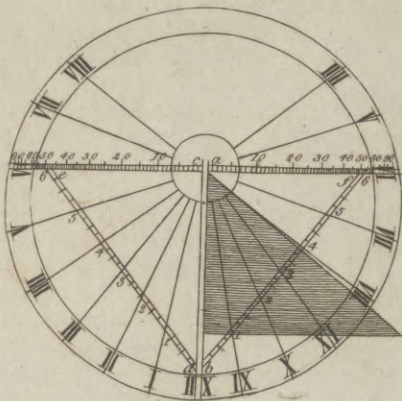


Fig. 2.

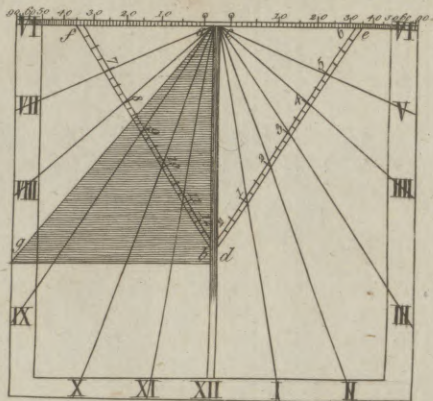


Fig. 3.



Fig. 4.

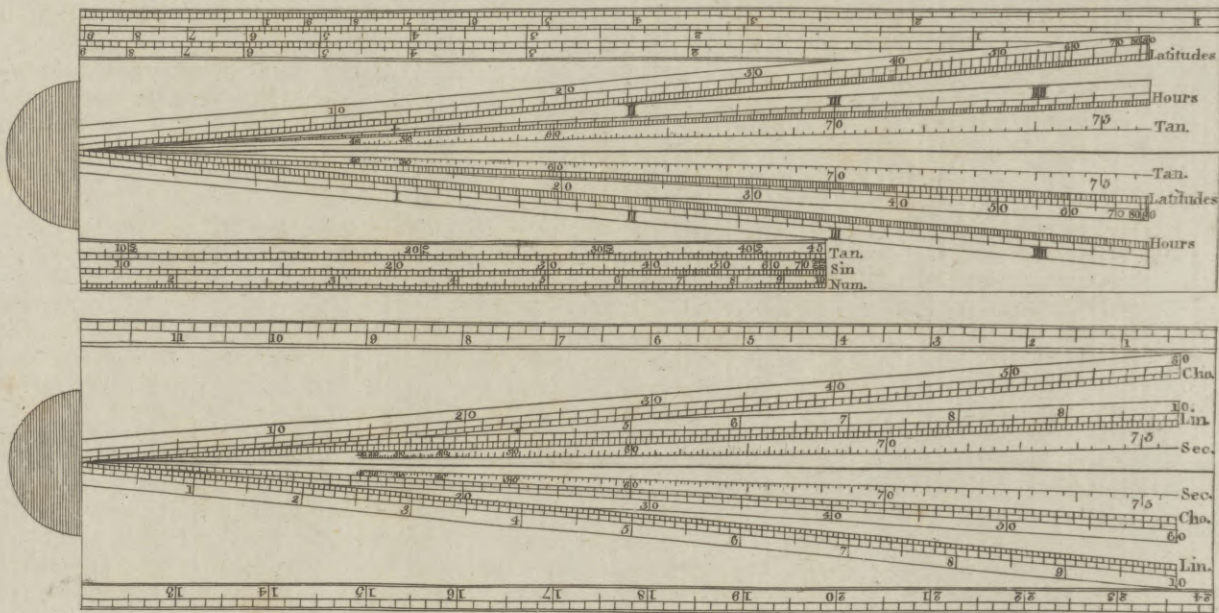


Fig. 5.

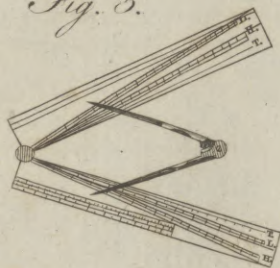


Fig. 6.

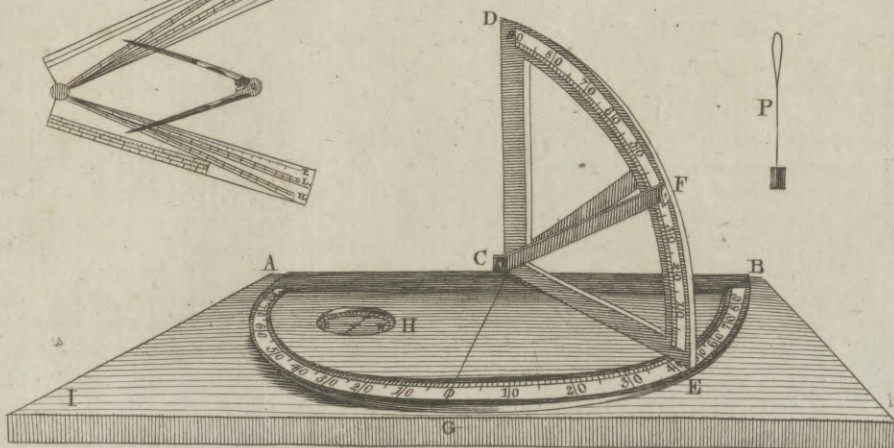


Fig. 8.

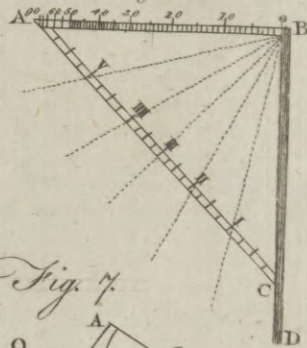
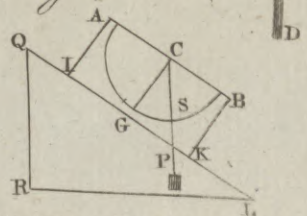
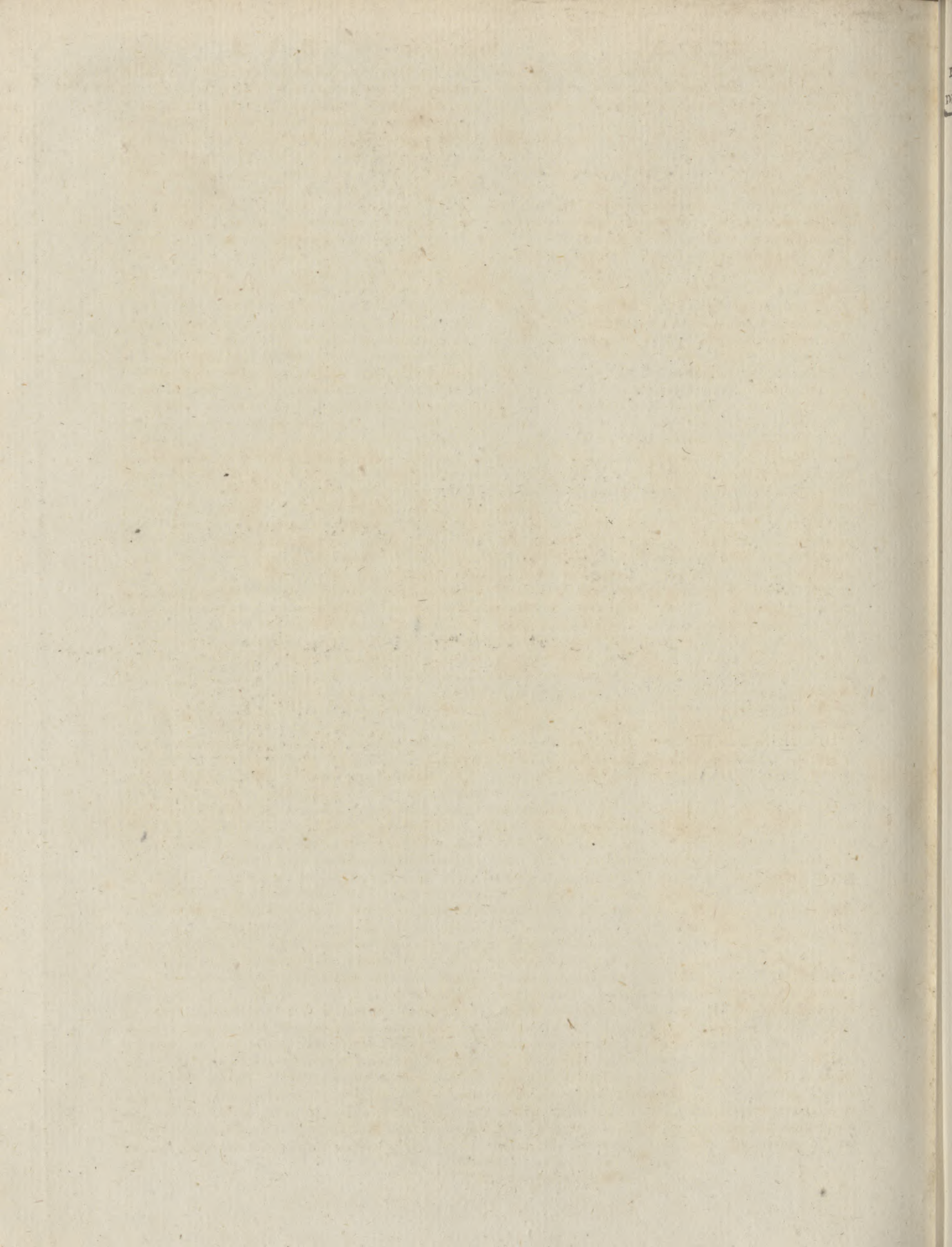


Fig. 7.





DIALING Lines, or Scales, are graduated lines, placed on rules, or the edges of quadrants, and other instruments, to expedite the construction of dials. See Plate CLVIII.

DIALING-Scātor. See *DIALING*, p. 803, and Plate CLXI.

DIALING-Sphere, is an instrument made of brass, with several femicircles sliding over one another, on a moving horizon, to demonstrate the nature of the doctrine of spherical triangles, and to give a true idea of the drawing of dials on all manner of planes.

DIALING-Trigon. See *DIALING*, p. 804, and Plate CLXI.

DIALING, in a mine, called also *Plumming*, is the using of a compass (which they call *dial*), and a long line, to know which way the load or vein of ore inclines, or where to shift an air-shaft, or bring an adit to a desired place.

DIALIS, in antiquity, a Latin term signifying something that belongs to Jupiter.—The word is formed from *Διος*, the genitive of *Ζεύς*, *Jupiter*.

Flamen DIALIS. See *FLAMEN*.

DIALITHA, in the writings of the ancients, a word used to express the elegant ornaments of the Greeks and Romans, composed of gold and gems. They also called these *litocolla*, “cemented stones or gems;” the gold being in this case as a cement to hold the stones together. They wore bracelets and other ornamental things about their habits thus made; and their cups and table-furniture, for magnificent treats, were of this kind. The green stones were found to succeed best of all in these things; and the emerald and greenish topaz, or, as we call it, chrysolite, were most in esteem for this purpose. This use of the stones explains what Pliny very often says of them in his description: *Nihil jucundius aurum decet*, “Nothing becomes gold better:” this he says of the green topaz or chrysolite; and this and many other like passages have greatly perplexed the critics, who did not hit upon this explication.

DIALING, or *DIALING*. See *DIALING*.

DIALOGISM, in rhetoric, is used for the soliloquy of persons deliberating with themselves. See *SOLILOQUY*.

DIALOGUE, in matters of literature, a conversation between two or more persons either by writing or by word of mouth.

Composition and Style of written DIALOGUE. As the end of speech is conversation, no kind of writing can be more natural than dialogue, which represents this. And accordingly we find it was introduced very early, for there are several instances of it in the Mosaic history. The ancient Greek writers also fell very much into it, especially the philosophers, as the most convenient and agreeable method of communicating their sentiments and instructions to mankind. And indeed it seems to be attended with very considerable advantages, if well and judiciously managed. For it is capable to make the driest subjects entertaining and pleasant, by its variety, and the different characters of the speakers. Besides, things may be canvassed more minutely, and many lesser matters, which serve to clear up a subject, may be introduced with a better grace, by questions and answers, objections and replies, than can be conveniently done in a continued discourse.

There is likewise a further advantage in this way of writing, that the author is at liberty to choose his speakers: And therefore, as Cicero has well observed, when we imagine that we hear persons of an established reputation for wisdom and knowledge talking together, it necessarily adds a weight and authority to the discourse, and more closely engages the attention. The subject-matter of it is very intensive: for whatever is a proper argument of discourse, public or private, serious or jocose; whatever is fit for wise and ingenious men to talk upon, either for improvement or diversion; is suitable for a dialogue.

From this general account of the nature of dialogue, it is easy to perceive what kind of style best suits it. Its affinity with *EPISTLES*, shows there ought to be no great difference between them in this respect. Indeed, some have been of opinion, that it ought rather to sink below that of an epistle, because dialogues should in all respects represent the freedom of conversation; whereas epistles ought sometimes to be composed with care and accuracy, especially when written to superiors. But there seems to be little weight in this argument, since the design of an epistle is to say the same things, and in the same manner, as the writer judges would be most fit and proper for him to speak, if present. And the very same thing is designed in a dialogue, with respect to the several persons concerned in it. Upon the whole, therefore, the like plain, easy, and simple style, suited to the nature of the subject, and the particular characters of the persons concerned, seems to agree to both.

But as greater skill is required in writing dialogues than letters, we shall give a more particular account of the principal things necessary to be regarded in their composition, and illustrate them chiefly from Cicero's excellent Dialogues concerning an Orator.—A dialogue, then, consists of two parts; an *introduction*, and *the body of the discourse*.

1. The *introduction* acquaints us with the place, time, persons, and occasion, of the conversation. Thus Cicero places the scene of his dialogues at Crassus's country seat; a very proper recess, both for such a debate and the parties engaged in it. And as they were persons of the first rank, and employed in the greatest affairs of state, and the discourse held them for two days; he represents it to have happened at the time of a festival, when there was no business done at Rome, which gave them an opportunity to be absent.

And because the greatest regard is to be had in the choice of the persons, who ought to be such as are well acquainted with the subject upon which they discourse; in these dialogues of Cicero, the two principal disputants are Crassus and Antony, the greatest orators of that age, and therefore the most proper persons to dispute upon the qualifications necessary for their art. One would think it scarce necessary to observe, that the conference should be held by persons who lived at the same time, and so were capable to converse together. But yet some good writers have run into the impropriety of feigning dialogues between persons who lived at distant times. Plato took this method, in which he has been followed by Macrobius. But others, who have been willing to bring persons to discourse together, who lived in different ages, without such inconsistency, have wrote dialogues of the dead. Lucian

Dialogue. has made himself most remarkable in this way. As to the number of persons in a dialogue, they may be more or less: so many as can conveniently carry on a conversation without disorder or confusion may be admitted. Some of Cicero's dialogues have only two, others three or more, and those concerning an orator seven. And it is convenient they should all, in some respects, be persons of different characters and abilities; which contributes both to the variety and beauty of the discourse, like the different attitude of figures in a picture. Thus, in Cicero's dialogues last mentioned, Crassus excelled in art, Antony principally for the force of his genius, Catullus for the purity of his style, Scevola for his skill in the law, Cæsar for wit and humour; and though Sulpitius and Cotta, who were young men, were both excellent orators, yet they differed in their manner. But there should be always one chief person, who is to have the main part of the conversation; like the hero in an epic poem or a tragedy, who excels the rest in action; or the principal figure in a picture, which is most conspicuous. In Plato's dialogues, this is Socrates; and Crassus, in those of Cicero above mentioned.

It is usual, likewise, in the introduction, to acquaint us with the occasion of the discourse. Indeed this is not always mentioned; as in Cicero's dialogue of the parts of oratory, where the son begins immediately with desiring his father to instruct him in the art. But it is generally taken notice of, and most commonly represented, as accidental. The reason of which may be, that such discourses appear most natural; and may likewise afford some kind of apology for the writer in managing his different characters, since the greatest men may be supposed not always to speak with the utmost exactness in an accidental conversation. Thus Cicero, in his dialogues concerning an orator, makes Crassus occasionally fall upon the subject of oratory, to divert the company from the melancholy thoughts of what they had been discoursing of before, with relation to the public disorders, and the dangers which threatened their country. But the introduction ought not to be too long and tedious. Mr Addison complains of this fault in some authors of this kind. "For though (as he says) some of the finest treatises of the most polite Latin and Greek writers are in dialogue, as many very valuable pieces of French, Italian, and English, appear in the same dress; yet in some of them there is so much time taken up in ceremony, that, before they enter on their subject, the dialogue is half over."

2. We come now to the *body* of the discourse, in which some things relating to the persons, and others to the subject, are proper to be remarked.

And as to the *persons*, the principal thing to be attended to is to keep up a justness of character through the whole. And the distinct characters ought to be so perfectly observed, that from the very words themselves it may be always known who is the speaker. This makes dialogue more difficult than single description, by reason of the number and variety of characters which are to be drawn at the same time, and each of them managed with the greatest propriety. The principal speaker should appear to be a person of great sense and wisdom, and best acquainted with the subject. No question ought to be asked him, or objection

Dialogue. started to what he says, but what he should fairly answer. And what is said by the rest should principally tend to promote his discourse, and carry it through in the most artful and agreeable manner. Where the argument is attended with difficulties, one other person or more may be introduced, of equal reputation, or near it, but of different sentiments, to oppose him and maintain the contrary side of the question. This gives opportunity for a thorough examination of the point on both sides, and answering all objections. But if the combatants are not pretty equally matched, and masters of the subject, they will treat it but superficially. And through the whole debate there ought not to be the least wrangling, peevishness, or obstinacy; nothing but the appearance of good-humour and good breeding, the gentleman and the friend, with a readiness to submit to conviction and the force of truth, as the evidence shall appear on one side or the other. In Cicero, these two characters are Crassus and Antony. And from them Mr Addison seems to have taken his Philander and Cynthio, in his *Dialogues upon the usefulness of ancient medals*, which are formed pretty much on Cicero's plan. Where younger persons are present, or such who are not equally acquainted with the subject, they should be rather upon the inquiry than dispute: And the questions they ask should be neither too long nor too frequent; that they may not too much interrupt the debate, or appear over talkative before wiser and more experienced persons. Sulpitius and Cotta sustain this character in Cicero, and Eugenius in Mr Addison. And it is very convenient there should be one person of a witty and jocular humour, to enliven the discourse at proper seasons, and make it the more entertaining, especially when the dialogue is drawn out to any considerable length. Cæsar has this part in Cicero. And in Mr Addison, Cynthio is a person of this turn, and opposes Philander in a merry way. Mr Addison's subject admitted of this: but the seriousness and gravity of Cicero's argument required a different speaker for the jocular part. Many persons ought not to speak immediately one after another. Horace's rule for plays is:

To crowd the stage is odious and absurd.

I. e. no fourth actor strive to speak a word.

Though Scaliger and others think a fourth person may sometimes be permitted to speak in the same scene without confusion. However, if this is not commonly to be allowed upon the stage, where the actors are present, and may be distinguished by their voice and habit; much less in a dialogue, where you have only their names to distinguish them.

With regard to the *subject*, all the arguments should appear probable at least, and nothing be advanced which may seem weak or trivial. There ought also to be an union in dialogue, that the discourse may not ramble, but keep up to the main design. Indeed, short and pleasant progressions are sometimes allowable for the ease and entertainment of the reader. But every thing should be so managed, that he may still be able to carry on the thread of the discourse in his mind, and keep the main argument in view, till the whole is finished. The writers of dialogue have not confined their discourses to any certain space of time; but either concluded them with the day, or broke off when their speakers have been tired, and reassumed them again the next day. Thus Cicero allows two days for his

Dialogue
||
Diamastigosis.

Diamastigosis,
Diameter.

his three dialogues concerning an orator; but Mr Addison extends his to three days, allowing a day for each. Nor has the same method always been observed in composing dialogues. For sometimes the writer, by way of narrative, relates a discourse which passed between other persons. Such are the dialogues of Cicero and Mr Addison last mentioned, and many others both of the ancients and moderns. But, at other times, the speakers are introduced in person, as talking to each other. This, as Cicero observes, prevents the frequent repetition of those words, *he said, and he replied*; and by placing the hearer, as it were, in the conversation, gives him a more lively representation of the discourse, which makes it the more affecting. And therefore Cicero, who wrote his *dialogue of old age* in this manner, in which Cato, who was then in years, largely recounts the satisfactions of life which may be enjoyed in old age, tells his friend Atticus, he was himself so affected with that discourse, that when he reviewed it sometimes, he fancied they were not his own words, but Cato's. There are some other dialogues of Cicero, written in the same way; as that *Of friendship*, and *Of the parts of oratory*. And both Plato and Lucian generally chose this method.

DIALOGUE, in dramatic composition. See POETRY, chap. ii 22, 23.

DIALTHÆA, in pharmacy, an unguent much used as a resolvent; so called from ALTHÆA, or marshmallows, which is the principal ingredient in it.

DIALUM, in botany: A genus of the monogynia order, belonging to the diandria class of plants. The corolla is pentapetalous; no calyx; the stamina at the upper side of the receptacle.

DIALYSIS, in grammar, a mark or character, consisting of two points, ··, placed over two vowels of a word, in order to separate them, because otherwise they would make them a diphthong, as *Mosaic*, &c.

DIAMASTIGOSIS, a festival at Sparta in honour of Diana Orthia, which received that name *απο του μασιγουου*, from *whipping*, because boys were whipped be-

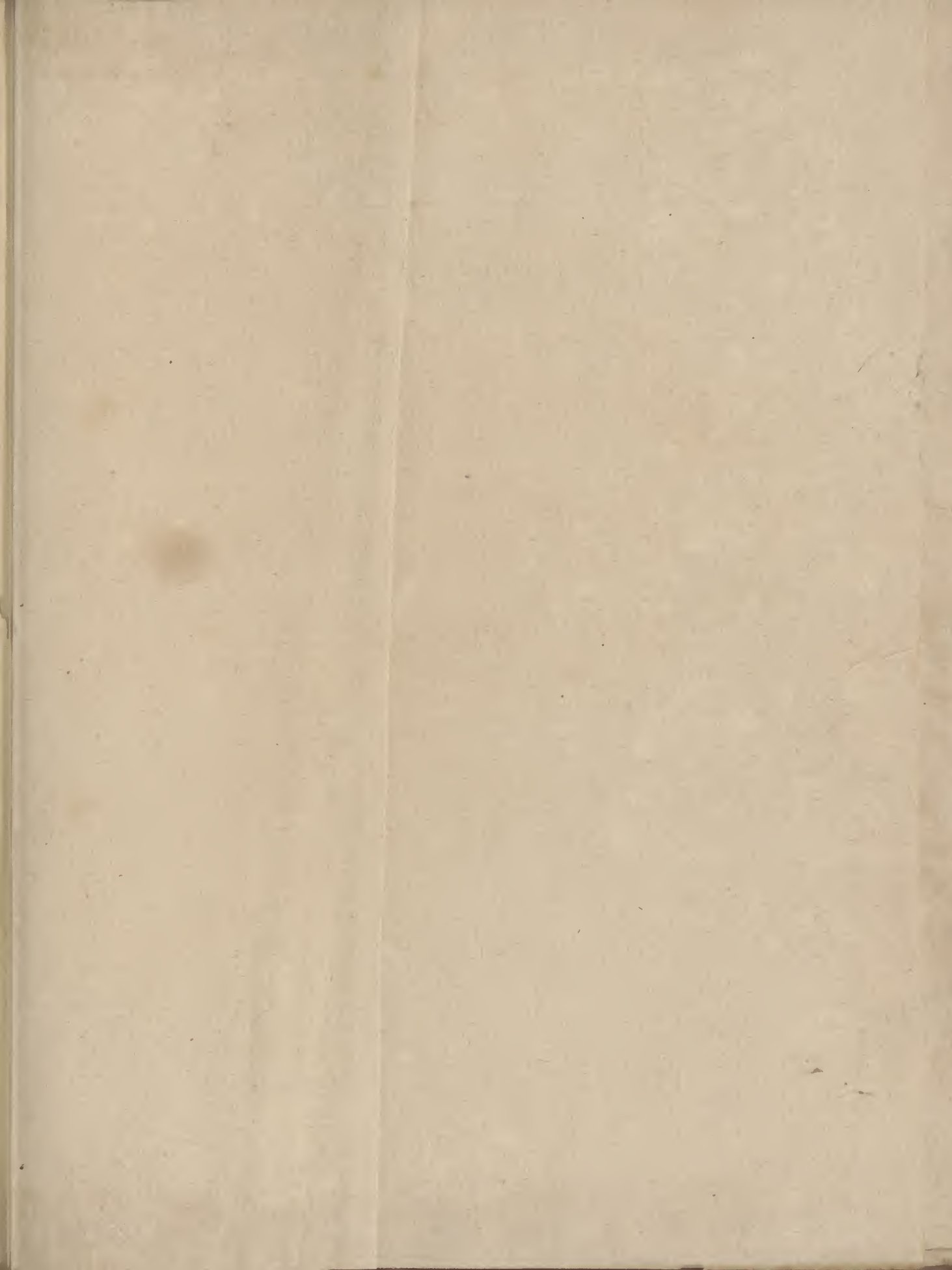
fore the altar of the goddesses. These boys, called *Bomonicæ*, were originally free born Spartans, but in the more delicate ages they were of mean birth, and generally of a slavish origin. This operation was performed by an officer in a severe and unfeeling manner; and that no compassion should be raised, the priest stood near the altar with a small light statue of the goddess, which suddenly became heavy and insupportable if the lash of the whip was more lenient or less rigorous. The parents of the children attended the solemnity, and exhorted them not to commit any thing either by fear or groans, that might be unworthy of Laconian education. These flagellations were so severe, that the blood gushed in profuse torrents, and many expired under the lash of the whip, without uttering a groan, or betraying any marks of fear. Such a death was reckoned very honourable; and the corpse was buried with much solemnity with a garland of flowers on its head. The origin of this festival is unknown. Some suppose that Lycurgus first instituted it to inure the youth of Lacedæmon to bear labour and fatigue, and render them insensible to pain and wounds. Others maintain, that it is a mitigation of an oracle, which ordered that human blood should be shed on Diana's altar; and according to their opinion, Orestes first introduced that barbarous custom, after he had brought the statue of Diana Taurica into Greece. There is another tradition which mentions that Pausanias, as he was offering prayers and sacrifices to the gods, before he engaged with Mardonius, was suddenly attacked by a number of Lydians who disturbed the sacrifice, and were at last repelled with staves and stones, the only weapons with which the Lacedæmonians were provided at that moment. In commemoration of this, therefore, that whipping of boys was instituted at Sparta, and after that the Lydian procession.

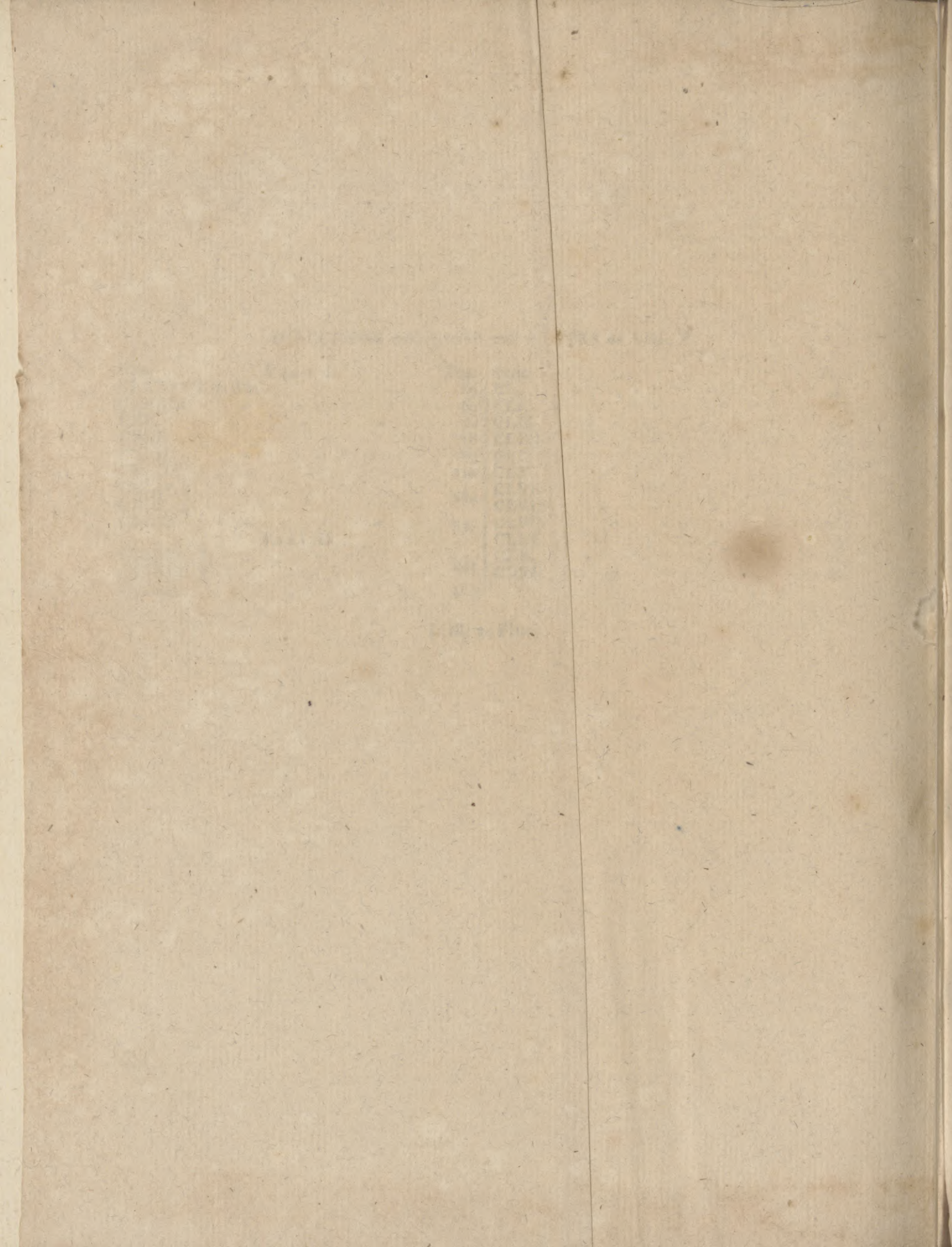
DIAMETER, in geometry, a right line passing thro' the centre of a circle, and terminated at each side by the circumference thereof. See GEOMETRY.

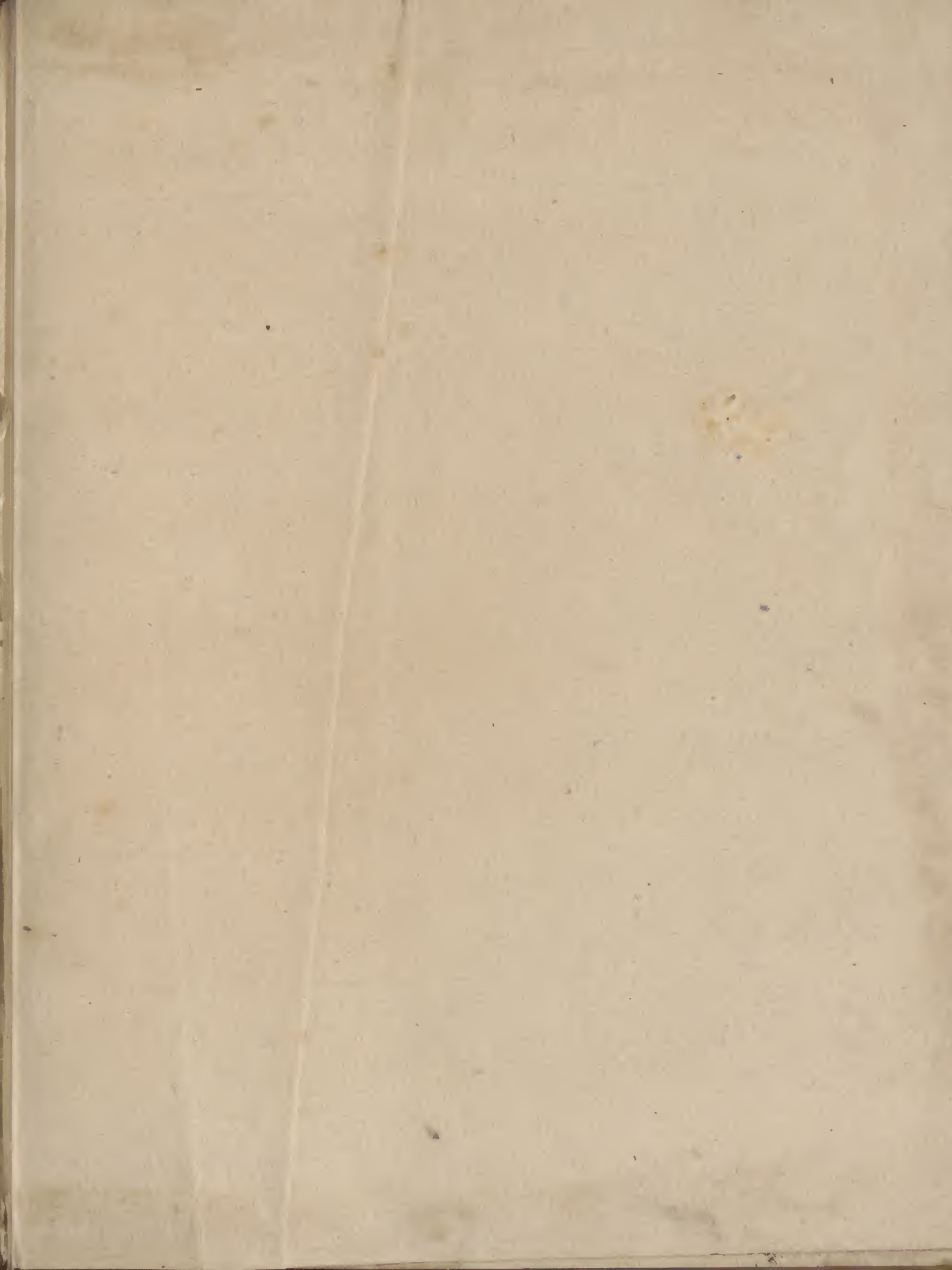
DIRECTIONS FOR PLACING THE PLATES OF VOL. V.

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In all, 24 Plates.







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