DESCRIPTIVE CATALOGUE OF DIAMONDS

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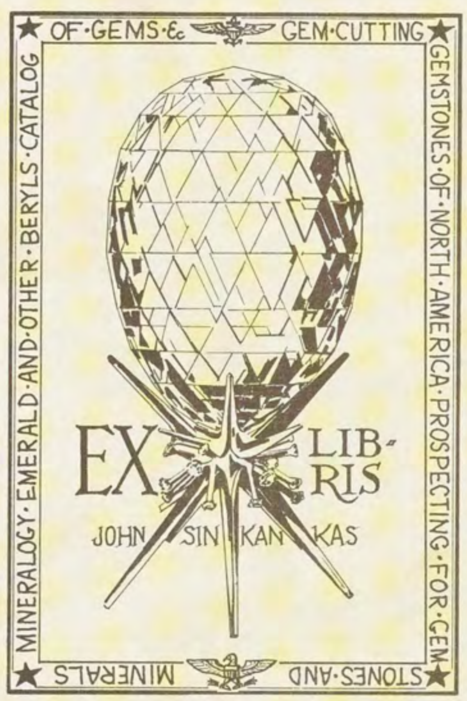

A

DESCRIPTIVE CATALOGUE

OF

DIAMONDS

IN THE CABINET

OF

SIR ABRAHAM HUME, BART. M. P.

BY

THE COUNT DE BOURNON.

WITH PLATES.

TRANSLATED FROM THE FRENCH.

LONDON:
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1815.

ADVERTISEMENT.

The Diamond is of all mineral substances the least known in respect to its crystalline formation, although it is the one most deserving of attention, not only on account of the numerous varieties it displays, but also of the extremely interesting forms which those varieties present, and of which a great number peculiarly belong to this substance.

So little has the crystallization of the Diamond been hitherto investigated, that there exists no treatise on the subject; this may be accounted for from its having been so rarely seen in its natural state, for it is only within a few years that any considerable quantity of rough Diamonds has been imported into England, previous to which period, the art of cutting them was almost entirely in the hands of the Portuguese and Dutch.

These considerations induced me to think that the publication of this Catalogue, with the Plates, might essentially contribute to the knowledge of this substance.

I cannot permit the present opportunity to pass by without expressing the sentiments of regard and esteem which I entertain for the Author, Count DE BOURNON, after a friendly intimacy of eighteen years. To his knowledge and to his attachment I am indebted for the formation as well as the arrangement of my Cabinet, a descriptive catalogue of which he made with his own hand; and whilst he assisted me in the choice of the various articles I purchased, he enriched my Collection with many specimens, and even some valuable series, with the most disinterested friendship.

I flatter myself that it is unnecessary to state how much mineralogy has profited by the talents of the Count de Bournon, and to what extent the taste for this science has gained ground in England under his auspices; it is to be hoped that it will long continue to be indebted to him for many future obligations.

A. H.

May, 1815.

LETTER

FROM

THE COUNT DE BOURNON

TO

SIR ABRAHAM HUME,

ON THE CRYSTALLIZATION OF THE DIAMOND,

ACCOMPANIED BY

TWO TABLES,

NECESSARY TO ELUCIDATE THE DESCRIPTIONS CONTAINED IN THIS CATALOGUE.

The engraving of the Plates having retarded the publication of this Catalogue for several months, I am enabled by the kindness of Count de Bournon to render it more complete.

A. H.

January, 1816.

LETTER, &c.

My dear Friend,

You may recollect that my first work on Diamonds, of which your Collection was the motive and ground-work, happened some time after to be mislaid, and lost. Flattering myself that what had cost me so much pains and trouble, might ultimately be recovered, the period arrived when, after twenty-five years of voluntary exile from my unhappy country, my august and legitimate Sovereign was restored to the throne of his ancestors. Being, consequently, about to return to France, I felt it impossible for me to quit a friend of twenty years standing, from whom I had received particular obligations, and to whom I also felt strongly attached by analogy of taste and pursuits, without completing, as far as it laid in my power, the Catalogue of his valuable Collection of Mineralogy; the formation, as well as the superintendance of which had been entrusted to me. I therefore delayed my journey, for the purpose of making a Catalogue of your choice Collection of Diamonds, with drawings of their various forms. This work, however, which, from want of time, I was obliged to do in a hurry, remained incomplete, it not being possible for me to verify by the aid of calculation, the measure of the angles given by the goniometer, after a first and single examination. I apprized you, therefore, in consequence, that without establishing any of the laws of crystallization, I should confine myself to giving the measure of the angles as approaching somewhat nearly to the truth, until a fresh investigation, made with all requisite attention, should enable me to ascertain them with greater accuracy.

An event equally unexpected, as it has been disastrous, and afflicting to humanity, having occasioned my return to this happy and hospitable land, I had the satisfaction to find that it was your intention, from a wish to promote the interest of science, to publish the Catalogue of your Diamonds, together with the plates, and that the descriptive part was already printed. It is indeed requisite to make known more particularly than it has hitherto been, a substance which holds so distinguished a place in Mineralogy. Chemistry, it is true, has been specially occupied of late in its analysis, and has, accordingly, produced by its powers, the purest natural carbon ; but Mineralogy has, as yet, given only one or two of its natural forms, whereas, the Diamond is, probably of all mineral substances, without excepting carbonate of lime, that which is subjected to the most numerous laws of crystallization, from whence the peculiar varieties of its primitive form are derived.

It was impossible for me to learn your intention of publishing your Catalogue, without feeling, at the same time, a desire of uniting my best endeavours to render it useful. One of the first modes which presented itself to me was to ascertain the measure of the angles of incidence belonging to all the varieties of the forms of this substance, which I have hitherto been able to discover, and in determining, at the same time, the different laws to which its primitive form is subjected. On which account I have added a Table, which, I think you will agree with me, ought necessarily to precede the Catalogue. The work being already printed, and the plates in a state of forwardness, I deeply regret that it is not in my power to make so perfect an arrangement as I could have wished; but the defect arising from this circumstance will be in a great measure diminished by means of the Table placed after that which belongs to the determining the laws of crystallization. It is besides necessary here to insert some observations explanatory of the method I have followed in coming to this determination.

In that part of the Catalogue which treats of the primitive crystal of the Diamond, I have remarked that the integral or primitive molecule has not yet been ascertained; but notwithstanding this deficiency, by having the knowledge of the forms and dimensions of the laminæ which are superposed on one another, on the faces of the primitive octaedral crystal in its growth, this knowledge was sufficient to establish the calculation of the several angles of incidence of the planes belonging to its different modifications. This assertion will, doubtless, appear surprising, the primitive crystal being a regular octaedron, and the Abbé Haüy having said that the octaedron, to whatever substance it may belong, has the regular tetraedron for its integral molecule. The method I have followed in the calculation, by availing myself of the lamina of the tetraedral truncated pyramid, Fig 77 and 78, will not appear less surprising; that learned person having moreover stated that the face of the regular octaedron being an equilateral triangle, which is a moiety of the plane belonging to the rhomboid of 60° and 120°, the calculation of the laws which belong to the rhomboid might be applied to the octaedron. Of course you are sensible, that, after stating this difference of opinion between that celebrated crystallographer and myself, it is incumbent on me to explain the reasons which induce me to differ from him.

The theory of the regular octaedron which admits the regular tetraedron as the integral molecule of the substances which assume the solid for their primitive form, always appeared to me difficult to admit. According to this theory, the substance to which it was applied would contain a double proportion of vacuity to solidity; whereas in the crystalline theory of other minerals, having either a rhomboid, or a prism, for their primitive form, an *obligatory* vacuity, so considerable, and independent of the theory which places the molecules of bodies not absolutely in contact with each other, but separate, can in no case be supposed to exist. If, according to this reasoning, the carbonate and fluate of lime, being both composed of the same earth, but combined with a different acid, and the molecules of the carbonate of lime fitting each other perfectly on the whole of their surface, without even leaving occasion to suppose any vacuity between them, it was required to calculate the specific gravity of the fluoric acid, its weight would unavoidably be found very nearly equal to that of mercury, which, doubtless, would be considered as impossible.

According to this same theory, the surface of all mineral substances which have the octaedron for their primitive form, would be made up of small equilateral triangles, alternately void and full; the one belonging to one of the faces of the solid tetraedrons, and the other to one of the faces of the void octaedrons. In these openings or voids, the planes forming their partitions would be in an inclined position, deviating from the axis which would pass through the middle of the void space, in the same proportion as they should deviate from the surface of the substance; a form, most assuredly, the best adapted for absorbing the light which would fall on the empty space within, or fittest for reflecting on the surface of the body the smallest possible portion of the rays of light which would strike upon it. That construction, therefore, which, by its nature, would absorb the moiety, nearly, of the light falling on the surface of the bodies to which it belongs, would be that in which the lustre produced by the simple reflection of light is the most vivid, namely, the Diamond: a conclusion no less improbable than the other.

If, on the other hand, we observe the construction which, according to this theory, ought to be that belonging to every mineral substance whose primitive form is octaedral, we shall see that the regular tetraedrons which would then form their integral molecules, would have no other points of cohesion between them than at their edges, or on an infinitely narrow surface, which power must consequently be extremely feeble. The result of this would be, that, whilst among the substances in which the power of cohesion extends itself over the entire surface of the molecules, we should meet with those in which the power of cohesion between their integral molecules is the weakest; those substances in which that power between the integral molecules is the most considerable, such as the diamond, spinel, &c. would be met with among those where the weakest cohesion would naturally be expected to be found: this also appears to me to be quite impossible.

These considerations tended much to create doubt in my mind respecting the regular tetraedron being the form of the integral molecule of the regular octaedron. These doubts, in fact, existed, until examining one day, with considerable attention, some crystals of fluate of lime, from Cornwall, in regular octaedrons, perfectly well defined ; I perceived on some of them, very sensible indications of natural joints passing through their edges. I then became thoroughly persuaded that, in point of fact, the integral molecule of the regular octaedron could not possibly be the regular tetraedron ; but, at the same time, I confess that, with all the researches I have since made, I have not been able to satisfy myself respecting the form of this molecule. Thus it is, that in three out of four of the facts which are the objects of our researches, it is infinitely easier to perceive what they are not, than to determine the reality of what they are.

The close examination I have since bestowed on the crystalline forms of the Diamond, has confirmed me in the opinion which I had grounded on those of the fluate of lime, proving to me also at the same time how much we are exposed in the sciences to introduce error in the place of truth, when over hasty in generalizing any observation; and even to make it one of the specific characters essential to substances, only because, up to that time, it had not been overturned by any of the small number of other observations which had offered themselves. Thus it is, for example, that the crystallization of mineral substances usually presenting geometrical forms in which all the angles are salient, and exhibiting no angles inward unless resulting from the union of two crystrals, or of two portions of crystals which nature had formed separately, in placing the parts of the two primitive nuclei in a position opposite to that which ought naturally to have belonged to them, if the operation had taken place on one alone, it has been concluded that all forms having inward angles indicated this reunion, to which the name of *macle* or *hemitrope* has been given, and that it never was the result of crystallization taking place at once, and on primitive nuclei only. In examining the form of the Diamond, numerous examples contradictory to this opinion present themselves, in which inward angles of various measures are found, so as to leave no room to doubt that it is the result of the same laws of crystallization, acting to that period, and operating directly on the primitive nucleus of the crystal.

This observation, the truth of which cannot for an instant be denied, on inspecting any pretty numerous collection of Diamonds, helps to confirm the opinion I entertained from the examination of the fluate of lime; and ignorant as I was compelled to remain in respect to the real shape of the integral molecule of the regular octaedron, it has determined me to consider the crystalline lamina obtained by sections parallel to its faces, and to the planes, passing through the edges, as that of its real crystallization, submitting the calculation of the forms of the Diamond to that which belongs to those laminæ, instead of to those laws which belong to the rhomboid of 60° and 120°; and, in fact, if the laws belonging to this rhomboid were applied to the octaedron, one could never arrive, by their means, at the formation of the great number of various inward angles which the Diamond offers; whilst in adopting the laws appertaining to the lamina I have mentioned, these angles are formed naturally, and calculation determines them with a precision which comes perfectly in aid of the method that has been adopted.

The reasons I have stated determined me to reject the method laid down by the Abbé Haüy for calculating the determination of the laws to which the octaedron is subjected in the crystallization of the Diamond; a method which I thought it right to follow myself in the determination of the laws of the crystallization of the fluate of lime; and to make this clearly understood, it is, I think, necessary, that these reasons should be placed at the head of the Catalogue. For the rest, all the forms you have given existing with the angles which I previously laid down, and which I have now rectified in the Table, if they could be determined according to the hypothesis adopted concerning the structure of the octaedron, and by the laws of the rhomboid of 60° and 120°, which I much doubt, it would be easy at all times to undertake the investigation—the materials, at least, being in a great measure already collected.

Accept, my dear Sir, the new assurances of the inviolable attachment, and perfect devotion of

Count de Bournon.

TABLE OF THE CRYSTALLINE FORMS OF THE DIAMOND.

THE PRIMITIVE CRYSTAL OF THE DIAMOND IS THE REGULAR OCTAEDRON.

RETIREMENT ALONG THE EDGES OF THE OCTAEDRON.

Replacing the edges by a single plane equally inclined on those adjacent.

Nos. of the Modifications.	Angles of incidence of the new planes upon the adjacent faces of the octaedron.	Nature of the Retirements.
1 Modification,	140° 44′	Retirement by 2 rows.

Replacement of each of the edges of the octaedron by two planes, which meet each other above those same edges.

Nos. of the Modifications.	Angles of incidence of the new planes,		Nature of the Retirements.
	with the faces of the octaedron.	among themselves, above the edges.	
2 Modification,*	152° 49′	163° 50′	Retirement by 5 rows in breadth by 2 in height.
3 Modification,	154° 47′	159° 54′	Retirement by 8 rows in breadth by 3 in height.
4 Modification,	160° 33′	148° 22′	Retirement by 10 rows in breadth by 3 in height.
5 Modification,	167° 44′	134° 0′	Retirement by 5 rows.
6 Modification,*	164° 13′	141° 2′	Retirement by 8 rows in breadth by 2 in height.
7 Modification,*	172° 41′	124° 6′	Retirement by 8 rows.

Replacement of each of the edges of the octaedron by two planes, which meet each other above those same edges, at an inward angle.

Nos. of the Modifications	Angles of incidence of the new planes		Nature of the Retirements.
	with the faces of the octaedron.	the inward angle formed by their meeting.	
8 Modification,*	109° 28′	109° 28′	Retirement by 1 row.
9 Modification,	115° 58′	122° 28′	Retirement by 9 rows in breadth by 8 in height.

Continuation of the replacements of the edges of the octaedron, which produce an inward angle.

Nos. of the Modifications.	Angles of incidence of the new planes		Nature of the Retirements.
	with the faces of the octaedron.	Incidence of the planes among themselves to form the inward angle.	
10 Modification,	128° 6′	146° 44′	Retirement by 7 rows in breadth by 5 in height.
11 Modification,*	131° 21′	153° 32′	Retirement by 3 rows in breadth by 2 in height.
12 Modification,*	139° 0′	168° 32′	Retirement by 7 rows in breadth by 4 in height.
13 Modification,	136° 43′	163° 58′	Retirement by 5 rows in breadth by 3 in height.

Intermediate retirements in the solid angles of the octaedron along the edges, and reunited to that of the first Modification.

Nos. of the Modifications.	Angles of incidence of the planes among themselves,		Nature of the Retirements.
	above the edges.	above the solid angles.	
14 Modification,*	149° 24′	120° 36′	Retirement by 2 rows along the edges, taking 1 molecule on this edge, and 11 on the other in the same face.
15 Modification,	155° 34′	114° 26′	A similar retirement along the edges, taking 2 molecules on this edge, and 9 on the other in the same face.
16 Modification,	160° 20′	109° 44′	A similar retirement along the edges, taking 2 molecules on this edge, and 11 on the other in the same face.
17 Modification,	164° 50′	105° 10′	A similar retirement along the edges, taking 1 molecule on this edge, and 7 on the other in the same face.
18 Modification,	166° 50′	103° 10′	A similar retirement along the edges, taking 1 molecule on this edge, and 7 on the other in the same face.
19 Modification,	169° 36′	100° 24′	A similar retirement along the edges, taking 1 molecule on this edge, and 10 on the other in the same face.

RETIREMENT TO THE SOLID ANGLES OF THE OCTAEDRON MADE ON THE FACES.

Replacement of the solid angles of the octaedron by a plane perpendicular to the axis.

Nos. of the Modifications.	Angles of incidence of the new planes on the faces of the octaedron.	Nature of the Retirements.
20 Modification,	125° 16′	Retirement by 2 rows.

TABLE OF THE NUMBERS AND FIGURES

UNDER WHICH ARE

THE PLANES OF THE DIFFERENT MODIFICATIONS.

	NUMBERS.	FIGURES.
Primitive Crystal,	1, 2, 3, 4, 5, 6.	1, 2, 3, 4, 5, 6.
1st Modification,	7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 27, 101.	7, 8, 9, 10, 11, 12, 13, 14, 18, 74.
3rd Modification,	96.	71.
4th Modification,	40, 47, 48, 51, 78, 87, 90, 91, 93.	29, 35, 36, 39, 57, 63, 64, 66, 67.
5th Modification,	38, 39, 49, 64, 96.	28, 37, 49, 70.
9th Modification,	65, 66, 67, 68, 69, 70, 71, 73, 75, 78, 84, 85, 87.	51, 52, 53, 55, 57, 61, 62, 63.
10th Modification,	65, 67, 72, 74, 75, 84, 86, 88, 89, 91.	52, 54, 55, 61, 65.
13th Modification,	75, 81, 82, 94, 95, 97.	55, 59, 68, 69.
15th Modification,	24, 25, 69, 70, 71, 73.	17.
16th Modification,	32, 35, 36, 37, 76, 85, 86, 93.	23, 26, 27, 56, 67.
17th Modification,	26, 28, 29, 30, 31, 33, 34, 47, 50, 51, 65, 66, 74, 75, 77, 82, 84, 88, 89, 91, 94, 97.	17, 19, 20, 21, 22, 24, 25, 35, 38, 39, 52, 55, 61, 65, 68.
18th Modification,	78.	57.
19th Modification,	22, 23, 48, 49, 67, 68, 72, 87, 90.	15, 16, 36, 37, 54, 63, 64.
20th Modification,	100, 101, 102, 103.	72, 73, 74, 75, 76.

Crystals of which the Modifications to which their planes belong, could not be determined, either on account of their diminutive size, or of some irregularities.

NUMBERS.	FIGURES.
41, 42, 43, 44, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 79, 80, 83, 98, 99, 100, 104, 105, 106, 107.	32, 33, 34, 40, 41, 42, 43, 44, 45, 46, 48, 58, 60.

OBSERVATIONS.

Instead of the relation of 24 to 20,78, which I have stated at the beginning of this description as that which exists between the dimensions of the rows of molecules necessary to be made use of for the calculation, I have availed myself of that of 3 to 2,6, as being the most simple, and correct.

The seven Modifications numbered 2, 6, 7, 8, 11, 12, in the first Table are not in this Collection, which is, as yet, at the head of all that have been formed of crystals of the Diamond; but belong to crystals either in that of the late Mr. Greville, Mr. Robert Fergusson, or in my own, now belonging to his most Christian Majesty the King of France, (in which latter, the varieties of the forms of the Diamond are very numerous, &c.) or are taken from the different notes I have made of my observations on that substance. My object, in placing them in this Table, has been to complete all that is known of the crystallization of the Diamond up to the present time; I say up to the present time, because I have substantial reasons for believing that we are still very far from being acquainted with all the laws belonging to this interesting substance. It is to the multiplicity of these laws, of which several often take place on the same crystal, that the rounded shapes are to be attributed, which are so multiplied, that it is not without great care and attention in selecting the crystals of this substance, particularly if they abound in facets, that they can be procured with faces perfectly planes.

The Table of the crystalline forms contains 20 Modifications of the primitive crystal; and if it is observed that six of these Modifications, (being those which belong to the intermediate retirements, and which are combined in this Table, with that belonging to the first Modification,) combine with each of the six retirements along the sides producing salient angles, and also with each of the six others which produce inward angles—combinations which I have not inserted in the Table, to avoid overloading it, but of which this Collection affords many examples—they would add 72 to the 20 already given, making the whole number 92; notwithstanding which, I am inclined to think that we are far from being acquainted with all that exist.

It is very difficult to ascertain the planes belonging to these Modifications ; first, on account of the very diminutive size of the crystals, especially of those which are the most perfect, and also, because almost all the retirements of the crystalline laminæ which create planes considerably inclined on the crystal, and uniting with each other at an angle usually very obtuse, are difficult to ascertain, and may often be considered merely irregularities in the formation of the Diamond. To this cause may probably be attributed the slight degree of attention hitherto paid to its crystallization.

The following Catalogue should be considered only as the sketch of a treatise on the crystallization of the Diamond, which I much regret it is not in my power at present to render more perfect. It is probable, I may one day resume the undertaking. Such, however, as it is, this sketch may be the means of calling the attention of the Mineralogist, and especially of the Crystallographer, to a substance which, of all others, offers the most various and most numerous forms of crystallization.

C. de B.

ERRATA.

Page 11, l. 11.—*for* Fig. 30, *read* No. 30.
Page 13, l. 16.—*for* Fig. 29, *read* Fig. 31.
Page 18, l. 14.—*for* No. 30, *read* Fig. 31.
Ibid l. 19.—*for* in the same Figure, *read* in Fig. 30.

CATALOGUE.

The primitive crystal of the diamond is a regular octaedron, which may be divided with much facility parallel to its faces; and judging according to what is seen in the octaedron of the fluate of lime, as also by the laws which appear to regulate its forms, it ought to have, besides, natural joints passing through its edges and its axis.

The integral molecule of all the substances which hitherto have given by cleavage the octaedron as the form of their primitive crystal, still remains unknown to the Crystallographist; for it is impossible to admit as such, the regular tetraedron and it is equally so to advance either the regular octaedron itself, or the acute rhomboid of 60° and 120°, which is obtained by simple cleavage parallel to its planes.

It is not, however, the same with respect to the lamina of crystallization, which is clearly shown to be a flattened tetraedral pyramid (Fig. 77 and 78) with a truncated summit; the base of which is an equilateral triangle; the opposite planes of this lamina make, with the sides of the pyramids, angles of 125° 16′, and 54° 44′, as well as rows of the molecules (Fig. 79), which are solid rhomboids, the perpendicular section of which, A B C D, is a rhomboid of 125 16′ and 54° 44′ whose sides A B and B C are, in respect to each other, as 24 to 20,78. One is enabled, therefore, by means of the determined form of the laminæ, as also of the rows of the crystalline molecules, to proceed to the calculation of the various modifications of this substance; leaving the form of the integral molecules to be determined hereafter.

1. A diamond crystallized in a regular octaedron; it may be observed, that at one of its solid angles it had previously adhered to a matrix, and from the aspect this angle presents it is at the same time apparent, that it had been actually formed in that matrix, and not accidently inclosed by it. Fig. 1.

2. A diamond in an octaedron larger than the preceding crystal; on its planes irregular striæ may be distinguished, which exhibit, at the same time, both the lamellar structure of the diamond and the direction of the laminæ. Fig. 2.

3. A diamond in an octaedron formed by the aggregation of a very considerable number of small octaedrons, all the faces

of which are in the same direction, and on the same plane. Fig. 3.

4. A large and superb diamond, belonging to the passage, in a very advanced state, of the regular octaedron to the acute rhomboid of 60° and 120°, by the diminution, in point of size, of two of the opposite planes, the deposit of the crystalline matter having been more abundant on those planes than on the other six. This fine diamond is perfectly transparent, and its planes are extremely smooth. It is of a light straw colour. Fig. 4.

5. A small diamond belonging to the passage of the regular octaedron to the regular tetraedron by the diminution in point of size, of four of its planes, and the increase that has taken place in the four others, as in Fig. 5. The edges of this diamond appear broken, owing to the striæ with which they are covered, and which belong to the sides of the crystalline laminæ caused by its imperfect crystallization.

6. A large diamond of a very fine water, belonging to a macle formed by a reunion of two of the segments of the octaedron analogous to those which are so common in the spinel. The lamellated texture, as well as the direction of the crystallized laminæ, are indicated in great perfection on this diamond by striæ extremely multiplied,

and very strongly marked. This diamond is rare, as much on account of its form, as of its perfection.

7. A small octaedral diamond whose edges are replaced each of them by a plane equally inclined on the adjacent ones: this modification is occasioned by a retirement of two rows along the same sides. The planes of the replacement are covered with striæ strongly marked, which arise from the irregularity of the crystallization. Some of the edges are occupied by a re-entrant or inward angle, the produce of a retirement by a number of rows below two. This modification is rarely met with perfect. Fig. 7.

8. A diamond belonging to the same variety, but in which the planes of replacement of the edges are not so strongly striated. Fig. 7.

9. A diamond belonging also to the same variety, but in which the planes that replace the edges of the octaedron are rounded by the reunion of some of those modifications which replace all their edges with two planes. On one of the faces of this crystal the primitive planes of the octaedron have disappeared. Fig. 7.

10. A large octaedral diamond of the same variety, but in which all the planes that replace its edges are perfectly

rounded. FIG. 8. It possesses a very small degree of transparency, and is of a deep brown tint, which, owing to the density of the colour, gives the appearance of black.

11. A dodecaedral diamond with rhombic planes produced by the planes of replacement on the edges of the octaedron in the variety preceding, these planes having attained their limits. The rhombic planes of this dodecaedron are all deeply striated parallel to their large diagonal, which is itself parallel to the edges of the octaedron. This crystal is extremely interesting. FIG. 9.

12. Another dodecaedral diamond with rhombic planes complete; it shows, however, some tendency to the division of its rhombic planes into two parts in the direction of its small diagonal; a variety to be taken into consideration hereafter. The surface of this diamond is coloured by some particles of a green earth, which are incrusted in it. FIG. 9.

13. A very fine and large diamond of a dodecaedral shape, slightly flattened in the direction of one of its axes. Some remains of the primitive planes of the octaedron are to be distinguished in the direction of the part flattened, but there exist no traces, or, at least, very slight ones, in the other directions. The planes of this dodecaedron are striated according to their large diagonal, and the striæ are perceivable

as far as in the remains of the planes of the octaedron ; at the same time it may be observed that they are occasioned by different retirements along the edges of the octaedron. It is the multiplication of these retirements within a very short space, and very few of which we have yet been able well to detect, or calculate, that give to the planes of several diamonds a rounded form, and which exists, though to a slight degree, in this crystal. This diamond is of a very fine transparency, and of a yellow brown, or colour of Malaga wine. FIG. 10.

14. A small dodecaedral diamond, but not flattened as the last, and in which the traces of all the octaedral faces remain, and are distinguished by their superior lustre, in comparison to that of the rest of the crystal. Near its surface may be seen small brown spots, which I conceive to belong to some bituminous substance.

15. A diamond of a beautiful white colour, belonging to the dodecaedron in which the planes are convex. FIG. 11. It is composed of an aggregation of small crystals, which occasions a considerable roughness on its surface.

16. A rather large sized diamond in a dodecaedral prism, elongated in the direction of one of its axes, on which two of the solid angles belonging to the octaedron abut, that is to

say, of those angles formed by the meeting of three planes only. This crystal, therefore, puts on the appearance of a hexaedral prism with elongated rhombic planes, situated on its sides and terminated by a triedral pyramid. This diamond is of a green colour; its surface is very rough, and on it some particles of a green earth may be discovered by the assistance of a magnifying glass. Fig. 12.

17. A diamond of a fine white colour, belonging to the same variety: its surface is very rough, owing to an imperfect crystallization, which occasions the molecules to be very distinctly seen. Fig. 12.

18. A very large and fine diamond perfectly white, and belonging to the same elongated dodecaedron: it is formed by the aggregation of a very considerable number of small octaedrons, the planes of which, by the assistance of the lens, are discoverable on the planes of the dodecaedron. Fig. 12.

19. A small diamond of a fine white colour; it is a flattened dodecaedron, and has the appearance of a short regular hexaedral prism terminated by a triedral pyramid with rhombic planes placed on the sides. Fig. 13.

20. A small diamond in the shape of an elongated dodecaedral prism, on whose planes may be observed a tendency

to be divided into two in the direction of their smallest diagonal: it is slightly coloured with green. Fig. 12.

21. A small flattened dodecaedral diamond similar to that No. 19, and elongated parallel with two of the opposite sides of the prism. Fig. 14. There exist at the apexes of the two triedral pyramids some traces of the planes of the octaedron; but as those belonging to the dodecaedron are deeply striated, some attention is required to distinguish them.

22. A large sized octaedral diamond, in which all the solid angles are replaced by four planes, which have taken place on their edges, and which meet together in the middle at an angle of nearly 170°, which is produced by an intermediate retirement along the edges of the octaedron, and at the angles of its faces. This diamond is of a pale red tint, owing to the reflection of a considerable spot of the same colour contained in it. Fig. 15.

23. A very perfect diamond belonging to the preceding variety, but its planes of replacement are larger, by which those that remain of the primitive octaedron are considerably diminished. Fig. 16.

24. Another very perfect diamond of a dodecaedral shape with rhombic planes divided into two in the direction of

their small diagonal, so as to meet together at a point which would be the middle of the edges of the octaedron at an angle of nearly 165°. These planes also present, in the direction of their great diagonal, an inward angle, belonging to the most obtuse of the series of the modifications of the diamond having inward angles, of which we shall treat hereafter. Fig. 17.

25. Another dodecaedral diamond of the same variety as the preceding one: it has acquired a greenish colour, owing to a large spot on its surface belonging to a green earth. Fig. 17.

26. A very pure and brilliant diamond of a light yellow cast: it belongs also to the dodecaedron, the planes of which are divided into two, in the direction of their small diagonal; but meeting under an angle different from those of the preceding varieties: these planes meet together at an angle of nearly 155° (Fig. 17), differing only in their inclination.

27. A considerable sized diamond of a flattened dodecaedral shape, and of a very fine white colour, which has preserved, on the part to be considered as a triedral pyramid, some vestiges of the primitive octaedron. Fig. 18.

28. A small flattened dodecaedral diamond, in which the

rhombic planes are divided into two in the direction of their small diagonal, and agreeably to the same laws of crystallization as those belonging to the diamond No. 24. This crystal is very perfect. Fig. 19.

29. A small diamond of the same variety as the preceding, but in which one of the planes of the triedral pyramid has become considerably larger than the two others. Fig. 20.

30. Another small diamond, also belonging to the same variety, and in which the flattened dodecaedron is, besides, elongated in a direction opposite to its axis. It contains a small cavity, the bottom of which is of a yellow colour. Fig. 21.

31. A small diamond of the same variety as the one preceding, but in which the planes of the flattened and elongated dodecaedron have become more narrow at one of the extremities of its prolongation, than at the other. Fig. 22.

32. A very fine diamond belonging to the variety of the octaedron which has passed into the flattened dodecaedron in one respect, and become elongated in the other (Fig. 21), but in which there remain, on the summit of the triedral pyramids, very considerable traces of the planes of the octaedron; there may also be observed a remarkable circumstance

in its crystallization, for, whilst the planes of division of the narrowest rhombs belong to the modification represented in Fig. 25, where the planes meet each other at an angle of nearly 165°, those of the larger faces belong to a new modification, in which the planes of division of the rhombs meet together according to their small diagonals at an angle of about 160°. Fig. 23.

33. In this diamond, which exhibits a very scarce variety, and is of a large size, the planes belonging to the two triedral pyramids of the elongated dodecaedron of the variety Fig. 30, reunite together in such a manner as to occasion the disappearing of the six other planes of the dodecaedron which form the short hexaedral prism; and each of these planes being divided into two parts, according to the small diagonal of their rhomb, the result is an obtuse dodecaedron formed by the reunion, base to base, of two hexaedral pyramids, but which, at the first sight, on account of the very obtuse angle at which they meet on three of their alternate edges, have the appearance of being formed by the reunion of two triedral pyramids. The surface of this interesting crystal has a considerable degree of roughness. Fig. 24.

34. A diamond of considerable size, in the shape of an elongated dodecaedron, become prismatic: the planes belonging to the division into two according to their small diagonal,

depend on the modification No. 24. This crystal, which is very perfect, preserves throughout very distinct traces of the planes belonging to the primitive octaedron: it is of a light green tint, and by the help of the lens, there may be seen on the surface small laminæ of a brown yellow colour, much resembling small spots of oil. FIG. 25.

35. A very perfect small diamond, belonging to the elongated dodecaedron, and without any traces whatever of the planes of the octaedron. The rhombic planes, which are divided into two in the direction of their small diagonals, belong to the modification in which those planes meet together at an angle of about 160°, which has already been noticed in No. 32. The colour of this diamond is white with a greenish cast. FIG. 26.

36. A small diamond belonging to the same modification as the preceding Number, and also derived from the elongated dodecaedron, but the planes are narrower at one extremity than at the other, which gives it a singular appearance. It is slightly tinged with yellow, and contains some small green spots. FIG. 27.

37. Another diamond like the preceding one, but of a more considerable size; it is extremely perfect, and of a fine white colour: its surface is striated. FIG. 27.

38. An octaedral diamond, the edges of which are replaced by two planes meeting together on each other at an angle of about 135°, and in which the crystallization has attained its limits. Of a gray colour, with a light tinge of yellow. Fig. 28.

39. A diamond of the same variety as the preceding, in which the dirty gray colour is of a deeper cast. Fig. 28.

40. A large and very perfect diamond belonging to that variety of the octaedron which passes into the rhomboid of 60° and 120°: all the edges of the octaedron are replaced by two planes, which present a new modification, as they meet each other on the edges of the octaedron at an angle of about 150°. There remain on the longitudinal planes of the prism traces of the planes belonging to the primitive octaedron, but not of the terminal ones. This diamond is of a fine white tint. Fig. 29.

Note. Figures 30 and 31 in the Plates are introduced for the purpose of study: they show the combination of the planes of those modifications in which all the edges of the octaedron are replaced by two planes, together with those modifications in which they are replaced by a single plane inclining equally on the adjacent ones.

41. A considerable sized diamond, being a macle formed by the reunion, in a contrary direction, of two segments, such as would be obtained by lifting up from one of the two faces of the octaedral modification represented in Fig. 29, the part superposed upon it, which has there given birth to an obtuse triedral pyramid. It is not difficult to distinguish at their common base the junction of the two segments, the base of the one having, in a small degree, gone beyond the other. Fig. 32.

42. Another large diamond extremely white, and resembling the one preceding, in which may be perceived, by their being strongly striated, the edges of the crystalline laminæ. Fig. 32.

43. A diamond belonging also to the same macle, but having still preserved some traces of the octaedron: it is deeply striated, and of a greenish colour. Fig. 33.

44. A small diamond of the same variety; an inward angle exists on its planes, but it is not easy to determine to which of the modifications producing those angles it belongs. Fig. 34. In this crystal there exists a part adhering to each of its segments, which relates to the replacement of the edges of the octaedron as indicated in the crystal, Fig. 30.

45. A diamond with 48 triangular facets; it belongs to the combination of the planes of the two modifications represented by the Figures 24 and 40; these planes are slightly convex. Fig. 35.

46. A diamond of the same variety, but somewhat larger, and more transparent, and of a greater degree of convexity; but the planes are irregular in point of size. Fig. 35.

47. Another diamond of the same variety, and of equal transparency with the one preceding, but less irregularly crystallized: it has the planes belonging to No. 22, instead of those of No. 24. Fig. 35.

48. A diamond in the shape of a flattened dodecaedron, the whole of whose planes are replaced by the combination of those belonging to the modifications described under No. 22 and 40, the last of which are convex. Its colour is a yellowish brown, and it contains within it certain spots which appear distinctly to belong to some bituminous substance, which gives the colour. Fig. 36.

49. A diamond exhibiting a very perfect macle analogous to that described under No. 41, and whose planes belong to the combination of those of the crystals under No. 22 and 38. By the aid of the lens, the line of union between the two

segments may be perfectly well distinguished. Fig. 37. This variety is very uncommon.

50. A small diamond belonging to the same macle as No. 41, but the planes of which, at the same time, belong to the modification mentioned under No. 24. This variety is still more rare than the one preceding. Fig. 38.

51. A very fine and perfect diamond belonging to the flattened dodecaedron, and of which the planes of the octaedron are preserved to a greater extent on the planes forming the triedral pyramids, than on the other ones: the remaining planes of the crystal belong to a combination of the modification represented under No. 24 and 40. Fig. 39.

52. A very perfect transparent dodecaedral diamond, the planes of which are divided into two, according to their small, as well as to their large diagonal, but their faces are all rounded in consequence of the crystallization having proceeded successively by a great number of retirements in the direction of its two diagonals. The crystal placed under the preceding Number exhibits very distinctly this series of retirements, very few of which, it seems, we are, as yet, acquainted with. Fig. 40.

53. The same variety of diamond, of a light red tint,

occasioned by a single spot of that colour near one of the points of its surface. This diamond shows, on those of its solid angles which answer to the planes of the octaedron, slight traces of various retirements. FIG. 40.

54. A large and fine diamond of the same variety, but of an elongated shape ; it is transparent, and of a dark brown colour, with light reddish reflections. FIG. 41.

55. Another diamond of a considerable size, and of the same variety precisely, as the preceding ; it is very transparent, and of the same brown tint ; but as it possesses less density, it partakes more of a yellow colour, and shows also some reflections rather of a reddish brown. The lens shows that this colour is confined to one side only, and that it is near to the surface, and by the reflection of which the whole of the diamond is tinged. FIG. 41.

56. A large diamond of the same variety, but of a convex figure ; it is also elongated in one sense, and flattened in the other ; it is likewise of a brown colour, with a reflection of a vinous tinge. FIG. 42.

57. A very fine diamond equally belonging to the same variety in point of shape as the preceding one ; it has a con-

siderable degree of transparency, and is very perfect; its colour is a fine yellow like sulphur. Fig. 42.

58. A small diamond also of the same variety of form as the preceding Numbers; but the dodecaedron which forms its basis is simply flat. Its colour is a fine white. Fig. 43.

59. A very fine and perfect diamond belonging also to the same combination of the modifications which divide the rhombic planes of the dodecaedrons by planes parallel to their great and small diagonals; but their convexity is owing to the quick and successive passage of the crystalline matter to different retirements. The basis of this crystal is a macle formed by the reunion of two segments, one of which is owing to the part added upon the faces of an octaedron similar to No. 30, the other having, besides, adhering to it, the plane of replacement of the edges indicated in the same Figure. The lens readily shows the reunion of the two segments. Fig. 44.

60. A macle diamond precisely like the preceding one, and having for its basis the variety of the octaedron given in Fig. 31, the segments always belonging to the additional part which is owing to the retirements on the faces of the octaedron. Fig. 45.

61. A macle of the same kind as that preceding, but in which there remains, on each of the two segments, the replacing plane of the edges of the octaedron represented in Fig. 30. Fig. 46.

Note. Fig. 47, which is a dodecaedron with rhombic planes, is placed in a different situation from those in the other Plates, for the purpose of explaining the following variety by means of its position.

62. To have a right conception of this variety, which always belongs to that which gives 48 curvilinear facets, we must represent the dodecaedron placed under No. 47, and in such a situation as that one of its rhombic planes be perpendicular to the horizon, and further to consider it as elongated in the direction of the axis which would pass parallel to those two planes, that marked D increasing in length and breadth in proportion to its elongation. This diamond is of a light sulphur colour. Fig. 48.

63. A diamond possessing the same variety as the former one, of a fine white colour. Fig. 48.

64. A small diamond, very singular, and extremely scarce ; it does not belong to the variety of the octaedron passed to the regular tetraedron, but to the octaedral variety in which

each of its edges are replaced by a plane which makes, with that of the octaedron, an angle of nearly 135°, all the planes of the primitive octaedron having disappeared; this gives a tetraedron, on each of the faces of which rises a small, very obtuse, triedral pyramid. This diamond is covered with strongly marked striæ, which indicate the direction of the edges of the first octaedron. Fig. 49.

65. An octaedral diamond, which presents on each of its edges an inward angle, occasioned by one of those retirements in the crystallization which take place more slowly than that by two rows, and from which originate planes making, with those of the octaedron, an angle of nealy 128°. This crystal has, besides, undergone the modification already mentioned under No. 24, which divides each of the planes which have taken place along the edges of the octaedron into two, which meet together on the middle of the edge at an angle nearly of 165°. The planes which replace the edges are striated, whilst those of the octaedron are extremely smooth. Fig. 52.

66. A small but beautiful and perfect diamond, offering the same variety of form as the preceding one; it is very transparent, and of a yellowish tinge. Fig. 52.

67. In this diamond the laws of the retirement along the

edges of the octaedron, after having given birth to a plane which makes, with the faces of the octaedron, an angle of about 128°, pass to another retirement, the planes of which make an angle of 115° with the above planes, as represented under Fig. 57: these same planes are divided into two, which meet in the middle of the edges of the octaedron at an angle nearly of 170°, as it has been already stated under No. 22. This diamond is of an irregular shape, and shows only in parts the planes made along its edges, which make, with the planes of the octaedron, an angle of about 115°.

Note. To avoid multiplying the number of the crystals, the figure of this diamond is not given.

68. A diamond in which the retiring planes along the edges of the octaedron meet its faces at an angle nearly of 115°. The division of the planes into two belongs to the modification in which the planes meet together on the middle of the edges at an angle nearly of 170°. This diamond is very perfect. Fig. 52.

69. A very perfect diamond, in which the retirement along the edges of the octaedron, to which the inward angle belongs which these edges exhibit, gives rise to certain planes which make, with those of the octaedron, an angle of nearly 115°. The division of these planes into two belongs

to that modification in which they meet together in the middle of the edges at an angle nearly of 155°. This modification is quoted under No. 25. FIG. 52.

70. Another very perfect diamond, and of a considerable size, properly belonging to the preceding variety; but in which the planes occasioned by the retirement along the edges which produce the inward angle are of a more considerable size. FIG. 51.

71. A large diamond belonging also to the same variety as No. 69; but the retirement has taken place on the cuneiform octaedron. FIG. 53.

72. In this minute but highly interesting diamond, the crystallization had undergone, in succession, several different retirements along the edges of the octaedron, collectively with that intermediate one in which the planes meet together in the middle of the edges at an angle of nearly 170°, before it had undergone that retirement along the edges which gives the inward angle, whose planes make, with those of the octaedron, an angle of nearly 128°. FIG. 54.

73. A very fine and perfect diamond, of the same variety as that described under No. 69, but it is of a more regular shape, and the planes of replacement are not so large.

74. This diamond, in its crystallization, after having undergone for some time the intermediate retirement which took place at the solid angles of the octaedron, and which creates the planes that meet together in the middle of the edges at an angle nearly of 165°, has undergone, for a very short space, a replacement along the edges, which gives an inward angle whose planes make, with those of the octaedron, an angle of nearly 128°.

75. A diamond of a beautiful variety, in which the octaedron, after having undergone the intermediate retirement which replaces all the solid angles by four planes meeting in the middle of the edges at an angle of nearly 165°, has also undergone in succession three other retirements along the edges of those which give the inward angles; in the first of which, the planes make an angle nearly of 135° with the planes of the octaedron, and in the second, an angle of about 128°, and in the third, that of about 115°. This diamond is of a fine white colour, and very transparent. Fig. 55.

76. A very large and fine diamond belonging to the combination on the planes of the dodecaedron of the intermediate modifications at the solid angles, and directly along the edges, all of which meet together at angles nearly of

160°: there remain also considerable vestiges of the planes of the primitive octaedron. Fig. 56.

77. This diamond, which is a flattened dodecaedron, differs from the one preceding not only on account of its flatness, but also because the planes which are owing to the intermediate retirement at the solid angles of the octaedron meet at an angle nearly of 165°, instead of one of about 160°: This diamond is of a green colour, and by the assistance of the lens, some particles of a green earth may be observed on its surface ; it also shows some traces of a retirement with an inward angle.

78. In this fine diamond, the basis of which is a dodecaedron, the crystallization, after having, for a certain time, produced collectively the planes of the intermediate retirement which replace the solid angles, and form, on the point of union between them, on the middle of the edges, an angle of nearly 167°, and those of the retirement along the edges which meet together at an angle of about 150°, has given rise, during a very short time, to that of the retirements which give inward angles, the planes of which make, with the faces of the octaedron, an angle of about 115°. Fig. 57. This crystal is very pure and very transparent.

79. A fine diamond analogous, in point of form, to the

preceding one, but differs from it in having undergone successively many of those retirements which create inward angles: these retirements are distinctly indicated in Fig. 58.

80. A diamond of a very perfect shape, the same as the preceding number. Fig. 58.

81. A very highly interesting diamond, as well on account of its perfection, as for the manner in which it completely explains the formation of the inward angles by the crystallization of the diamond, and by the action itself of the laws of crystallization, and by the striæ which take place on its surface. Its form is a dodecaedron with rhombic planes, each of which has an inward angle in the direction of its large diagonal: the planes of this angle making, with those of the octaedron along the edges of which they have taken place, an angle of nearly 135°. Fig. 59.

82. A diamond of the same variety, but which has moreover undergone the intermediate modification by which each of the solid angles is replaced by four planes, meeting together at an angle of nearly 165°.

83. This diamond is of a fine green colour, and presents a very peculiar and very interesting variety: it is the same as the preceding Number, but in some of the rhombic planes

of the dodecaedron, which, in the last crystal, are divided into four, with an inward angle according to its great diagonal. This inward angle prevails only in one half of the diagonal, whilst the other half exhibits an obtuse outward angle: there remain also some traces of the planes of the primitive octaedron on its angles. Fig. 60.

84. A very fine elongated dodecaedral diamond, whose planes are occupied by those of an intermediate replacement on the solid angles of the octaedron by four planes which take place on the edges, on the middle of which they meet at an angle of about 165°, combined with those of the replacement of the edges of the octaedron which produce an inward angle, whose planes meet those of the octaedron at an angle of nearly 128°. There remain on this crystal some traces of the planes of the primitive octaedron, surrounded by very small planes of another retirement along the edges of the octaedron, producing equally an inward angle, whose planes make, with those of the octaedron, an angle of nearly 115°. This diamond is perfectly white. Fig. 61.

85. A flattened octaedral diamond belonging to the same variety as the preceding, with the exception, however, that the intermediate variety fills up the solid angles by four planes which meet together at an angle of nearly 160°; there

remain no farther traces of the planes of the octaedron, except on two of its opposite angles. FIG. 62.

86. An octaedral diamond of a very flat shape, and of a fine white colour, whose planes belong to the intermediate modification which gives an angle of 160°, and to that which replaces the edges of the octaedron by two planes forming an inward angle, the planes of which meet those of the octaedron at an angle of about 128°. There remain traces of the planes of the octaedron on the summits of the two pyramidal parts; there may be seen also on this crystal, certain traces of various retirements, all of which produce inward angles.

Note. In all the preceding crystals, as well as in the one that follows, which exhibits inward angles, the intermediate retirements at the solid angles have taken place some time previous to the others having been combined with them.

87. A small diamond belonging to the flattened dodecaedron, which has retained very considerable remains of the planes of the octaedron, and whose planes belong to the combination of those of the intermediate retirement taking place on the solid angles of the octaedron, the planes of which meet together on the middle of the edges, at an angle

of nearly 170°: and of those of the retirement formed along the edges, the planes of which meet each other under an angle of about 150°: there exist besides, around the remaining planes of the octaedron, some very minute ones, making an inward angle, the planes of which, with those of the octaedron, give an angle of about 115°. Fig. 63. The basis of this crystal may also be considered as a triangular segment of the octaedron.

88. This diamond exhibits another triangular segment of the octaedron, the edges of which are occupied by an inward angle occasioned by an intermediate retirement whose planes meet in the middle of the edges at an angle of nearly 165°, and by that along the edges, whose planes make, with those of the octaedron, an angle of about 128°. This diamond is of a pale yellow colour.

89. Another very small and transparent diamond, being also a triangular segment of an octaedron, but less thick: its planes are precisely the same as those of the preceding diamond.

90. A very pure small diamond, but possessing more transparency than the preceding ones: its planes are similar to those of No. 87. Fig. 64.

91. A diamond belonging to a macle analogous to that under No. 34, the planes of which belong to the combination of the intermediate retiring planes on the solid angles of the octaedron, in which the planes meet together on the edges at an angle of nearly 165°, with those along the edges, giving an inward angle whose planes form, with those of the octaedron, an angle of nearly 128°. Fig. 65.

92. An octaedral diamond, the edges of which are, each of them, replaced by two planes which meet together upon the edges at an angle of nearly 150°. This modification is the same as that of No. 40, but in which the planes of replacement have arrived at their limits. Fig. 66.

93. A diamond belonging to the same variety, but having besides undergone, conjointly with the replacement of the edges, the intermediate replacement of the solid angles of the octaedron by four planes on each angle, which meet on the middle of the several edges at an angle of about 160°. Fig. 67.

94. A diamond of a very regular shape, and of a fine white colour, belonging to the octaedron, but having experienced the modification which replaces the edges by an angle inward, the planes of which modification meet those of the octaedron at an angle of nearly 135°, conjointly

with that intermediate modification which replaces each of the solid angles with planes meeting together on the middle of the edges at an angle of nearly 165°. The striæ which shew the retirement parallel to the edges causing the inward angle, are very distinctly marked. Fig. 68.

95. A diamond of the same variety as the preceding Number, but having preserved the traces of the planes of the primitive octaedron: the striæ which mark the nature of the retirement producing the inward angle, are equally well preserved. Fig. 69.

96. A diamond of considerable size, belonging to a macle precisely corresponding with that of No. 41; but in one of the component segments, the planes of replacement of the edges of the octaedron belong to the modification in which those planes meet at an angle of nearly 135°, and in the other to that in which the planes meet each other under an angle of about 160°, when viewed at the two different extremities. Fig. 70 and 71.

97. A small diamond of a dirty gray colour, belonging to the octaedron, the edges of which are occupied by an inward angle belonging to the combination of two modifications, of which the one replaces each of the solid angles of the octaedron by four planes meeting those of the neighbouring

angle on the middle of the edges at an angle nearly of 165°, and the other modification replaces all the edges by two planes, making an outward angle, and meeting the faces of the octaedron at an angle of nearly 135°.

98. A superb diamond, and of a perfectly regular shape, belonging to the variety with inward angles already described: it completely tends to prove, that the inward angle by no means belongs to any species of macle, but is produced directly by the crystallization. This diamond is very pure, and of a fine white colour.

99. Another very fine diamond, but curvilinear; its striæ shew different retirements along the edges of the octaedron reunited with those of the intermediate retirements: it is to these different retirements, undergone in succession, that its curvilinear form is owing: it is very transparent, and of a light yellow colour, with a shade of brown.

100. An irregular diamond, but which shows itself to belong distinctly to the octaedron, whose solid angles are replaced by a single plane: the planes of replacement are all very rough, and shew that this diamond is composed of an aggregation of smaller ones. Fig. 73.

Note. Figure 72 represents a cuneiform octaedron, the apex of whose summit is replaced by a single plane, and belongs to Mr. Greville's Collection; and as the plane of replacement is very smooth, and of a brilliant lustre, it shows that the primitive octaedron produces the inward angle by the immediate laws which govern its crystallization.

101. A very minute diamond in the shape of a perfect cube, the edges of which are replaced by a single plane, and are very rough.

102. Another very minute diamond similar to the last, but in which the solid angles are replaced by a small equilateral triangle. Fig. 75.

Note. The diamond represented under Fig. 75 A. belongs to the series of the cubic varieties; but it is not in this Collection.

103. A large sized diamond of a yellow brown tint; notwithstanding its shape is round, it clearly appears to belong to a cube whose edges are replaced; and it is apparent from the shagreen appearance of its surface that it belongs to those crystals of which this is entirely an aggregation, and is the immediate product of the crystallization.

104. A pretty large dodecaedral diamond of a flattened

shape, the faces of which are deeply striated ; it has a visible tendency to convexity, by the very act itself of the crystallization.

105. Another octaedral diamond, whose edges are replaced by an inward angle, and has also a tendency to become round.

106. Another diamond, become convex by the act itself of its crystallization, but in which is perceived also the form remaining of the octaedron. It is somewhat of a brownish colour.

107. A large and superb diamond perfectly convex ; its form is the result of the aggregation of a considerable number of crystals : it is of a lightish brown colour.

108. This diamond, which is of a light yellow tint, is too minute to admit of the measure of its angles being ascertained, and the more so, as the replacement on the edges of the octaedron do not join. This variety is analogous to that of No. 93, Fig. 67. It has the same combination of one of the intermediate modifications which the said angles have undergone with one of the modifications by which each of the edges are replaced by two planes ; but the meeting angle of the planes of the intermediate modification in

the middle of the edges of the octaedron is less obtuse. FIG. 80.

109. A small crystal of the same form as the preceding Number, but in which each angle is moreover replaced by a small octagonal face. FIG. 81.

110. A very perfect crystal, yellowish white, similar to that described No. 99. FIG. 73.

111. A primitive crystal, in which the faces, with the exception of that which adhered to the matrix, are perfectly well defined, as well as the edges.

112. An octaedral crystal, the faces of which are covered with decreasing triangular laminæ arranged like steps, so as to form a succession of salient and retiring angles. This crystal is also remarkable for the edges being coloured red by oxide of iron. FIG. 82.

113. A very beautiful little cube, whose edges are replaced by double facettes with parallel sides, with a quadrangular pyramid on each face considerably flattened. This variety is extremely rare. FIG. 83.

114. An octaedral crystal of a yellowish white colour, the

edges of which are somewhat rounded ; it shews at each of the angles a quadrangular pyramidal regular cavity. This crystal is quite regular; the faces of the octaedron are dull, but the cavities exhibit brilliant reflexions of light. FIG. 84.

115. A small octaedral diamond, the angles of which are replaced by curvilinear cavities, which occasion the faces of the octaedron to be nearly round. The sides are also modified, but the faces that replace them are very narrow. FIG. 85.

116. A large octaedral diamond, weighing $6\frac{3}{4}$ carats ; its edges are slightly rounded, and its colour (at least on the surface) is a greenish grey.

117. A small white transparent cubic diamond, the angles of which are replaced by the faces of the primitive octaedron, as is also each of the sides by two faces very slightly inclined towards each other. These latter faces are much larger than in the greater part of the crystals in which either the same or analogous modifications offer themselves. The faces of the octaedron are extremely brilliant, those of the cube are *dotted*, and the others slightly striated. See FIG. 86.

118. A large octaedral diamond, somewhat flattened,

parallel to two of the faces of the octaedron, the edges of which are each replaced by eight narrowish facettes, which gives them a roundish appearance. This diamond is represented in FIG. 57.

119. A yellow octaedral diamond, shewing triangular decreasing laminæ on its faces.

120. A large transparent diamond, exhibiting the appearance of a rhomboidal dodecaedron with rounded faces. This convexity results in fact from each of the faces of the dodecaedron being composed of two faces at least. This crystal belongs to the variety represented in FIG. 51.

121. A well defined transparent crystal of a light green tint. FIG. 51.

122. A macled diamond of the same variety as No. 118, FIG. 57. This crystal is well defined : one only of its angles, however, shews a retiring angle.

123. A large white transparent diamond of the same variety, in which the two portions which are united at their bases are much thinner than in the preceding number.

124. A large yellow transparent diamond of an octa-

edral shape, each face of which exhibits a double hexaedral pyramid. This crystal is of a very regular form, and of a fine colour. Fig. 87.

125. A white transparent shining diamond, being an octaedron, the solid angles of which are modified by eight small triangular elongated faces. In the interior of the crystal may be perceived certain fissures in the direction of the cleavage.

126. A large cubic greenish diamond, the angles of which are replaced by one plane and the edges by three. Two of the faces which replace the edges incline considerably on the faces of the cube. Fig. 58.

127. A small transparent shining grayish-white diamond, formed by a regular aggregation of eight small cubes, all the edges of which are rounded. Unique. Fig. 89.

128. A beautiful white transparent diamond of the variety No. 108, but which presents the appearance of a modified tetraedron replaced at the angles, as shewn in Fig. 90, which is owing merely to the enlargement of four of the faces of the octaedron at the expense of the other four.

A. H.

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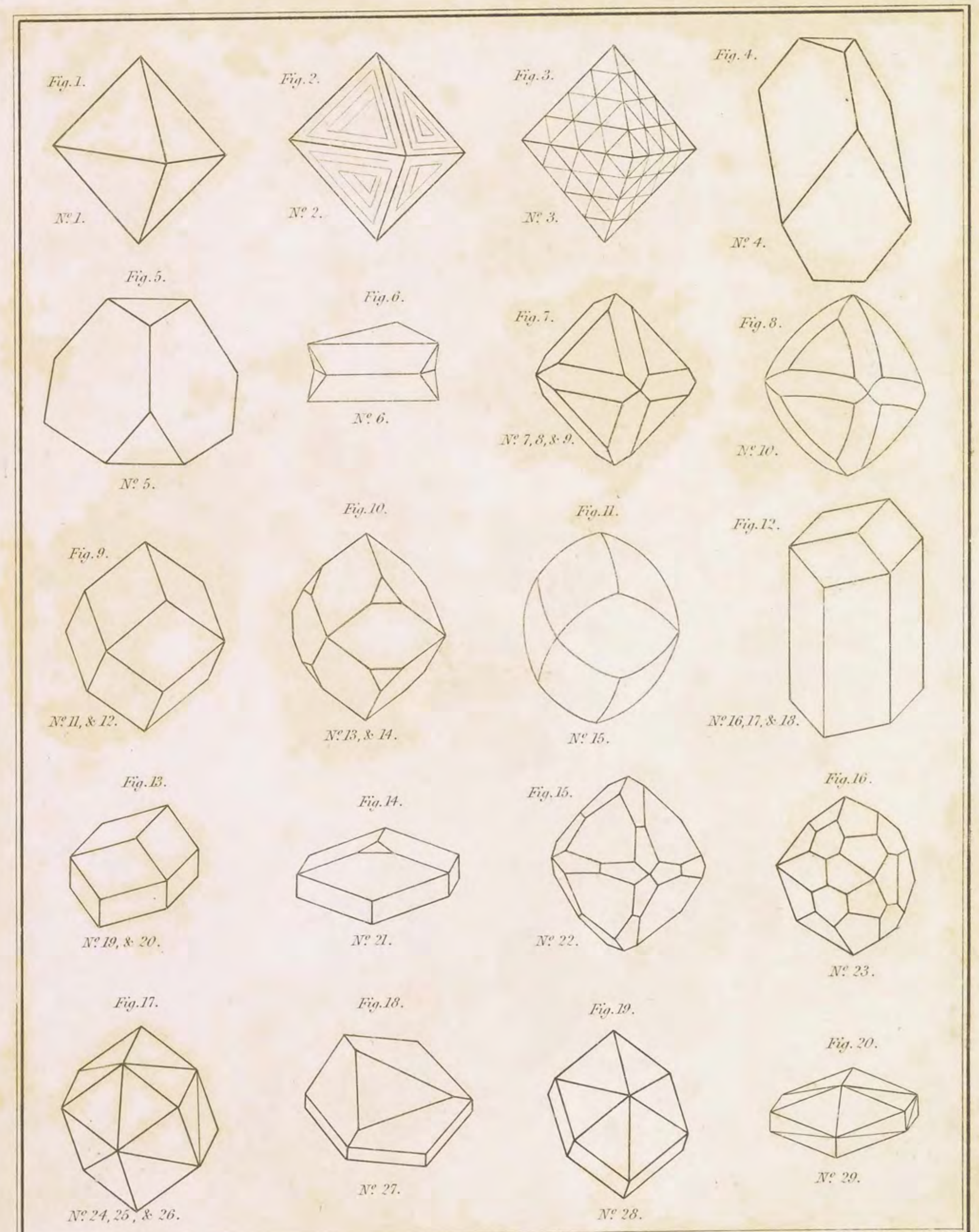


Count de Bournon del. *Lowry sculp.*

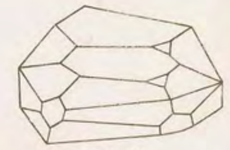
Fig. 21.

No. 30.

Fig. 22.

No. 31.

Fig. 23.



No. 32.

Fig. 24.

No. 33.

Fig. 25.

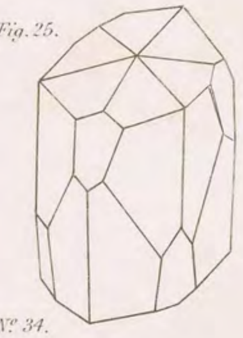


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Fig. 26.

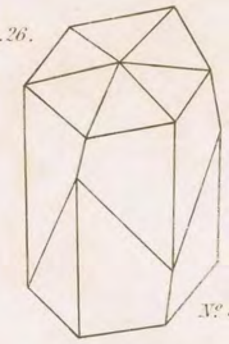

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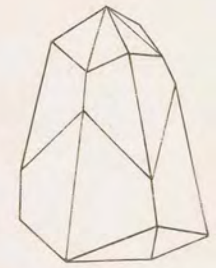
Fig. 27.

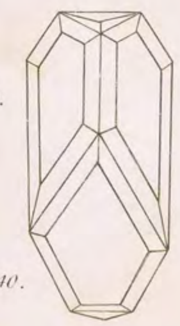


No. 36, & 37.

Fig. 28.

No. 38, & 39.

Fig. 29.



No. 40.

Fig. 30.

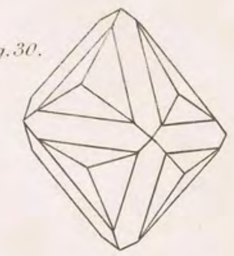
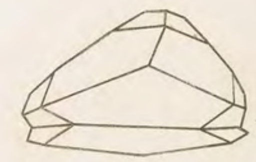


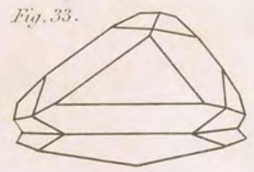
Fig. 31.

Fig. 32.



No. 41, & 42.

Fig. 33.



No. 43.

Fig. 34.

No. 44.

Fig. 35.

No. 45, 46, & 47.

Fig. 36.

No. 48.

Fig. 37.

No. 49.

Fig. 38.

No. 50.

Fig. 39.

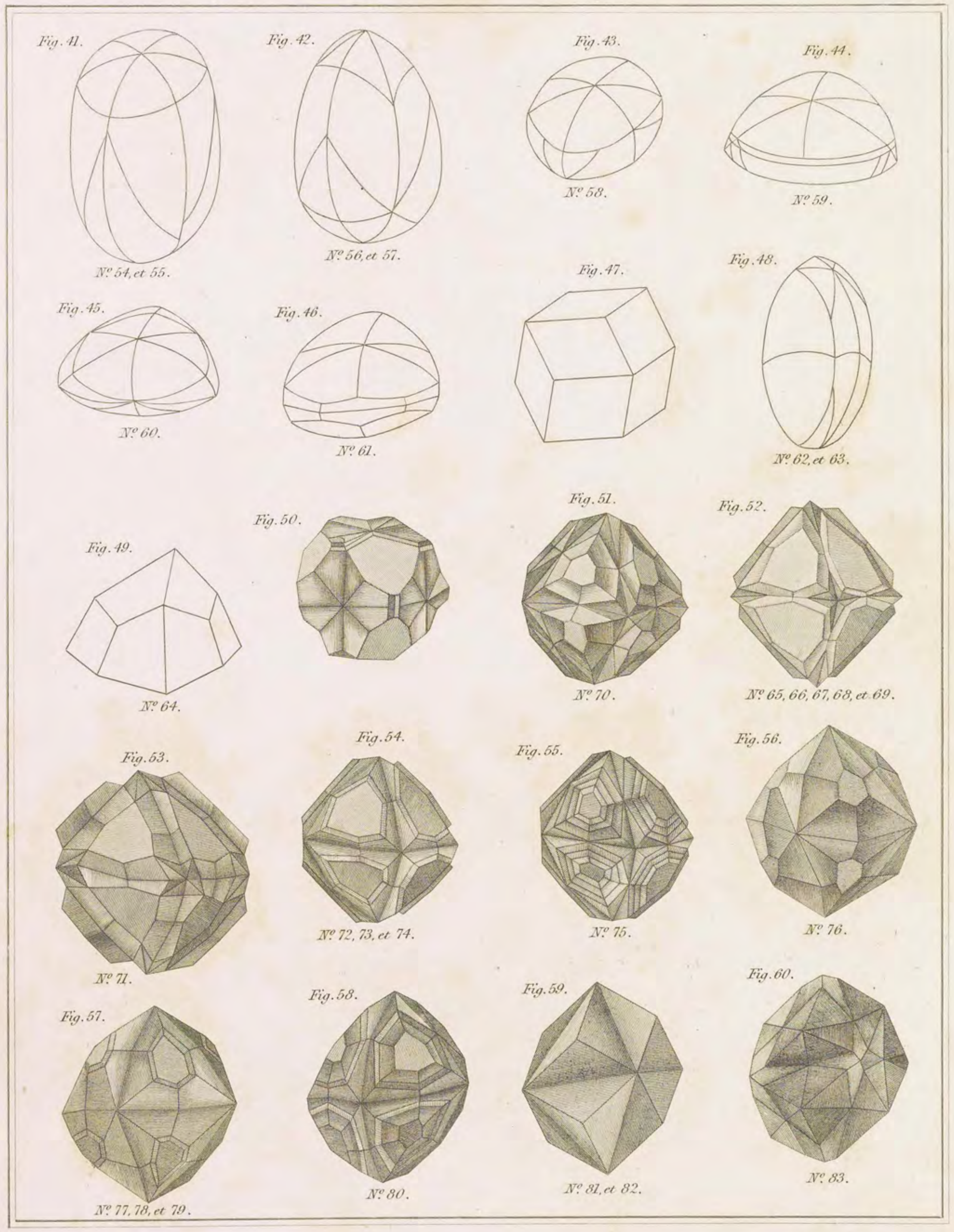
No. 51.

Fig. 40.

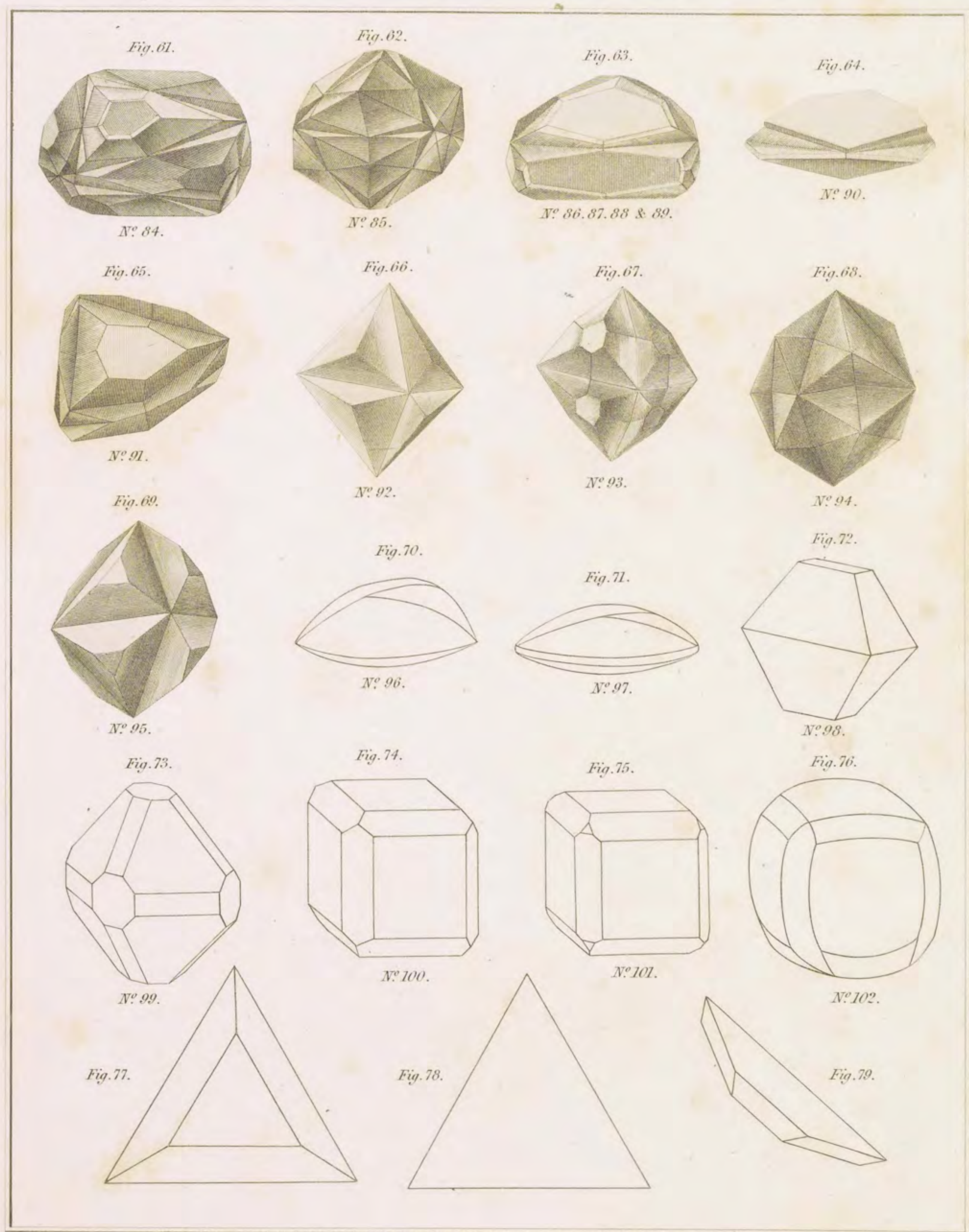
No. 52, & 53.

Count de Bournon del.

Lowry sculp.



Lowry Sculpsit. Count De Bournon Del.



Lowry Sculpsit. Count De Bournon Del.

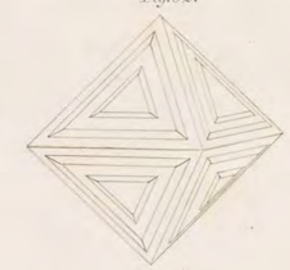
Fig. 80.

No. 108.

Fig. 81.

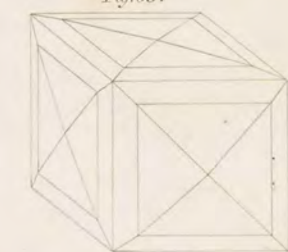
No. 109.

Fig. 82.



No. 112.

Fig. 83.

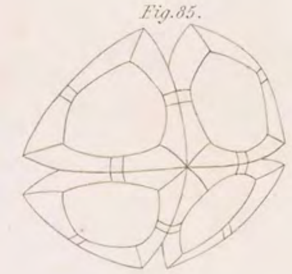


No. 113

Fig. 84.

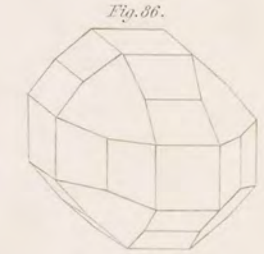
No. 114.

Fig. 85.



No. 115.

Fig. 86.



No. 117.

Fig. 87.

No. 124.

Fig. 88.

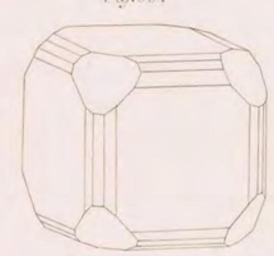


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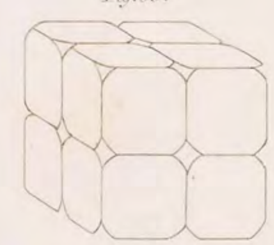
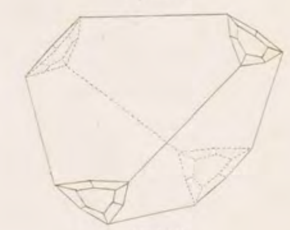
Fig. 89.



No. 127.

Fig. 90.



No. 128.

Jª Basire sculpt. Levy delt.