

What is Matter and What is Force?

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[The continual discoveries with which modern science astonishes and bewilders the world create a presumption in many minds that an article dealing with scientific subjects becomes unreliable when it is a few years old, because most probably superseded by new facts or theories, discovered or formulated in the meantime by the hierophants of the laboratory or the lecture hall, but not yet generally known. Some of these discoveries would in legal phraseology be termed retro-active — they upset theories hitherto upheld as axioms of science or "laws of nature"; and science that has become out of date is quite as much to be avoided as "last year's fashions". This, of course, is a danger which necessarily threatens anyone who, not being in the inner circle of scientists, quotes from even the "latest editions" of scientific works, and the uncertainty thereby created does much to keep up the unquestioning faith which so many persons feel in the dicta of modern science, paradoxical as that may sound. The reason is plain enough. Men of science stand to the vulgar in the position of revelators. It does not so much matter if they are mistaken today, since they will most likely correct their mistakes tomorrow; and this uncertainty does for the men of science what the constant promise of a new revelation did for Joe Smith and Brigham Young — it creates expectant attention and happy anticipation. This uncertainty of science tends also to discourage undue curiosity and criticism on the part of the public, and to favour the autocratic assumptions of scientific "authorities"; for naturally there does not seem to be much use for outsiders to spend their time in learning abstruse things that may be discovered, in a few months or years, to have after all been altogether falsely conceived and wrongly explained. In the case of the following article, however, most of the scientific theories and data quoted are still standing, although the article is over five years old; and the occult views of nature it puts forth are true for all time. For this reason it has been thought well to republish it without delay, before the scientific views it deals with have any more time to turn sour or "explode" The article, it should be mentioned, was written in answer to some objections raised by a correspondent in a previous number of THE THEOSOPHIST, as to the designation of electricity as a "form of matter"; and the writer does not imagine that the question which forms its title is fully answered in the text. There remain several aspects of force almost wholly unnoticed, and it would, of course, be ridiculous to suppose that the subject of Force has been exhausted by dealing with some of its manifestations. Had it been the intention of the article to settle the questions at issue, the writer would not have taken for a title the query, "What is Matter and What is Force?" but would probably have adopted the usual style of teachers of science, and headed the article, "What Matter and Force are". Enough is said in the article, however, to answer its original purpose, namely, of showing that the all-important questions, What is matter? and What is Force? have received no satisfactory answer from modern science, and of proving that no one has any right, in the present state of scientific knowledge, to assert, in the face of the occultists, that electricity is not a form of matter, more especially so since Helmholtz has declared it to be as atomic as ponderable matter itself.]

"It is a question of science", which, as such, has to be strictly kept within the boundaries of modern

materialistic science. All “discussion on the subject”, however “desirable”, would prove, on the whole, unprofitable. Firstly, because science confines herself only to the physical aspect of the conservation of energy or correlation of forces; and, secondly, because, notwithstanding her own frank admission of helpless ignorance as to the ultimate causes of things, judging by the tone of our critic’s article, I doubt whether he would be willing to admit the utter inaptness [Page 2] of some of the scientific terms as approved by the Dwija, the “twice-born” of the Royal Society, and obediently accepted by their admirers. The fact that modern science has been pleased to divide and subdivide the atmosphere into a whole host of elements, and to call them so for her own convenience, is no authoritative reason why the Occultists should accept that terminology. Science has never yet succeeded in decomposing a single one of the many simple bodies miscalled “elementary substances”, for which failure, probably, the latter have been named by her elementary. And whether she may yet, or never may, succeed in that direction in time, and thus recognise her error, in the meanwhile, we Occultists permit ourselves to maintain that the alleged “primordial” atoms would be better specified under any other name but that one. With all respect due to the men of science, the terms “element” and “elementary” applied to the ultimate atoms and molecules of matter of which they know nothing do not seem in the least justifiable. It is as though the Royal Society agreed to call every star a “Kosmos”, because each star was supposed to be a world like our own planet; and then would begin taunting the ancients with ignorance, since they knew but of one Kosmos, the boundless, infinite universe. So far, however, science admits herself that the words “element” and “elementary”, unless applied to primordial principles or self-existing essences, out of which the universe was evolved, are unfortunate terms, and remarks thereupon that “experimental science deals only with legitimate deductions from the facts of observation, and has nothing to do with any kind of essences except those which it can see, smell, or taste”. Professor J. P. Cooke tells us that “science leaves all others to the metaphysicians” (New Chemistry, 1887). This stern pronunciamento, which shows the men of science refusing to take anything on faith, is immediately followed by a very curious admission made by the same author. “Our theory, I grant, may be all wrong”, he adds, “and there may be no such things as molecules.....The new chemistry assumes as its fundamental postulate that the magnitudes we call molecules are realities, but this is only a postulate”.

We are thus made to suspect that the exact science of chemistry needs to take as well as transcendental metaphysics something on blind faith. Grant her the postulate — and her deductions make of her an exact science; deny it — and “exact science” falls to pieces! Thus, in this respect, physical science does not stand higher than psychological science, and the Occultists need fear but very little of the thunderbolts of their “exact” rivals. Both are, to say the least, on a par. The chemist, though carrying his subdivision of molecules further than the physicist, can no more than he experiment on individual molecules. One may even remind both that neither of them has ever seen an individual molecule. Nevertheless, and while priding themselves upon taking nothing on faith, they admit that they cannot often follow the sub-division of molecules with the eye, but “can discern it with the intellect”. What more, then, do they do than the [Page 3] Occultists, the alchemists, the adepts ? While they discern with the “intellect”, the adept, as he maintains, can as easily discern the subdivision *ad infinitum* of that which his rival of the exact methods pleases to call an “elementary body”, and he follows it — with the spiritual in addition to his physical intellect.....We must pass to the more important question now, and see how far science is justified in regarding electricity as a force and Eastern Occultists in maintaining that it is “still matter”. Before we open the discussion I must be allowed to remark that, since a “Theosophist” wants to be scientifically accurate, he ought to remember that science does not call electricity a force, but only one of the manifestations of the same; a mode of action or motion. Her list of the various kinds of energy which occur in nature is long, and many are the names which she uses to distinguish them. With all that, one of her most eminent adepts, Professor Balfour Stewart — one of the authorities he quotes against our President — warns his readers (see “The Forces and Energies of Nature”) that their

enumeration has nothing absolute or complete about it, representing, as it does, not so much the present state of our knowledge as of our want of knowledge, or rather profound ignorance, of the ultimate constitution of matter". So great is that ignorance, indeed, that, treating upon heat, a "mode of motion" which is supposed to be better understood than electricity, that scientist confesses that "if heat be not a species of motion, it must necessarily be a species of matter", and adds that the men of science "have preferred to consider heat as a species of motion to the alternative of supposing the creation of a peculiar kind of matter". [See also, to cite an impartial authority, H.T. Buckle's "History of Civilization"]

And, if so, what is there to warrant us that science will not yet find out her mistake some day, and recognise and call electricity, in agreement with the Occultists, "a species of a peculiar kind of matter".

Thus, before the too dogmatic admirers of modern science take the occultists to task for viewing electricity under one of its aspects — and for maintaining that its basic principle is — matter, they ought first to demonstrate that science errs when she herself, through the mouthpiece of her recognised high priests, confesses her ignorance as to what is properly force and what is matter. For instance, the same Professor of Natural Philosophy, Mr. Balfour Stewart, LL.D., F.R.S., in his lectures on the "Conservation of Energy" tells us as follows: — "We know nothing or next to nothing of the ultimate structure or properties of matter, whether organic or inorganic", and . . . "it is in truth only a convenient classification and nothing more".

Furthermore, one and all, the men of science admit that though they possess a definite knowledge of the general laws, yet they "have no knowledge of the individuals in the domains of physical science". For example, they suspect "a large number of our diseases to be caused by [Page 4] organic germs"; but they have to avow that their "ignorance about these germs is most complete". And in the chapter "What is energy?" the same great naturalist staggers the too-confiding profane by the following admission: — "If our knowledge of the nature and habits of organised molecules be so small, our knowledge of the ultimate molecules of inorganic matter is, if possible, still smaller. It thus appears that we know little or nothing about the shape or size of molecules, or about the forces which actuate them. The very largest masses of the universe sharing with the very smallest this property of being beyond the scrutiny of the human senses". Of physical "human senses" he must mean, since he knows little, if anything, of any other senses. But let us take note of some further admissions, this time by Professor Le Conte, in his lecture on the correlation of vital with chemical and physical forces...."The distinction between force and energy is very imperfectly, or not at all, defined in the higher forms of force, and especially in the domain of life. . . . Our language cannot be more precise until our ideas in this department are far clearer than now".

Even as regards the familiar liquid — water — science is at a loss to decide whether the oxygen or hydrogen exist as such in water or whether they are produced by some unknown and unconceived transformation of its substance. "It is a question". says Mr. J. P. Cooke, Professor of Chemistry, "about which we may speculate, but in regard to which we have no knowledge. Between the qualities of water and the quality of these gases there is not the most distant resemblance". All they know is that water can be decomposed by an electrical current; but why it is so decomposed and then again recombined, or what is the nature of that they call electricity, etc., they do not know. Hydrogen, moreover, was till very lately one of the very few substances which was known only in its aeriform condition. It is the lightest form of matter known.

There is not an atom in nature but contains latent or potential electricity which manifests under known conditions. Science knows that matter generates. [Using the term “generated” in the lesser sense of calling forth into manifestation. Force or energy is known to be eternal, and cannot of course be *generated* in the sense of being created] what it calls force, the latter manifesting itself under various forms of energy — such as heat, light, electricity, magnetism, gravitation, etc., — yet that same science has hitherto been unable as we find from her own admissions, as given above, to determine where it is that matter ends and force (or spirit, as some erroneously call it) begins. Science, while rejecting metaphysics and relegating it through her mouthpiece — Professor Tyndall — to the domain of poetry and fiction, unbridles as often as many metaphysicians her wild fancy, and allows mere hypotheses to run riot on the field of unproved speculation. All this she [Page 5] does, as in the case of the molecular theory, with no better authority for it than the paradoxical necessity for the philosophy of every science to arbitrarily select and assume imaginary fundamental principles; the only proof offered in the way of demonstrating the actual existence of the latter being a certain harmony of these principles with observed facts. Thus, when men of science imagine themselves subdividing a grain of sand to the ultimate molecule they call oxide of silicon, they have no real but only an imaginary and purely hypothetical right to suppose that, if they went on dividing it further (which, of course, they cannot), the molecule, separating itself into its chemical constituents of silicon and oxygen, would finally yield that which has to be regarded as two elementary bodies — since the authorities so regard them. Neither an atom of silicon nor an atom of oxygen is capable of any further subdivision into something else, they say. But the only good reason we can find for such a strange belief is because they have tried the experiment and — failed. But how can they tell that a new discovery, some new invention of still finer and more perfect apparatuses and instruments, may not show their error some day? How do they know that those very bodies now called “elementary atoms” are not in their turn compound bodies or molecules, which, when analysed with still greater minuteness, may show containing in themselves the real primordial elementary globules, the gross encasement of the still finer atom-spark, the spark of life, the source of electricity — matter still! Truly has Henry Kunrath, the greatest of the alchemists and Rosicrucians of the middle ages, shown spirit in man, as in every atom — as a bright flame enclosed within a more or less transparent globule — which he calls soul. And since the men of science confessedly know nothing of (a) the origin of either matter or force; (b) nor of electricity or life; and (c) that their knowledge of the ultimate molecules of inorganic matter amounts to a cipher. Why, I ask, should any student of Occultism, whose great masters may know, perchance, of essences which the professors of the modern materialistic school can neither “see, smell, or taste” — why should he be expected to take their definitions as to what is Matter and what is Force as the last word of unerring, infallible science? The term imponderable agents is now regarded as a scientific absurdity. The latest conclusions at which modern chemistry has arrived, it seems, have brought it to reject the word imponderable, and to make away with those text books of pre-modern science which refer the phenomena of heat and electricity to attenuated forms of matter. Nothing, they hold, can be added to or subtracted from bodies without altering their weight. This was said and written in 1876, by one of the greatest chemists in America. With all that, have they become any the wiser for it? Have they been able to replace by a more scientific theory the old and tabooed “phlogiston theory” of the science of Stahl, Priestley, Scheele, and others? Or, because they have proved, to their own satisfaction, that it is highly unscientific to refer the phenomena of heat and electricity to attenuated forms of matter, have they [Page 6] succeeded at the same time in proving what are really Force, Matter, Energy, Fire, Electricity, Life? The phlogiston of Stahl — a theory of combustion taught by Aristotle and the Greek philosophers — as elaborated by Scheele, the poor Swedish apothecary, a secret student of Occultism, who, as Professor Cooke says of him, “added more knowledge to the stock of chemical science in a single year than did Lavoisier in his lifetime”, was not a mere fanciful speculation, though Lavoisier was permitted to taboo and upset it. But, indeed, were the high priests of modern science to attach more weight to the essence of things than to mere generalisations, then, perhaps, they would be in a better position to tell the world more of the “ultimate structure of matter” than they now are. Lavoisier,

it is well known, did not add any new fact of prime importance by upsetting the phlogiston theory, but only added “a grand generalisation”. The Occultists are perfectly aware, it need hardly be said, of modern theories of combustion, and fully recognize the part which oxygen plays therein. They prefer, however, to hold to the fundamental theories of ancient sciences, knowing well that a very large balance of real knowledge lies on that side, when the ancient and the modern are compared. No more than the authors of the old theory do they attach to phlogiston — which has its specific name as one of the attributes of Akasa — the idea of weight which the uninitiated generally associate with all matter. And though to us it is a principle, a well-defined essence, yet no more than we did they view it as matter in the sense it has for the present men of science. As one of their modern professors put it — “translate the phlogiston by energy, and in Stahl's work on Chemistry and Physics, of 1731, put energy where he wrote phlogiston, and you have . . . our great modern doctrine of conservation of energy”. Verily so it is the “great modern doctrine”, only plus something else, let me add. Hardly a year after these words had been pronounced, the discovery by Professor Crookes of radiant matter — of which farther on — has nigh upset again all their previous theories.

“Force, energy, physical agent, are simply different words to express the same idea”, observes our critic. I believe he errs. To this day the men of science are unable to agree in giving to electricity a name which would convey a clear and comprehensive definition of this “very mysterious agent”, as Professor Balfour Stewart calls it. While the latter states that electricity or “electrical attraction may probably be regarded as peculiarly allied to that force which we call chemical affinity”; and Professor Tyndall calls it only “a mode of motion”; Professor A. Bain regards electricity as one of the five chief powers or forces in nature: — “One mechanical or molar, the momentum of moving matter”, the others “molecular, or embodied in the molecules, also supposed (?) in motion — these are heat, light, chemical force, electricity”. (The Correlations of Nervous and Mental Forces) Now, these three definitions would not gain, I am afraid, by being strictly analysed . . . Light was never regarded [Page 7] as “a force”. It is, says science, a “manifestation of energy”, a “mode of motion” produced by a rapid vibration of the molecules of any light-giving body, and transmitted by the undulations of ether. The same for heat and sound, the transmission of the latter depending, in addition to the vibrations of ether, on the undulations of an intervening atmosphere. Professor Crookes thought at one time that he had discovered light to be a force, but found out his mistake very soon. The explanation of Thomas Young of the undulatory theory of light, holds now as good as ever in the theories of modern science at least, and according to this explanation that which we call light is simply an impression produced on the retina of the eye by the wave-like motion of the particles of matter. Light, then, like heat — of which it is the crown — is simply the ghost, the shadow of matter in motion ! . . . The men of science have just found out “a fourth state of matter”. whereas the Occultists have penetrated years ago beyond the sixth, and, therefore, do not infer, but know of the existence of the seventh, the last. Professor Balfour Stewart, in seeking to show light to be an energy or force, quotes Aristotle, and remarks that the Greek philosopher seems to have entertained the idea that “light is not a body, or the emanation of any body (for that, Aristotle says, would be a kind of body), and, that, therefore, light is an energy or act”. To this I respectfully demur, and answer that if we cannot conceive of motion without force, we can conceive still less of an “energy or act” existing in boundless space from the eternity, or even manifesting without some kind of body. Moreover, the conceptions about “body” and “matter” of Aristotle and Plato, the founders of the two great rival schools of antiquity, opposed as they were in many things to each other, are nevertheless still more at variance with the conceptions about “body” and “matter” of our modern men of science.

The Theosophists, old and modern, the Alchemists, and Rosicrucians have ever maintained that there were no such things *per se* as “light”, “heat”, “sound”, “electricity”, least of all could there be a vacuum in

nature. And now the results of old and modern investigation fully corroborate what they had always affirmed, namely, that in reality there is no such thing as a “chemical ray”, a “light ray”, or a “heat ray”. As far as can be ascertained by those whose observations and experiments are confined to the material plan, there is nothing but radiant energy; or, as a man of science expresses it in the *Scientific American*, “radiant energy, motion of some kind, causing vibrations across space of something between us and the sun; something which, without understanding fully (verily so!), we call 'ether', and which exists everywhere, even in the vacuum of a radiometer”. The sentence, for being confused, is, none the less for it, the last word of science. Again: “We have always one and the same cause, radiant energy, and we give this one thing different names — 'actinism'. 'light', or 'heat'. And we are told also that the miscalled chemical or actinic rays, as well as [Page 8] those which the eye sees as blue, or green, or red, and those which the thermometer feels, are all one thing, the effects of motion in ether”. (“The Sun's Radiant Energy” by Professor Langley.)

Now, the sun and ether being beyond dispute material bodies, necessarily every one of their effects — light, heat, electricity, etc., — must be, agreeably to the definition of Aristotle (as accepted, though slightly misconceived, by Professor Balfour Stewart), also “a kind of body”, *ergo* — matter.

Now what is in reality matter ? We have seen that it is hardly possible to call electricity a force, and yet we are forbidden to call it matter under the penalty of being called “unscientific”. Electricity has no weight — *ergo*, it cannot be matter. Well, there is much to be said on both sides. Mallet's experiment, which corroborated that of Pirani (1878), showed that electricity is under the influence of gravitation, and must have, therefore, some weight. A straight copper wire, with its ends bent downwards, suspended at the middle to one of the arms of a delicate balance, while the bent ends dip in mercury. When the current of a strong battery is passed through the wire by the intervention of the mercury, the arm to which the wire is attached, although accurately balanced by a counterpoise, sensibly tends downwards, notwithstanding the resistance produced by the buoyancy of the mercury. Mallet's opponents, who tried at the time to show that gravitation had nothing to do with the fact of the arm of the balance tending downward, but that it was due to the law of attraction of electric currents, and who brought forward to that effect Barlow's theory of electric currents, and Ampère's discovery that electric currents, running in opposite directions, repel one another, and are sometimes driven upwards, only proved that men of science will rarely agree, and that the question is so far an open one. This, however, raises a side issue as to what is “the law of gravitation”. The scientists of the present day assume that “gravitation” and “attraction” are quite distinct from one another. But the day may not be far distant when the theory of the Occultists that the “law of gravitation” is nothing more or less than “the law of attraction and repulsion” will be proved scientifically correct.

Science may, of course, if it so pleases her, call electricity a force. Only by grouping it together with light and heat, to which the name of force is decidedly refused, she has either to plead guilty of inconsistency, or to tacitly admit that it is a “species of matter”. But whether electricity has weight or not, no true scientist is prepared to show that there is no matter so light as to be beyond weighing with our present instruments. And this brings us directly to the latest discovery, one of the grandest in science; I mean Mr. Crookes' “radiant matter”, or, as it is now called, the fourth state of matter. That the three states of matter, the solid, the liquid, and the gaseous, are but so many stages in an unbroken chain of physical continuity, and that the three correlate or are transformed one [Page 9] into the other by insensible gradations needs no further demonstration, we believe. But what is of far greater importance to us Occultists is the admission made by several great men of science in various articles upon the discovery of that fourth

state of matter. Says one of them in the "Scientific American": —

"There is nothing any more improbable in the supposition that these three states of matter do not exhaust the possibilities of material condition than in supposing the possibilities of sound to extend to aerial undulations to which our organs of hearing are insensible, or the possibilities of vision to ethereal undulations too rapid or too slow to affect our eyes as light."?

And as Professor Crookes has now succeeded in refining gases to a condition so ethereal as to reach a state of matter "fairly describable as ultra-gaseous, and exhibiting an entirely novel set of properties", why should the Occultists be taken to task for affirming that there lie beyond that "ultra-gaseous" state still other states of matter; states so ultra-refined, even in their grosser manifestations — such as electricity under all its known forms — as to have fairly deluded the scientific senses, and let the happy possessors thereof call electricity — a force! They tell us that it is obvious that if the tenuity of some gas is very greatly increased, as in the most perfect vacua attainable, the number of molecules may be so diminished that their collisions under favourable conditions may become so few in comparison with the number of masses that they will cease to have a determining effect upon the physical character of the matter under observation. In other words, they say: "The free-flying molecules, if left to obey the laws of kinetic force without mutual interference, will cease to exhibit the properties characteristic of the gaseous state, and take on an entirely new set of properties". This is radiant matter. And still beyond lies the source of electricity — still matter.....Speaking of his discovery, Professor Crookes justly remarks that the phenomena he has investigated in his exhausted tubes reveal to physical science a new field for explanation, a new world, "a world wherein matter exists in a fourth state, where the corpuscular theory of light holds good, and where light does not always move in a straight line, but where we can never enter, and in which we must be content to observe and experiment from without". To this the Occultist might answer: "If we can never enter it with the help of our physical senses, we have long since entered and even gone beyond it, carried thither by our spiritual faculties and in our spirit bodies".

And now I will close this too lengthy article with the following reflection. The ancients never invented their myths. One acquainted with the science of occult symbology can always detect a scientific fact under the mask of grotesque fancy. Thus one who would go to the trouble of studying the fable of Electra — one of the seven Atlantides — in the light of occult science, would soon discover the real nature of Electricity, and learn that it signifies little whether we call it force or matter, since it is both. [Page 10] and so far, in the sense given it by modern science, both terms may be regarded as misnomers. Electra, we know, is the wife and daughter of Atlas the Titan, and the son of Asia and of Pleione, the daughter of the Ocean. As Professor Leconte well remarks, there are many of the best scientists who ridicule the use of the term "vital force" or "vitality" as a remnant of superstition, and yet the same men use the words gravity, magnetic force, physical force, electrical force, etc., and are unable withal to explain what is life, or even electricity; nor are they able to assign any good reason for that well-known fact that when an animal body is killed by lightning, after death the blood does not coagulate. Chemistry, which shows to us every atom, whether organic or inorganic, in nature susceptible to polarisation, whether in its atomic mass or as a unit, and inert matter allied with gravity, light with heat, etc., hence as containing latent electricity, that chemistry still persists in making a difference between organic and inorganic matter, though both are due to the same mysterious energy, ever at work by her own occult processes in Nature's laboratory, in the mineral no less than in the vegetable kingdom. Therefore do the Occultists maintain that the philosophical conception of spirit, like the conception of matter, must rest on one and the same basis of phenomena, adding that force and matter, spirit and matter, or deity and nature, although they may be

viewed as opposite poles in their respective manifestations, yet they are in essence and in truth but one, and that life is present as much in a dead as in a "living" body, in inorganic as in organic matter. This is why, while science is searching still, and may go on searching for ever, to solve the problem "What is life?" the Occultist can afford to refuse taking the trouble, since he claims, with as much good reason as any given to the contrary, that life, whether in its latent or dynamical form, is everywhere, that it is as infinite and indestructible as matter itself, since neither can exist without the other, and that electricity is the very essence and origin of life itself. "Purush" is non-existent without "Prakriti"; nor can Prakriti, or plastic matter, have being or exist without Purush, or spirit, vital energy, life. Purush and Prakriti are, in short, the two poles of the one eternal element, and are synonymous and convertible terms. Our bodies as organised tissues are indeed "an unstable arrangement of chemical forces", plus a molecular force — as Professor Bain calls electricity — raging in it dynamically during life, tearing asunder its particles at death, to transform itself into a chemical force after the process, and thence again to resurrect as an electrical force or life in every individual atom. Therefore, whether it is called Force or Matter, it will ever remain the omnipresent' Proteus of the universe, the one element, Life, Spirit or Force at its negative, Matter at its positive pole; the former the Materio-Spiritual, the latter the Materio-Physical Universe, Nature, Swabhâvat or Indestructible Matter.