

TRIPLE ORDER OF SCIENCE—PHYSICS, METAPHYSICS AND FAITH.

IN a previous article we called attention to a triple order of science. It has been said that that article seemed to belittle the efforts of conscientious investigators in physical science. Nothing could have been farther from its intention. Its purpose was to note the evil done, in the name of "Science," by those who do not recognize the triple order, and who try to obliterate the clearly drawn lines of division between physics, metaphysics and faith. We return to this subject of the boundary lines, since a very definite knowledge of the place of physics is the key to the abundant sophistry that is palmed off upon the public as science.

Physics (taking in the whole range of physical science) has nothing to do with first causes or final causes. It deals exclusively with matter. Its province does not go beyond material phenomena. By observation and repeated experiment it tries to discover the general laws that regulate the action of the material universe. It proceeds upon the axiom that the laws of nature are constant. As physics, it does not embrace the cases in which there may be a deviation from the known constancy of action in the forces of nature. Physics,—material science,—so long as it keeps to its domain, pursues a rigorous method. It is perfectly logical; and we may subscribe in advance, as philosophers and theologians, to all the conclusions which it draws legitimately in its own sphere. It refers material phenomena to their immediate causes. But it has nothing to do with essence, prime origin or final destiny. In so far as it goes, it can give us real certainty. But we must be on our guard to distinguish carefully what is *certain* from certain preconceived conclusions which physics does not, cannot demonstrate, and which we know from other sources to be not only undemonstrable, but utterly false. In the controversy of our day the comparatively youthful science of geology plays a very important part. It affords us—to be liberal with it—a clear demonstration of the great antiquity of our globe; of the existence of an azoic or lifeless period before the organic period; of progressive succession in the forms of life; and of man's comparatively recent appearance. Besides this definite certainty with regard to some things, geology has its hypotheses which bear an air of probability; and some of its probabilities are becoming daily more settled by the discovery of new facts. Still, probability is only probability, and

must be treated as such. So long as it does not contradict *certain* principles, we must allow it to pass as *probability*. But we cannot allow it to be forced upon us as certainty; nor will we admit as certainty any conclusion that is drawn from it as a premise. Neither can we admit that because all laws of physics were once held as hypotheses, all existing hypotheses are to be regarded as so many future laws. The changes that twenty-five years have wrought in fundamental chemistry should suffice to make us prudent in our use and advocacy of physical hypotheses.

Whilst recognizing seriously in the interest of truth the authority of material science, we should cultivate the critical habit of rejecting the dreams of that class of "scientists" who do not adhere to the true method of material science, which is purely experimental, but who jump at conclusions with "missing links"; who are too ready to emancipate themselves from the laws of lawful induction; who, without analyzing their own synthesis, make assertions that overleap their experiment; who parade as truth what is sometimes only comical hypothesis; and who discourse on essence, cause, origin and finality as if—well, as if they were metaphysicians. From the literature of material science we might gather a library of hasty conclusions, rash assertions and wrecked hypotheses. And in our day there is manifested a daring, truly homeric, to prop up pet theories with *facts* of which there is no record. We should not say that it is never allowable to make the supposition of a fact for the purpose of testing a theory. But we protest against proclaiming as laws, theories that are based on such presumptions.

As an illustration of hypothetical geology, we summarize from a work on the antiquity of man, by M. de Mortillet, Professor at the Paris School of Anthropology. He wishes to prove the scriptural age of man absurd. He bases his conclusion upon four hypotheses. He boldly fixes the exact proportion of the prehistoric ages. Then by hypothesis of identity between the glacial and another period, fixes the duration of this, even in his mind, indefinite period at 100,000 years. Finally, he says, when *we know* this duration to have been 100,000 years, we can put the appearance of man on the earth at between 230,000 and 240,000 years ago. This is but one example in a thousand. The hypothetical biology of Mr. Haeckel is just as interesting. His method of doing away with the fiction of a spiritual or even an immaterial soul may be reduced to the following: (1) To assume the existence of the organic molecule, which he calls plastidule, with its own soul (mechanical force); (2) to assume that the reunion of these little plastidular souls makes the soul (mechanical force) of the cellule; (3) to assume that the reunion of these cellular souls (forces)

makes what people have agreed to call the "soul" in an organized being, whether animal, plant or man; (4) to assume that the more complex functions called thought, intelligence, reason, being exerted especially in the brain, the brain has, therefore, privileged plastidules or organic molecules which form psychic cellules. If your curiosity prompts you to go back to the beginning to see what, after all, are those original little molecular souls, you will find that they are only an undulatory, rhythmic, ramified motion, dependent on atomic mechanism. *Satis.*

But to come nearer home and to use an illustration that will serve as one for all: When was there ever a theory that so came to take the intellectual world by very storm as the theory of evolution. What theory has ever been so importunately forced into notice. We who were disposed to be incredulous were told that we knew nothing of the facts; that we might pass our time more profitably in going through the storehouse of science than in presuming to reject untried the discoveries of science. And if we laughed at the anti-climax of the theory—the rubbing off of the tail—we were little better than arch-heretics, so ignorant, forsooth, that ridicule was the only argument we could bring against the dogmas of "science." Well, to be sure, as the researches were new, and in novel lines, the only policy we had to pursue was to be silent, to read, to watch, to note the facts of discovery, to demand in every instance the tests required for the formulating of a law. And what has been the result? Only this, that the evolution theory started without a fact and has ended without a fact. The storehouse of nature has been simply ransacked to find one fact. And we, though laymen in "science," know that the constancy of a fact under every variety of condition is required to establish a physical law. It might be answered that the evolution of varieties of life was advanced only as something fortuitous. Well, even for this fortuitous evolution not one fact is forthcoming. On the contrary, whatever has been discovered only confirms the doctrine of the creation of species. For though the record on the rocks shows us that, as time advanced, the types of life increased in number and elevation, and became more specific, the very same record shows that the types, at their first appearance, appeared at their best, and *if* they changed, that they changed only to degenerate and thus to become extinct, but never to advance to a higher type. We know of no one who has meditated more seriously upon the evolutionist philosophy than has Sir J. W. Dawson. He says, "it has been well characterized as the 'baldest of all the philosophies which have sprung up in our world.'" He continues: "that in our day a system destitute of any shadow of proof, and supported merely by vague analogies and figures of speech, and by the arbitrary and

artificial coherence of its own parts, should be accepted as a philosophy and should find able adherents to string upon its thread of hypotheses our vast and weighty stores of knowledge, is surpassingly strange."¹ Sir J. W. Dawson does not, as we do not, deny or undervalue the physical research that has been made. How could he without misapprehending the fact of his own life? To conclude, therefore, "Evolution" is a hypothesis. It rests upon another hypothesis—that of the missing links. The hypothesis of the missing links is made to satisfy the other hypothesis of evolution. Thus the whole theory is an assumption based on an assumption. Even as regards the Trilobites of the Devonian, Barrande, the celebrated Bohemian palæontologist, has traced their history and shown that they are, *if* an argument, a very clear one against the theory of the derivation of species.

So much for hypothesis. At the Anthropologic Congress, held in Germany in 1882, Virchow ventured this suggestion to the assembly, that it would be well for investigators not to draw conclusions so hastily, but to profit by sad experience and examine things twice. He advised even the relegating of hypotheses to notes, leaving the text for established facts. What a reduction in the text this would make! To conclude on this point, therefore: First: We admit all facts in advance; we encourage research; we are glad to have the record of its results; every fact known, or yet undiscovered, is in harmony with the doctrines of Christianity; there can be no opposition between truth and truth. Secondly: We reject, in advance, every theory that is in opposition with the known truth; and we object to having the discovered truths of science trimmed away so as to be forced in as paving stones upon the road to error. We turn now to a higher science, philosophy, metaphysics.

Mr. Büchner² will tell us that the deep thought of Plato, Leibnitz, Bossuet, may serve to dupe novices, but that it is only to be smiled at by scientists (as Büchner). Now how are we to reply to men who use language of this description regarding the world's recognized geniuses? What is Büchner, in his microscopic studies of dirt, to Plato, in his sublime thought? Professor Lange makes bold to insult faith and intelligence by asserting that metaphysics and religion have no objective reality.³ Do we not answer mildly when we say that Professor Lange knows nothing of either? Helmholtz beards us with the astounding declaration that our philosophy soars on the wings of Icarus (metaphysics). Is it too

¹ *The Story of the Earth and Man*, ch. 14.

² *Force and Matter*.

³ *History of Materialism*, vol. i., p. 3.

much to charge him with ignorance, to tell him that he is out of his sphere? It is one thing to be a patient and acute observer, experimenter; another thing¹ to be a philosopher. But why do we select our examples from among the Germans? Because the English and American writers of the same class are little more than copyists of the Germans. However, what do we mean by metaphysics?

Our "scientists" pride themselves upon their logic. But strange to say, they do not know that metaphysics—the general metaphysics—lies at the base of all sound logic. Metaphysics teaches us where to draw the line between the essential and the non-essential, to discriminate between substance and accident. It treats of undemonstrable first truths. It discusses the nature of cause and effect and defines the conditions necessary for the ascribing of one thing to another, as effect to cause. What is there so very childish in all this? We fear the charge falls back upon those who make it. A greater thinker than all these exponents of the "clay age" has said that all human knowledge strikes its roots in metaphysics. These "scientists," these devotees of clay, are constantly using metaphysics, though they do not know it. Whenever they strive to analyze or classify, they call to their aid some principle of metaphysics, some principle whose certainty is independent of experiment, and without which a law could never be formulated out of physical phenomena. The metaphysical principle of causality underlies the whole of physical science, which is science only in so far as it makes use of this principle. We cannot think without metaphysics. We cannot think without generalizing and classifying, and we are metaphysicians in the very act by which we would repudiate the title. Metaphysics has less need of physics than physics has of metaphysics. It is to be counted a great boon of nature that metaphysics does not entirely desert its post of mental surveillance, even in the case of the very men who abjure it.

If we turn now to a higher degree in the scale of knowledge, to the higher science, to faith, we shall find the men of the slime school—when confronted by the supernatural—only growing in bitterness, in mockery, in eagerness to asperse. This spirit of hatred for the higher knowledge has never motived the expressions of the great men whose names remain and will remain. It was not with this predetermined spirit of hatred that those researches were undertaken which have left us the names of Copernicus, Newton, Linnæus, Ampère, Faraday, etc. However, there is much truth in the proverb about the empty wagon—that in

¹ *Critical Exposition of the Sources of Knowledge.*

passing it makes the most noise. We hear the rumble in the Congresses of Science. In the Congress of Rostock (1872), Virchow, the president, openly proclaimed that no understanding was to be had with those who believed in a spiritual soul and a positive religion; above all, none with those who professed Christianity. We have not forgotten the noise made by the address of Mr. Tyndall, when presiding at the Belfast Congress of 1874. The *Scientific American*, commenting on the Belfast address, says (September 26, 1874): "It is no longer a question of the earth's form, or position, or age, that marks the conflict of science and religion; no more is it a question of man's place in nature, his relation to other forms of life, or the origin of his physical frame; these outposts have been carried and the citadel itself is entered; the distinction between mind and matter, or matter and spirit, is denied, and with it the personal immortality of man, the personal dominion of the universe, and all that these involve." We merely remark the very pitiable arrogance of this longing *to be as the beast and no more*. Just another citation—this time from Paul Bert, a late coryphæus in his school. In a newspaper article (*Répub. Fr.*, August 31, 1881), speaking of scientific and religious teaching, he says that "the former rests upon reason, which engenders science; the latter, which is the teaching of the Church, affirms, and, in affirming, rests upon faith, the mother of superstition, and becomes, as it were fatally, the school of fanaticism and imbecility." We have here a bright example of the bad faith that is brought to the support of a bad cause. Proofs, of course, we never have to confront; nay, not even an attempt at proof. The weapons of attack are simply denial, mockery and bad language. In the onslaught upon metaphysics there is generally some outward show of argument, which in so far as it goes is but a clumsy use of metaphysics itself. But when religion is attacked, even the show of argument is usually neglected; and the whole programme is repeatedly made up of two very old numbers: 1. Aspersions by some new leader; 2. A chorus of exultation. The ignorance displayed in the attack upon metaphysics is wisdom as compared with the blindness of spirit in which men are hurried on in the war against faith. They do not recognize a defeat. They do not listen to a reply. Their whole method of meeting an adversary lies in not meeting him. It is the evasive method of Mr. Huxley, who, after asking questions about the continuance of consciousness (*i.e.*, the immortality of the soul), says: "And I am afraid that, like jesting Pilate, I shall not think it worth while (having but little time before me) to wait for an answer."¹

¹ Mr. Huxley in *Fortnightly Review*, December, 1886, p. 799.

It is not necessary here to institute an analysis of the act of faith to show the value of knowledge possessed by faith. It should be enough to know that faith rests upon evidence—an evidence more powerful to beget certainty than the evidence of experimental physics. It is the evidence of infallible authority, and there is no need of repeated experiment. A single consideration should make manifest the absurdity of the attack of pseudo-science upon faith as a basis of knowledge. For faith is based upon the evidence of Divine Revelation; and the Revelation is a historical fact. Now Strauss and Renan—master and disciple—the two most influential enemies of Christianity since the encyclopedists,—Strauss and Renan, dealing *ex professo* in history, declared that in the war against the fact of Revelation they met with defeat. They then placed the issue in the hands of materialistic experimenters. But who is there who knows the nature and scope of physical experiment, but sees the absurdity of employing it as a means to expunge historical fact? “Science” cannot destroy history. The fact of the Revelation stands, and with it the obligation of belief in the truths revealed, whether we may or may not be able to develop them with the dim light of unaided reason. The fact of Revelation has proved itself in the history of man; and the language of its opponents shows a bad cause.

It is certainly very valuable, in the pursuit of truth, to have a code of laws to guide us through intricate problems where reason even loses its way; to know from a higher authority when a position is certainly untenable, and thus be spared many a long, tedious and fruitless experience. In fact, the solid, steady advance of truly scientific thought under the guidance of dogma is patent to all but the blind. Dogma leaves absolute liberty of investigation for the unknown; but it indicates, in advance, false routes and corrects faulty hypotheses. Dogma never stands between physics and its fact. But dogma intervenes when there is question of drawing conclusions—or rather of making assertions which cannot be the result of argument; and it puts an end to those flights which are not of reason but of imagination. Yet do we find men who, rather than be guided by an unfailing authority, are willing to go to any length of contradiction. In rebellious pride they waste their lives seeking for systems that will exclude Revelation, God, Creation, and all intelligence above the visible things of the world. They catch at every vague unwarranted assertion to arm themselves against the spectre of the supersensible and supernatural. Fleeing from the light of metaphysics and of faith, they are as Voudoos before every jack-o'-lantern physical theory which can bid to lure them deeper into the darkness and the mire. The absurd situations which so-called “science” thus constantly makes

for itself in its flight from metaphysics and faith would be very laughable were they not so pitiable. Professor Borden P. Bowne has with very delicate touch characterized this—call it which you will—blindness or insincerity of modern “science.” In the preface to his work on “The Philosophy of Theism,” referring to the eagerness of some speculators to account for the order and design in the world without making mention of a superior intelligence of God, Professor Bowne says: “That nature, when driven out with a fork, always comes running back, is a discovery of ancient date. We have an excellent illustration of this law in the way in which language has avenged the attempt to discredit the teleological view of nature. Teleology has taken entire possession of the language of botany and biology, especially when expounded in the terms of evolution. Even plants do the most acute and far-sighted things to maintain their existence. They specialize themselves with a view to cross-fertilization and make nothing of changing species or genus to reach their ends. A supply is often regarded as fully explained when the need is pointed out, and evolution itself is not unfrequently endowed with mental attributes. Such extraordinary mythology arises from the necessity for recognizing purpose in the world; and as it would not be in good form to speak of a divine purpose, there is no shift but to attribute it to ‘Nature’ or ‘Evolution’ or ‘Law,’ or some other of the home-made divinities of the day” (page vii.). In the preceding paragraph, Professor Bowne had said: “Except in philosophy and theology, there is coming to be a decided conviction that no one has a right to an opinion who has not studied the subject. Off-hand decisions of unstudied questions receive very little consideration nowadays in the sciences. It is to be hoped that this mental seriousness may yet extend to philosophy and theology. At present it is not so. He would be a rare man indeed who could not settle questions in theology or Biblical criticism without previous study; while the small men who could dispose of philosophy and philosophers in one afternoon are legion.”

The following words from Sir J. W. Dawson, whilst corroborating the bold expressions of Professor Bowne, will form a very fitting conclusion to these pages: “Few of our present workers have enjoyed that thorough training in *mental* as well as physical science, which is necessary to enable men even of great powers to take large and lofty views of the scheme of nature. Hence, we often find men who are fair workers in limited departments, reasoning most illogically, taking narrow and local views, elevating the exception into the rule. . . . Such defects certainly mar much of the scientific work now being done. In the more advanced walks of scientific research, they are to some extent neutralized

by that free discussion which true science always fosters ; though even here they sometimes vexatiously arrest the progress of truth, or open floodgates of error which it will require much labor to close. But in public lectures and popular publications they run riot. To launch a clever and startling fallacy, which will float for a week and stir up a hard fight, seems almost as great a triumph as the discovery of an important fact or law."¹ A deeply significant summary of all we have been saying may be found in that very ancient text : *Scientia inflat.*

NOTES OF A CATHOLIC TOURIST IN CENTRAL EUROPE.

THERE are many objects of interest which escape the notice of most tourists, even in the well-trodden fields of central Europe. Amongst those more apt to be neglected by the multitudes of Englishmen and Americans who meet there so constantly, are those connected with the faith of their common Catholic ancestors. Sectarian prejudice has made many Englishmen so ignorant on the subject that they often fall into the grossest errors respecting the beliefs and practices of the countries they visit. Americans, whose home is necessarily devoid of mediæval remains, might be expected to be generally indifferent to relics and survivals of such old days. Nevertheless the keen interest they have displayed when their attention has been called to matters of the kind, has often surprised us. We are thus led to think that not only the Catholic readers of the *AMERICAN CATHOLIC QUARTERLY REVIEW*, but also no small number of non-Catholics may feel interest in these wayside notes. They refer to matters which we have not found elsewhere recorded, and mainly relate to matters ecclesiastical ; thus we venture also to offer a few practical hints for the comfort of those who may follow in our track.

We left London for Basle on June 17th, to anticipate the rush of summer migrants and to be in time to enjoy that prodigal display of Swiss wild flowers which precedes the mowing of its fields ; sleeping at Dover enabled us to embark leisurely for Calais and to secure a rightly directed coupé for the night journey *via* Laon. Let travellers who may wish, as we did, to ride face forwards, be

¹ *Story of the Earth and Man*, ch. 13.