

PROFESSOR HAECKEL AND HIS PHILOSOPHY¹

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BY THE REV. JOHN GERARD, S.J.
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WE are constantly assured that it is the first principle of science to take nothing on faith or authority, and that we are bound to believe only what we can prove by our own reason. It is evident, however, that a large number of those who boast of being above all things scientific, and who style themselves "rationalists," as going by reason more than others, rely in fact not on it but on the authority of men whose word they are content to take for what they do not and cannot ascertain for themselves ; so that their professed scientific creed is found to resolve itself into blind acceptance of the teaching of a master.

It is of course undeniable that submission to authority is right and proper, as a means of attaining to the truth, and is even truly scientific—as in many instances it is actually necessary—but only in cases in which we have reasonably convinced ourselves that such authority is good and capable of teaching what for ourselves we cannot learn. Accordingly, when we are told to submit to the teaching of a master, the first question must be as to his qualifications, and unless we find good reason to believe that he may be trusted, we should act irrationally in taking him as our guide, philosopher, and friend.

Amongst those to whom this office is now widely

¹ Reprinted from *The Month* for October, 1910.

assigned, none is so much in evidence as Professor Ernst Haeckel, of Jena. No doubt, in his own country his authority is largely on the wane, and amongst real men of science it has never been seriously regarded. But, as it is cynically said, bad German philosophies come to England after they are dead, and amongst the mass of our public it is generally supposed that in his *Riddle of the Universe*, is to be found the last word of Science concerning all things divine and human, so that armed with this the man in the street is competent to confute all the philosophers and theologians who have so long striven to keep mankind in the dark. This, "Haeckel's Great Work," is scattered broadcast at the price of a few pence, so as to be within the reach of all, and we are exultingly informed, as though it were a conclusive testimony to its value, that it is selling by hundreds of thousands; which at least certainly shows how wide is its influence. It is therefore necessary strictly to examine how far this famous work merits the character which it is sought to ascribe to it, and how far its author deserves to be taken as a genuine representative of science in the conclusions which his readers are bidden to accept. To such an inquiry, however rigorously conducted, Professor Haeckel cannot properly object; for no one is more outspoken than he in his criticism of all with whom he does not agree. His mode of arguing with opponents we should be sorry to emulate, but it will be needful clearly to exhibit what his method is.

Professor Otto Hamann thus introduces our whole subject :—¹

"Why, it will be asked, do you, at this time of day, undertake to combat this 'Champion of Darwinism'? Has not the man

¹ *E. Haeckel und seine Kampfweise*, p. 2.

been long ago found guilty of untruths ever afresh charged against him, of which his own works are evidence? True, I reply, so it is; but the great public cannot conceive and comprehend that all which is proffered by Haeckel as fact and truth is fancy, or at best hypothesis. Moreover, he is the leader of an entire school, and his words have greater influence than those of any other professor, however great a favourite."

Amongst the articles of human belief there are none against which Professor Haeckel declares war more fiercely, or which he assails with greater obloquy, than God, and Christianity, and the Immortality of our souls, against which he exerts his controversial methods to the full. God Himself, he defines as "a gaseous vertebrate," in which it is hard to find either point, or humour, or even sense. As to Christianity, it will be sufficient to give a specimen, though we must be allowed to omit the most outrageous of all, an offensive and utterly baseless slander concerning the paternity of Christ. It will be enough to consider what he tells us concerning the four Gospels:—¹

"As to the four canonical gospels [he writes], we now know that they were selected from a host of contradictory and forged manuscripts of the first three centuries, by the 318 bishops who assembled at the Council of Nicæa in 327. The entire list of gospels numbered forty; the canonical list contains four. As the contending and mutually abusive bishops could not agree about the choice, they determined to leave the selection to a miracle. They put all the books (according to the *Synodicon of Pappus*), together underneath the altar, and prayed that the apocryphal books, of human origin, might remain there, and the genuine inspired books might be miraculously placed on the table of the Lord. And this, says tradition, really occurred."

But, as is acknowledged by Haeckel's devoted disciple, Mr. Joseph McCabe,² there is not a word of truth in the above account of the matter. Tradition says nothing of the kind. The story of the *Synodicon* "is not to be taken seriously," and "is

¹ *Riddle*, p. 110.

² *Haeckel's Critics Answered*, p. 83.

not worthy of consideration ;” “the Canon of the Gospels was substantially settled long before the Council of Nicæa.” Moreover, Pappus was not the author of the *Synodicon*, but only the editor.

Nevertheless, in the opinion of this apologist, the authority of Professor Haeckel is nowise impaired by the exhibition he thus makes of himself. For, it is argued, he never pretends to be a theologian or ecclesiastical historian, and “here was on the face of it a department of thought where no one will suspect him to have spent much of his valuable time.” Accordingly (it is said), to found a serious charge on this count is simply “ludicrous.”

But is it not quite plain that if Haeckel knew nothing on the subject, he should have said nothing, and should not have adopted the positive and supercilious tone which we heard above, and from which readers must inevitably suppose that he had taken at least ordinary pains to learn the truth. A very slight expenditure of his valuable time, and the use of an elementary text-book, would have saved him from volunteering such a display of ignorance.

In confirmation of what he writes upon the above subject, as also upon the still more objectionable matter to which reference has been made, Professor Haeckel cites “Saladin,” the pseudonym of a scurrilous English free-thinker, to whom nobody who has any knowledge of such things would attach the least importance ; and as Mr. McCabe again confesses, “Haeckel had been wholly misinformed as to his standing in this country, and thus had been betrayed into a reliance on what he understood to be his expert knowledge.” But then, we are told, Professor Haeckel “has acknowledged his defects, and has inserted in the cheap German edition of his

work a notification that the authority he followed was unsound," which is seemingly thought to clear him from blame. Something more should, however, be mentioned. While in later English editions which circulate where something is probably known concerning "Saladin," the passages dealing with his Scripture history are suppressed, and re-written by Mr. McCabe himself; in those destined for German readers, "Saladin" is still presented as a good authority, and one of his most disreputable productions specially indicated as an authority, is described by Haeckel as "an admirable work, the study of which cannot be too strongly recommended to every honest and truth-seeking theologian." In all this it is not easy to discover that delicate regard for truth which should characterize the genuine man of science.

But after all, it will probably be said, these are matters comparatively trivial and beside the actual question. It is to his pre-eminent position in the domain of science that the authority of Professor Haeckel is due, and it is because of its supremely scientific character that his famous *Riddle*, as we are assured,¹ "is unanswered, because it is unanswerable."

Now, unquestionably, Professor Haeckel is in his own department a scientific authority of the first order, and his researches into the life history of calcareous sponges, radiolaria, medusæ, and other lower forms of life, combined with his accomplished draughtsmanship, give him every right to speak as a master on such subjects; while even as to other branches of zoology it would be improper to deny him a respectful hearing. But, unfortunately, it is with no such matters that his famous book generally

¹ Translator's Preface (cheap edition).

deals. Of the *Riddle*, less than one-sixth part treats of what by any stretch of language can be described as science at all, and still less of that branch of science which Haeckel can claim as his own. "Science," as the term is now understood, is confined to that which we can observe or with which we can make experiments; whereas the *Riddle* deals with what is eternal, illimitable, and infinite, about which, therefore, we may speculate or philosophize, but cannot learn anything by "scientific" methods. But, as is evident, the most accomplished zoologist is not necessarily on that account a trustworthy guide as a philosopher; as to the philosophical doctrines, therefore, which form the great bulk of Professor Haeckel's book, we must estimate their value quite independently of his scientific reputation, and we shall speedily find testimony on the philosophical side which manifestly is due to no theological prepossessions against him. Thus Professor Paulsen, of Berlin, whom none will accuse of being a clerical partisan, concludes a careful examination of the *Riddle* in these terms:—

"I have read this book with burning shame; shame for the condition of our people in general and philosophic culture. That such a work should be possible, that it should be produced, printed, bought, read, and admired amongst a people that has had a Kant, a Goethe, and a Schopenhauer—this is truly lamentable."

Moreover, as to "science" itself, strictly so called, that upon which Haeckel chiefly insists, and wherein he discovers evidence for the principles which he regards as of supreme moment, is not within his own province of Zoology, but in that of Physics, where he can make no claim to be more of an expert than in Philosophy itself. It is here, nevertheless, that he finds the famous "Law of Substance," which as he

declares,¹ "has become the pole-star that guides our monistic Philosophy through the mighty labyrinth to a solution of the world-problem."

But here the physicists, in their turn, are not at all inclined to assent to his doctrine. Professor Chwolson, of the University of St. Petersburg, thus writes :—²

"We had set ourselves the task to inquire how Haeckel behaves towards the Twelfth Commandment ['Thou shalt never write of aught about which thou knowest nothing']; whether in regard of scientific questions which lie outside his special branch, he exhibits that thoroughness and deep seriousness which have made him one of the great leaders in his own line ; or whether, slighting this Commandment, he writes of matters concerning which he has no glimmer of an idea. To settle this question we carefully studied all that the *Riddle* contains concerning Physics. Material there was in plenty, for questions of Physics play a large part in the book, and one of these is for the author the sure Lodestar guiding his philosophy through the mighty labyrinth of the world problems. The result of our examination is startling, not to say astounding. Everything—yes, *everything*—touching physical questions which Haeckel says, expounds, or affirms, is wrong ; is grounded on misunderstanding, or exhibits an almost incredible ignorance of the most elementary points. Even of the law which he declares to be the 'Lodestar' of his philosophy he has not the most elementary school-boy knowledge ; and, on the strength of such entire ignorance, he is prepared to demonstrate and declare that the very foundation of modern Physics must be renounced as unsound."

Our own distinguished physicist, Sir Oliver Lodge, is no more favourable to the views of Professor Haeckel, and has devoted a special treatise³ to their refutation.

Referring to Professor Huxley's essay on the philosophy of Hume, he writes,

"he [Huxley] speaks concerning 'substance'—that substance which constitutes the foundation of Haeckel's philosophy—almost as if he were purposely refuting that rather fly-blown production."

¹ *Riddle*, p. 2.

² *Hegel, Haeckel, Kossuth und das zwölfte Gebot* (German translation).

³ *Life and Matter*.

Dealing with Haeckel's cardinal contention, that organic life is but a form of material energy, and mentioning Mr. McCabe's interpretation of this doctrine—while he is careful to observe that he does not wish to hold Haeckel responsible for the utterances of his disciple, since "he must surely know better," Sir Oliver thus proceeds as to the master's own teaching :—

"If it were true, that vital energy turns into, or was anyhow convertible into, inorganic energy ; if it were true, that a dead body had more inorganic energy than a live one ; if it were true, that these 'inorganic energies' always, or ever, 'reappear on the dissolution of life,' then undoubtedly *cadit quaestio* ; life would immediately be proved to be a form of energy, and would enter into the scheme of physics. But, inasmuch as all this is untrue—the direct contrary of the truth—I maintain that life is *not* a form of energy, that it is *not* included in our physical categories, that its explanation is still to seek."

Even more to the point is the following. After severely criticizing various particulars of Professor Haeckel's work, Sir Oliver goes on :—

"It is just these superficial, and hypothetical, and as they seem to me rather rash, excursions into side issues, which have attracted the attention of the average man, and have succeeded in misleading the ignorant."

In regard of the point which Haeckel evidently regards as of supreme importance, that is to say his assumption that the study of inorganic nature makes it impossible to believe in a designing or directing Creator, Sir Oliver Lodge is no less explicit :—

"The serious mistake [he writes] which people are apt to make concerning this law of energy, is to imagine that it denies the possibility of guidance, control, or directing agency, whereas really it has nothing to say on these topics ; it relates to *amount* alone. Philosophers have been far too apt to jump to the conclusion that because energy is constant, therefore no guidance is possible. Physicists however know better."

Finally he again quotes Professor Huxley, who declared :—

"That which I very strongly object to is the habit, which a great many non-philosophical materialists unfortunately fall into,

of forgetting very obvious considerations. They talk as if the proof that the 'substance of matter' was the 'substance' of all things, cleared up all the mysteries of existence. In point of fact, it leaves them exactly where they were."

To come now, at last, to that department of science in which Professor Haeckel is recognized as an authority of the first class, it must be inquired whether this constitutes him such a guide as it is safe to follow where he would lead us in the work we are discussing.

As to this, it must first be observed that in the *Riddle* itself, as has already been intimated, we shall find very little about zoology, and still less about those departments of it which he has made his special study. But in his other publications he has spoken much concerning it, and of these there is much to be said. To begin with, being here on his own ground, Haeckel allows himself freely to indulge in a style of controversy, which even in his own land is unusual, and has greatly exercised the minds of his foreign admirers. Any one who presumes to contradict him is summarily dismissed as a simpleton, an ignoramus, or a slanderous liar, and not only his scientific attainments, but his private character becomes the object of gross invective. Louis Agassiz, for example, was widely respected alike for his personal qualities and for his scientific eminence. He had however the audacity to differ with Haeckel on the subject of Darwinism, and was accordingly thus described by his antagonist:—¹

"Louis Agassiz was the most ingenious and most active swindler who ever worked in the field of Natural History."

Having likewise a difference of opinion with a yet more renowned man of science, his own former teacher, Professor Virchow, he engaged with him in

¹ *Revue Scientifique de France et de l'Étranger*, 1876 (transl.).

a dispute, "exhibiting," observes M. de Quatrefages, "no greater courtesy than is apt to characterize such controversies beyond the Rhine."

It would not be difficult to make an anthology of the flowers of speech which Professor Haeckel thus scatters when on the warpath; as when he says that a work of Hamann's is "from beginning to end one big lie;" that one of Wigand's is an exhibition of "incredible and truly stupendous folly;" while as to Adolf Bastian, the ethnologist, whose critique of Darwinism is set down as replete with "bombastic fustian," "shallow twaddle," and "boundless absurdity," it is moreover pointed out, as an interesting and instructive circumstance, that those are most angry and scornful regarding the doctrine of our ape origin who are manifestly most closely connected with their simian ancestors.

But this, after all, has no direct or essential connection with the subject of our inquiry. A man, however rude and foul-mouthed, may yet be a competent scientific instructor, and though there is nothing to be learnt from him in regard of manners, Professor Haeckel may be a trustworthy guide in zoology. Has he a right to such a character? That is the question.

Of all the doctrines which he seeks to propagate, none, it is clear, is dearer to him than the descent of man from lower animals and his essential similarity to them. The "Law of Substance" itself seems to be valued chiefly as preparing the way for this supreme conclusion, which in all his works he loses no opportunity of preaching.

At the bottom of his scale of life, to furnish the all-important lowest rung of his ladder, Haeckel places the *Monera*, structureless particles of protoplasm, in which, as he supposes, life assumes its

simplest form. That such creatures have any real existence in nature, other biologists are by no means agreed. He, however, is quite positive on the subject, and no doubt something of the kind is needed for the first stage of development as he conceives it.

On this fundamental question Professor Delage, of the Paris Sorbonne, speaks thus :—¹

“To judge of Haeckel's theory aright, we must distinguish in it two elements altogether different : on the one hand an attempt to explain the phenomena of biology on mechanical principles, an attempt the value and originality of which may be questionable, but which is quite legitimate ; on the other hand a wretched farrago of metaphysics unworthy of a naturalist at the present day.”

As to the genesis of man, which is more properly within the province of zoology, Haeckel has adopted various means of convincing his readers of what he styles the demonstrable fact that our race has been evolved by purely natural forces from lower animals, and ultimately from the most primitive forms of life. To this end he has constructed a purely imaginary human pedigree, concerning which an authority so unlikely to be influenced by theological prejudice as Du Bois-Reymond declared that it is worth about as much as are Homer's genealogies of heroes whom he derives from Hercules or Jupiter.

Another demonstration of this descent is exhibited as being furnished by the supposed recapitulation of race-history in embryonic development. According to this theory, the embryo of every creature high in the scale of life passes in the course of its development from the original “ovum” through all the various stages through which its progenitors arrived at the term they have now attained ; so that the future man, for instance, is for a period indis-

¹ *La structure du protoplasma et les théories sur l'hérédité*, p. 464.

tinguishable from a fish, a reptile, or a puppy. That such resemblance is absolutely exact in every respect, was a point which at the very outset of his career Professor Haeckel sought to make manifest in the following manner. In his *Natural History of Creation* (German original), published in 1868, were given¹ three woodcuts purporting to represent the ova of a man, a monkey, and a dog, and² three other woodcuts as the embryos of a dog, a fowl, and a tortoise; and it was pointed out in the text that in neither instance was any difference to be discovered between the three. But presently it was found, and could not be denied, that in each case the same identical woodcut was thrice repeated, the title alone being changed, so that the resemblance was not very wonderful.

So audacious a device did not long escape notice. Being first detected by Professor Rüttimeyer of Basle, it was denounced by him as an outrage against scientific honesty. Other distinguished biologists were of the same opinion, as His and Hamann, who declared that by such a proceeding Haeckel had forfeited the right to be ranked amongst serious men of science.

The facts being indeed too notorious for denial, Haeckel attempted no defence except the extraordinary plea, that inasmuch as the various ova and embryos *are* exactly similar, it is lawful so to depict them. "Were you to compare the rudimentary embryos themselves," said he to his adversaries, "you would be unable to detect any difference." It is obvious, however, that even were the fact as he assumes, this would afford no justification for the deception he practised. It is likewise clear that competent embryologists utterly deny his assump-

¹ P. 242.

² P. 248.

tion, as, for instance, Professor Lieberkühn of Marburg, who declared that if Haeckel could find no difference between the embryos, he himself would have no difficulty.

At a later period (1891) Professor Haeckel pleaded guilty to the trick he had practised with the woodcuts, styling it an "unpardonable piece of folly," which seems a scarcely adequate description. Nor does he appear to have subsequently amended his practice to any great extent. On the contrary, it is declared by such authorities as His, Semper, Hensen, Bischoff, Hamann, and others, that of the plates which illustrate his works some are pure "fabrications," and others are arbitrarily "doctored" to serve his purpose. In particular, Dr. Arnold Brass declares that in recent years (1905 and onwards) Haeckel has grossly falsified the figures he has published, as by giving fewer vertebræ to the embryo of a monkey and more to that of a man. Against this charge, which involves much intricacy of detail, it still remains for Haeckel to vindicate himself.¹

He has, however, raised a plea in his defence which must not be passed in silence. Acknowledging that a certain proportion of his plates have been manipulated so as not to give an exact representation of the actual objects, he declares that these are not meant for faithful pictures, but are merely diagrammatic (*schematische Figuren*), drawing attention to those points which are really important, and of which we learn not by observation, but by scientific inference. He further asserts that if he is guilty in this respect, so likewise are hundreds of the most renowned men of science who do the same.

To this it is replied that such a plea is quite

¹ A full account of all this matter is given by Father Erich Wasmann, S.J., in the *Stimmen aus Maria-Laach*, February, March, April, 1909.

inadmissible : that no one has a right to present such diagrams as actual pictures unless he make it clearly understood what they are ; that his fellow-men of science are not in the habit of doing anything of the kind ; and that he begs the question by treating inference from the theory which he has to prove as though it were an established truth.

More than this. The main point of the indictment is not merely that Professor Haeckel has foisted his "schematic figures" upon the world, but that he has actually manipulated what purport to be copies of plates published by other writers, and that he has by such gerrymandering procured the evidence which Nature has omitted to furnish for the completion of the unbroken chain of man's descent from the brutes, which he declares to be guaranteed by science. That the objects thus depicted by him are correct representations of any actually known originals cannot be pretended, for, as he himself acknowledges, links of the chain are missing, and these have to be supplied by "comparative synthesis," that is to say, by hypothesis, and scientific, or unscientific, use of the imagination. The charge against him has been most definitely formulated ; in support of it illustrations are published to show with what originals he has made free, and how he has misused them. Were the allegations untrue, they would be easily disproved ; but this he has not attempted.¹

Evidence on this matter given by Professor Franz Keibel, of Freiburg, is the more remarkable, inasmuch as it is furnished by one who clearly is far from hostile to Professor Haeckel and has scant sympathy with his antagonists.²

¹ See article by Fr. E. Wasmann in the *Apolozetische Rundschau*, translated in the *New Ireland Review*, May, 1909.

² From the *Deutsche Medizinische Wochenschrift*, quoted in the Keplerbund's brochure *Im Interesse der Wissenschaft*.

Keibel examines in detail the question whether Haeckel's plates have been so manipulated as to make them serve his purpose, and also whether, as he declares, the figures found in most scientific text-books and manuals have been similarly prepared. As the result of a minute examination of the evidence, he finds that illustrations have undoubtedly been borrowed from works by other authors—as by himself, Selenka, Spree, Koelliker, Hertwig, and His. Of Haeckel's reproductions, some, says Keibel, are pure inventions of his own, and must be described as "fancy pictures"; others are materially modified, nor only in cases where there are genealogical gaps to be filled; some are poor copies of their originals; others are "violently diagrammatized" (*sehr stark schematisiert*). Moreover, nothing of the kind is to be found in respectable text-books and manuals, and such performances must be stigmatized as thoroughly unscientific.

Yet, when all is said, Dr. Keibel will not tax Haeckel with dishonesty or deceit, being sure that he acted from no bad motive, being moved only by fanaticism as the apostle of a new creed. But to most men it will seem to be comparatively unimportant by what precise motive Professor Haeckel was actuated in practising such deceptions. The fact remains that they *are* deceptions, and that no sensible person can trust him. No less damaging is the judgement of another high authority, Professor Kohlbrugge, who pronounces Haeckel's pedigree of man to be the production of a fanatic.

Still less disputable are the manifest self-contradictions of which Professor Haeckel is guilty in regard of matters vitally affecting his whole teaching. In his works designed for popular use, such as the *Riddle* and *Menschenproblem* (ed. 1908),

he roundly declares that the descent of men from monkeys is "*an historically established fact.*" But in his *Progonotaxis Hominis* (1908), which is addressed to the learned, we are informed that "all conclusions which the most exact scientific researches enable us to form on the race-history of any organism, are and remain *hypothetical.*" What shall the plain man think of such discordant voices from the same lips?

We will conclude with another example which to scientific men will appear no less discreditable than any given above. On occasion of the bicentenary of the birth of Linnæus, May 24, 1907, Haeckel published a tribute to that great naturalist, in which, under the guise of honour to his memory, he was claimed, by a mere verbal fallacy, as a witness for the doctrine of man's simian origin, a doctrine which, had he ever heard of it, Linnæus would have utterly repudiated. So scandalous a misrepresentation naturally aroused amongst those acquainted with the truth of the matter an indignation to which expression was given by Dr. Julius Wiesner, a distinguished Austrian botanist, who thus delivered himself:—

"Whosoever rightly considers Haeckel's production, will fail to discover in it a tribute to the memory of the great Linnæus. Linnæus, the most scientific of inquirers, who was ever solicitous to serve the truth, who was at the greatest pains to correct any mistake he could discover, who ever treated his opponents with the utmost courtesy,—is honoured by Haeckel, who in his most recent writings exhibits himself as a fanatical misleader of the people, one who with delusive assurance enunciates what have long been recognized for errors and mistakes as if they were verities, and who treats his opponents with unexampled insolence."

And this is the man who is put forward as one of the greatest and best instructors the world has ever known!