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A FRESH LOOK AT THE HYPOTHESIS OF EVOLUTION

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The theory of evolution, as initiated by the publication of Charles Darwin's *Origin of the Species*, has had a profound impact on the fortunes of Christianity. Since next year, 1959, is the centenary of that publication, it is appropriate for us at this time to audit our books and evaluate the contemporary situation.

Darwin on the voyage of the Beagle had noticed the similarities and the differences between the foxes on the mainland and the foxes on a distant island. They were so similar that a genetic relationship could not be denied, but they were also so different that they constituted a new species. From this and similar observations Darwin concluded that these species could not be explained by a special creation but must have evolved from common ancestors.

The idea of evolution was then applied to man. *Homo sapiens* could not be regarded as a special creation, but must have evolved from some lower form of life. Such attraction did the idea of evolution exert on the minds of scholars that they soon extended it to the astronomical cosmos on the one hand and sociological and historical phenomena on the other. And thus there arose evolutionary accounts of religion and the history of the Hebrews.

At many points the conflict with Christianity was obvious. The evolution of religion from animism or fetishism and the history of the Hebrews that makes monotheism a very late development entirely contradicted the Bible and made special revelation impossible. Within biology, the assertion that man has evolved from lower species conflicted with the biblical account of the creation of Adam and especially of Eve. Evolution was made to rule out the existence of God altogether. For example, Corliss Lamont (*Humanism as a Philosophy*, 1949, p. 102) says, "Biology has conclusively shown that man and all other forms of life were the result, not of a supernatural act of creation by God, but of an infinitely long process of evolution ... which started with the lowly amoeba and those even simpler things marking the transition from inanimate matter to life. ... Mind, in short, appeared at the present apex of the evolutionary process and not at the beginning." Since, further, these ideas became immensely popular, orthodox Christianity was faced with a conflict of major proportions.

FIRST REACTIONS

Faced with this attack on the inspiration of the Scriptures, with this denial of creation, and in some instances faced with a blatant atheism, the Christians reacted vigorously. That there reaction was not always wise is hardly surprising. In many disputes first reactions often miss the point. For ages, from Aristotle in antiquity to Linnaeus in the eighteenth century, the scientists had taught the fixity of existing species. The Christians trusted the scientists and carelessly assumed that the existing species were the several kinds which God originally created. They did not consider the possibility that the *kinds* of Genesis might be what modern biologists call *families* or perhaps *orders*. Thus they failed to recognize that the existing species are many more in number than the special acts of creation listed in the first chapter of Genesis. (Indeed the special acts of creation are fewer than the contemporary status of biology seems to require; but more of this later.)

Because then the Christians were trapped into defending Linnaeus rather than the Bible, they often made regrettable blunders. And as is usual in free-for-all altercations the opponent's publicized one's blunders in order to distract attention from whatever is of worth. Considerable time has passed now – a full century – and there may be some interest in observing what remains on the field of battle.

For a great many people, however, there is no point in viewing the scene of the battle, if such a viewing is supposed to show some remaining balance between the two forces. The popular opinion is that evolution won a sweeping victory and the Bible was decisively defeated.

“Since Darwin's day,” says Richard Swan Lull, professor of paleontology at Yale University (*Organic Evolution*, 1947, p. 15) – “Since Darwin's day evolution has been more and more generally accepted, until now in the minds of informed thinking men there is no doubt that it is the only logical way whereby the creation (i.e. biology) can be interpreted and understood.”

William Howells of the University of Wisconsin (*Mankind So Far*, 1944, p. 5) says, “The theory of evolution is an overworked term, in its popular usage, and unfortunate besides, because it implies that, after all, there may be something dubious about it. Evolution is a fact, like digestion. ... The phrase is doubtless the expression of a die-hard prejudice.”

However, this is not the whole story. Even those who insist that evolution is a fact beyond doubt betray certain hesitations. Howells himself admits that “there is also the mystery of how

and why evolution takes place at all. ... Nor is it known just why evolution occurs or exactly what guides its steps." Professor Lull also admits, "We are not so sure, however, as to the modus operandi." And J. Arthur Thomson makes an astounding statement:

"Many of the genealogical trees which Haeckel was so fond of drawing have fallen to pieces. Who can say anything, except in a general way, regarding the ancestry of birds or even Vertebrates? *The Origin of Species* was published in 1859, but who today has attained clearness in regard to the origin of any single species?"

Even Dobzhansky, who, in opposition to Thomson, would claim that he has attained clarity in regard to the origin of many species, admits, with respect to the human species, that "we have only the most fragmentary information concerning the stages through which the process has passed" (*Evolution, Genetics, and Man*, 1955, p. 319).

If thus Dobzhansky admits less than Thomson, Howells is even more dogmatic than Dobzhansky, for Howells asserts that the human line can in fact be traced back to the fishes (*op. cit.* p. 5).

Here then are various claims and admissions. What is their significance? Perhaps after all there is some reason for reviewing the debris of battle.

An attempt to evaluate such concessions as these may begin with some more material from J. Arthur Thompson. Professor Thompson is a convinced evolutionist. In his volume *Concerning Evolution* (pp. 44-48) he treats very seriously the idea that life originated from non-living matter. He even suggests that this process is still going on. We may believe it is still going on because we are not sure that it is not going on. But if perchance life is not now originating from inanimate matter, perhaps the sun's rays and the earth's atmosphere were quite different long ago and produced results then which they cannot produce now.

Dobzhansky also, as well as Thomson, seems to accept the notion that life originated from non-living matter. He admits at first that this is only a conjecture, and that it is highly improbable; but then he concludes that "a highly improbable event may, however, take place somewhere in the universe. Such a 'lucky hit' happened to occur on a small planet, earth" (*op. cit.* p. 19). Thus he states the spontaneous generation of life as a fact.

In anticipation of the discussion of the philosophy of science that is to follow, something needs to be said here with respect to the origin of life from non-living matter. Is there any evidence of this? Is there sufficient evidence to assert point blank that it happened? It is a mere tautology

to say that *if* certain conditions obtained in the past, certain effects *could* have occurred. But the important question is not: Could such and such have happened, if the conditions were right. The important question is: Were the conditions right and did such and such things actually happen?

Now, if the evolutionist must be so dogmatic on the origin of life, how can he afford to repudiate Haeckel's genealogical trees or admit doubt as to the origin of species?

The explanation, as Thomson gives it, is as follows: "Uncertainty in regard to the factors cannot be said to affect the validity of the model concept of evolution, and it is entirely unfair to use confessions of ignorance in regard to the *factors* as if they implied doubt in regard to the *fact*. ... There is not the slightest reason for jettisoning the modal formula because we are still very ignorant in regard to the detailed steps and factors in the process" (*op. cit.* p. 100).

Similarly Professor Lull, after admitting that "We are not so sure, however, as to the *modus operandi*," adds immediately "but we may rest assured that the process has been in accordance with great natural laws, some of which are as yet unknown, perhaps unknowable" (*Organic Evolution*, p. 15).

A LESSON FROM PHYSICS

The point I now wish to examine is whether or not a sound philosophy of science will permit us to rest assured with a theory whose factors are unknown and perhaps unknowable. If we examine scientific methods as practiced by the physicists, their superiority in ideals of caution, accuracy, and rigor will become obvious. The theory, or better, the theories of light can serve as a well-known example.

Sir Isaac Newton (1642-1727) believed that light consists of small particles or corpuscles. This he believed chiefly on the basis that the corpuscular theory best explained the rectilinear propagation of light. In addition to this hypothesis, there also existed in Newton's day a theory that consider light to be a wave motion of a fluid medium; but it took some juggling to make this theory suitable for rectilinear propagation. Newton did not approve of the juggling.

Now, the corpuscular theory implies that the speed of light in water is greater than the speed of light in air. On the other hand, the wave theory of light implies that the speed of light in air is greater than the speed of light in water. Unfortunately there was no method, throughout the eighteenth century, by which the speed of light could be experimentally measured. That is to say, the *factors*, to use Professor Thomson's language, were unknown and unverifiable. But instead of

blindly declaring one of these theories a *fact* despite the ignorance of the *factors*, the best scientific reaction during the first half of the nineteenth century was a search for some method of discovering the factors. Eventually a method was invented and in 1850 Léon Foucault performed the experiment. By this experiment Foucault determined that the speed of light is greater in air than in water.

At this point Foucault showed a scientific caution that might still be emulated. He might have concluded that his experiment had demonstrated the wave theory. But he actually concluded that his experiment had refuted the corpuscular theory. The experiment makes the wave theory possible, and since no other theory had been suggested, scientists would naturally use the wave theory. Yet other theories then undreamed of might later be invented. These later theories might be better. Hence Foucault concluded only that the corpuscular theory is false and the wave theory is possible. And this conclusion came by attention to the mechanics, the *modus operandi*, the factors in the case.

However, even Foucault's caution was too bold. In 1902 another important experiment was conducted. If light is a wave motion, the intensity of light gradually diminishes as the source becomes more and more distant. This diminishing continually approaches zero. But if light is corpuscular, another implication follows. Suppose a metal plate is slowly made to recede from a source of light. If light is corpuscular, fewer and fewer particles hit the plate. At a given distance only one particle will hit the plate. Beyond that distance the intensity will be zero. That is to say, instead of the intensity decreasing continually to zero, it will decrease to one and then suddenly drop to zero. The experiment showed that the intensity actually drops suddenly from one to zero. Therefore light cannot be a wave motion; it must be corpuscular in spite of Foucault's experiment which showed it could not be corpuscular. What is worse, this result is in contradiction to the fundamental laws of the electromagnetic field.

UNKNOWN FACTORS

Proper scientific ideals require the scientist to consider the possibility of alternate hypotheses. He can never accept any hypothesis as final and beyond doubt. The results of science are never "assured"; they are tentative and subject to constant revision. It is even possible, as in this case of light, that the theories discarded a century ago may return to favor in somewhat altered form. And most pertinently for the present discussion on evolution, it must be insisted

that the acceptance of a theory whose factors are unknown is extremely bad science, especially when one considers that these same factors may even be unknowable.

At this point the evolutionists will undoubtedly reply that the propagation of light is a fact whether or not we know its factors. To this I wish to make a shorter and a longer answer.

First, the propagation of light is ordinarily regarded as a fact because and only because of very careful attention to the factors. For centuries light was considered to be a non-propagated force, like gravitation, because no one was able to detect and measure its speed. It was indeed in Newton's own lifetime that Roemer (1676) observed the differences in time between the near and far eclipses of Jupiter's satellites and concluded that light has a finite velocity. Once again the acceptance of the theory came with a careful attention to the detailed factors.

To the assertion that evolution is a fact, I draw attention to the ambiguity of the term evolution itself. Evolution has two or more distinctly different meanings. The statement that evolution is a fact depends on this ambiguity. Dobzhansky (*Genetics and the Origin of Species*, 1951, p. 11) defines evolution in four clauses, the first two of which are pertinent to this argument. "The theory of evolution asserts that (1) the beings now living have descended from different beings which lived in the past." This means nothing more than we all had parents. If this is all that evolution means, and Howells also defines it merely as "descent with modification," that is, if the word simply means that nature exhibits changes, or that different breeds of dogs and foxes have come into being, then for all colloquial purposes we can very well admit that evolution is a fact. But such a view of evolution is not what Christians were protesting against when they attacked evolution; nor was it the view that the evolutionists were propagating when they provoked the protest against their claims.

But if, on the other hand, the term evolution designates an atheistic, non-supernatural, spontaneous development of simple life from inanimate matter and the rise of all present forms of life through a slow and gradual development from that simplest form, the declaration that evolution is a fact would lose its plausibility. Yet this is the view that is propagated. Dobzhansky does not put it into his definition but in other places he asserts, as we have seen, that life actually sprang from inorganic matter. He rejects vitalism, rules out all teleology, and accepts the mechanistic hypothesis. He says explicitly that "the diversity [among organisms] has not arisen from a whim or caprice [or as we should say, from the sovereign choice and purpose] of some deity" (*Evolution, Genetics, and Man*, pp. 20-21; *Genetics and the Origin of Species*, p. 3). This

is evolution; but who could with intellectual honesty claim that this atheistic view is a fact better substantiated than former tentative theories of light? (An evolutionist who explicitly accepts mechanism cannot with good grace complain of being held to the standards of mechanistic science.)

If a fair survey of the field of battle is to be made, the evolutionist must not be allowed to use one theory, a detailed mechanistic and atheistic theory, for his attack, and a different theory, a vague and general theory for his defense. To ridicule Christians for denying observed change when in fact they are denying atheistic naturalism is a technique of propaganda, not science. Nor is it calm judgment to accuse Christians of denying actually observed changes when in fact they are questioning unobserved alleged changes and pointing out the limits of the evidence.

Although Dobzhansky denies divine providence without acknowledging his denial in the definition of evolution, his other clauses are more definite than the vague statement of clause one. He adds, “(2) the evolutionary changes were more or less gradual, so that if we could assemble all the individuals which have ever inhabited the earth, a fairly continuous array of forms would emerge.”

Since this notion of a gradual change and a continuous array is a part of the definition, this too must be a fact, if evolution is a fact. If “at present, an informed and reasonable person can hardly doubt the validity of the evolution theory,” and if “the very rare exceptions prove only that some people have emotional biases” (*ibid.* p. 11), then doubt as to the continuity of the array is also subject to these strictures.

EXPRESSIONS OF DOUBT

What then are we to make of the doubts indicated in the following quotation from Richard Goldschmidt, *The Material Basis of Evolution* (pp. 6, 7)? After stating that he “cannot agree with the viewpoint of the textbooks that the problem of evolution has been solved,” he continues, “This viewpoint ... must take it for granted ... that all possible differences, including the most complicated adaptations, have been slowly built up by the accumulation of such mutations. We shall try to show that this viewpoint does not suffice to explain the facts ... I may challenge the adherents of the strictly Darwinian view ... to try to explain the evolution of the following features by accumulation and selection of small mutants: hair in mammals, feathers in

birds, segmentation of arthropods and vertebrates, the transformation of the gill arches in phylogeny including the aortic arches, muscles, nerves, etc.”

Later (p. 210) he says, “thus we have been forced to assume large evolutionary steps ... involving the whole system of the organism.” He mentions another scientist “who says that the change from one species to another must be in one, or at most, a few large steps, changing many or all characters of the plant at once.”

Now, if there is no continuous array of forms, and if the appearance of a new species occurs in one large step, involving the whole system of organisms, then, however Goldschmidt himself might prefer it, and I am not implying that he would put it this way, it would seem that biology is much closer to the view of special creation than original evolutionists like Haeckel and Huxley would find comfortable. It was for such reasons as these that I said above that the special acts of creation listed in Genesis are much fewer than the actual status of biology seems to require.

In conversation a botanist friend of mine expressed the conclusion that quite aside from animals it was impossible to believe that all plants had evolved from a single original form. Before geology had made as much progress as it now has, it was possible to hope, my friend said, that the gaps would be filled up by later discoveries; but now the examination of strata has been so extensive that a discovery of the many necessary intermediate forms seems quite unlikely.

THEORY WITHOUT EVIDENCE

What can be said of the outcome of this century-old battle? It is true that the defenders of divine creation made a number of unfortunate blunders; but it is also true that the evolutionary theory has not emerged unscathed. The evolution that Christianity attacked, the theory that brings life out of matter without divine intervention, is still a theory without evidence and not a fact with which science may rest assured.

Perhaps the evolutionists have not retreated under the pressure of theological attack; but the weight of scientific evidence itself, the detailed factors, the insoluble problems, and above all the rigor of a sound philosophy of science have forced admissions that may be said at least to border on special creation. And this is no doubt as much as can be expected from purely scientific methodology.