

A PLAIN MAN'S DIFFICULTIES ABOUT EVOLUTION

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WHILE it is quite true that the vast majority of biologists accept the principle of evolution as operating in the realm of living Nature, yet it is equally true that a great many people do not believe a word of it. These disbelievers in evolution may be divided into two great classes—those whose objections are religious, and those whose objections are scientific.

The position of those whose objections are religious is perfectly simple and clear. It is something like this; The Bible is the Word of God; therefore, everything in the Bible is true. The Bible says God made man and all living things in a few days; therefore, man and these things were so created. For believers in the accuracy of the literal statements in *Genesis*, no "problem" of evolution can arise. If living things were created, they did not evolve, for the essence of creation is suddenness and the essence of evolution is gradation. The whole story of *Genesis I* is dramatic in its suddenness. "Let there be light, and there *was* light." "And God said, 'Let the earth bring forth the living creature after his kind . . . and it *was* so.'" The creation of the Universe is contained in five words—"He made the stars also." To the man who believes that everything in the Bible is historical truth, there is no room for evolution. It is a case of the instantaneous miracle *versus* a long drawn-out process.

Now, there are many more persons in the position of this plain man than might be supposed. They have not thought deeply about creation or about evolution, but they contrive to believe that millions of different plants and animals were called into being out of nothing, in a perfect or adult condition, and have propagated their kind ever since. I have called this plain man "religious", but indeed it would be more accurate to call him "an uncritical believer in the Biblical story"; for it is clear that a man may believe in the story of creation in *Genesis* and be thoroughly irreligious, or, on the other hand, he might insist that the account of the origin of man and animals had nothing whatever to do with his religion, whether true or false. This last position is, of course, perfectly

justifiable. But, as a matter of fact, the greater number of people whom one must call "religious" do accept the creation story of *Genesis* while they reject the story of evolution.

Putting for the present on one side the orthodox religious objection to any account except the Biblical of the origin of living things, let us try to understand the difficulties which the ordinary man has in grasping the idea of evolution or Darwinism. The first mistake he makes is to suppose that the Darwinian hypothesis attempts to give any account of the *origin* of living things. The Biblical version of creation *does* purport to give an account of the origin in a divine *fiat*, as we call it, whereas Darwinism takes life for granted as existing on the earth, and proceeds to speculate how existing forms are related to remotely pre-existing ones. Darwin was concerned in tracing the *descent* of existing forms of life from simpler or at any rate very different forms belonging to a remote past. His is a *theory* of descent; creation is an instantaneous appearing.

The plain man has made difficulties for himself by failing to understand that the Darwinian theory is one particular way of explaining the evolution of living things by trying to account for their present condition through their remote ancestry. For nothing is stable, all things are in a state of flux, and "evolution" is only a learned word to express that. If the religious man doesn't like the flavour of evolution, then we can call it a "becoming" or an "unfolding", and surely there is nothing undesirable about these names! Many popular difficulties are thus due to hazy notions about the subjects under discussion. We see "evolution" all around us. Things are always being improved.

The trans-Atlantic liner of to-day has been evolved from the oaken "dug-out" of the lake dwellers; the automatically-sighted quick firer is an evolution from the bow and arrow. Not of course in that sense in which living things give rise one to the other, but in the sense that there has been progressive improvement of form for function. A man's "tail-coat" has been evolved from the sheep-skin cloak which his pre-historic ancestor wrapped round his shoulders; and the two buttons at the back of it, so meaningless to-day, are a "vestige" of the stage when the tails of the coat were looped up out of the way of the horse's flanks when its wearer was on horseback.

The absence of so-called "links", too, is a difficulty which many people have in accepting the evolutionary account of animal ancestry. This is another difficulty due to ignorance about the evidence, most of which is highly technical. As regards the "links" between

man and monkeys, these existed so very long ago that a visit to a very well equipped Museum of Natural History is necessary to supply the evidence.

Of course the geological or rock record is, in the nature of things, imperfect, but it is far more perfect than the uninitiated person imagines. There are links between fishes and amphibians, between fishes and reptiles, between reptiles and birds, and between birds and mammals. Every year more links are brought to light. The fact is, the ordinary person would not know "a link" if he saw one! Suppose I demanded to be shown the link between the pre-historic canoe and the "Olympic", what particular form of vessel could a shipbuilder point me to? And yet one could arrange in a museum a complete series of examples of things that floated to illustrate "the evolution of the modern steamer", and nevertheless have the greatest difficulty in pointing to any one of them as "the link" between two widely separated members of the series.

The address by Sir Arthur Keith to the British Association at Leeds last September has been the occasion of letting us see how very little indeed the ordinary man knows of what Darwin set out to explain, far less how he explained it. For example, some people writing to newspapers have actually asked why, if evolution is true, all the jelly-fish have not become men? These people have simply never grasped the doctrine of descent or the conception of correspondence with the environment. The jelly-fish is a stable organism completely adapted to its surroundings. As a former Bishop of Carlisle once said, "Some people speak as if evolution meant that anything could become anything else if you gave it time enough."

They do seem to think that every animal is in the process of becoming some other one, for they seriously ask, "How are there any monkeys at all? Why have they not all become men?" I might just as well ask why are all my remote cousins not now my brothers and sisters. These objectors have never taken the trouble to grasp the meaning of descent from a *common* ancestor. Neither Darwin nor Huxley ever said that man sprang from monkeys. Darwin suggested that monkeys and men were descended in the course of ages from a common ancestral stock. But monkeys remain monkeys and men remain men—both being adapted as stable types to their respective environments. In truth, the ignorance regarding the actual facts which Darwin set out to explain is abyssmal. Probably not one person in a thousand could tell you what his book *The Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for*

Life is all about; for in order to follow the arguments properly one must know a large number of facts concerning plants, animals, fossils and the races of mankind, besides a considerable amount of animal physiology. The fact is that the Darwinian hypothesis was framed by a learned naturalist to account for thousands of facts of which the man in the street never heard. No wonder he has difficulties in understanding it! How many people of one's ordinary acquaintance could tell you what a "species" is? But evidently it is necessary to understand what a species is if we are to follow a theory about its origin.

There is an idea abroad that the Bible teaches the fixity of species and that Darwin taught the opposite. This is a gratuitous complication. The concept "species" as Darwin used it in his celebrated treatise is a technical affair of modern biology, and to read it back into *Genesis I* is to be guilty of very faulty scholarship. Many of the "plain" man's difficulties are thus of his own making, or, at any rate, are the result of his general ignorance of what it is that evolution is supposed to explain. Ninety-nine people out of a hundred do not know what the problem is, or why there is any need to discuss the origin of species. We cannot appreciate the evolutionary standpoint unless we have some acquaintance with all of the following: the tendency for living things to vary; the tendency to resemble parents (heredity); the tendency towards a progressive process known *par excellence* as "evolution"; the tendency to a retrogressive process known as involution; the conception of correspondence with environment; the conception of natural selection as a process similar to artificial selection.

Besides all this, one must have some ideas about the age of the earth, the antiquity of man, the nature and sequence of the fossils, the more obvious facts of vertebrate embryology, and the significance of the presence of vestigial organs in the human body. It is quite possible, however, to have some acquaintance with all of these subjects, and yet have great difficulty in accepting the Darwinian theory. This difficulty was well expressed by the late Lord Salisbury in his address as President of the British Association at Oxford in 1894. He said:—

If we think of that vast distance over which Darwin conducts us, from the jelly-fish lying on the primaeval beach to man as we know him now; if we reflect that the prodigious change requisite to transform one into the other is made up of a chain of generations, each advancing by a minute variation from the form of its predecessor; and if we further reflect that these successive changes are so minute that in the course of our historical period

—say three thousand years—this progressive variation has not advanced by a single step perceptible to our eyes in respect to man or the animals and plants with which man is familiar; we shall admit that for a chain of change so vast, of which the smallest link is longer than our recorded history, the biologists are making no extravagant claim when they demand at least many hundred million years for the accomplishment of the stupendous process. Of course, if the mathematicians are right, the biologists cannot have what they demand. If, for the purposes of their theory, organic life must have existed on the globe more than a hundred million years ago, it must, under the temperature then prevailing, have existed in a state of vapour. The jelly-fish would have been dissipated in steam long before he had had a chance of displaying the advantageous variation which was to make him the ancestor of the human race. I see, in the eloquent discourse of one of my most recent and most distinguished predecessors in this chair, Sir Archibald Geikie, that the controversy is still alive. The mathematicians sturdily adhere to their figures, and the biologists are quite sure the mathematicians must have made a mistake. I will not get myself into the line of fire by intervening in such a controversy. But until it is adjusted, the laity may be excused for returning a verdict of “not proven” upon the wider issues the Darwinian school has raised.

It must be admitted that what were difficulties thirty-three years ago are difficulties yet, and they could scarcely be better expressed than in the passage just quoted. The plain man *has* a difficulty in understanding how any group of animals should remain as they are, apparently for ever, for he imagines that evolution means continual progression. But evolution does not mean indefinite progression; it means such advance as is necessary to bring the species into stable equilibrium with its environment, and that when that is attained, the evolution shall cease. The type of animal is now completely adjusted to its surroundings, and may live for aeons in this state of adjustment. Thus certain fishes appear now exactly as they did in the palaeozoic era.

Alongside the tendency to vary is another tendency, namely, *not* to vary, to hold on the even tenor of the vital way, which some biologists call “physiological” or “functional inertia.” Professor J. Arthur Thomson lays a considerable amount of stress on this property of living things, because it is the property which underlies the tendency to maintain the biologic *status quo ante*. The neglect of this concept introduces difficulties in the way of grasping the scheme of evolution. Evolution does not mean, as many people imagine, indefinite and eternal advance all round. It means the process of slowly becoming perfectly adapted to the environment in which the type of plant or animal under consideration has been

striving to live. But even those who believe thoroughly that evolution is an incontestible fact in the history of this planet nevertheless do not by any means find any lack of puzzles to be cleared up. There is much learned discussion about how variations arise, and how by natural selection they are taken advantage of for the good of the species.

It is difficult to see natural selection at work. The experts, however, assure us that variation is going on all the time, and that now and again we can witness the more or less sudden appearance of a variation which they prefer to call a "mutation." When we say we do not see evolution in action, we are forgetting the gigantic time-scale on which, apparently, Nature works. The span of a single human life is probably much too short to afford us a chance of seeing natural selection at work. When we reflect that the chalk as seen on the downs and cliffs of the South of England is entirely composed of the bodies of microscopically small marine animals, and that some of the cliffs are three hundred feet high, we may get some rough idea of the enormous lapse of time required to deposit such a mass.

The experts themselves have their difficulties. In the nineties of last century the German biologist Weissmann asserted that acquired characters could not be inherited because they affected only the body, and that the ovary or germplasm was not influenced by the body in which it was merely carried along. We now know that Weissman overstated his case; and he lived, moreover, before the important discovery of internal secretions which has thrown so much light upon obscure regions of animal physiology.

The inheritance of acquired characters is a subject surrounded by much discussion and uncertainty even to-day. In 1914, at the Australian meeting of the British Association, Professor Bateson of Cambridge in his presidential address laid such great emphasis on this and certain allied problems that people began to say that Darwinism was being cast overboard. This was, of course, a paraphrase of what Dr. Bateman said, but it must be confessed that he left the public mind in a rather confused state. Unfortunately, that is quite a common condition for the public mind to be in.