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though perhaps not quite so correctly. But Christ was called the beloved Son[1] long before St. John wrote his Gospel. How Jesus is the only Son because He is the only begotten Son is not explained by any of these attributes. But the Creed explains it in that which follows. The other variations of this article in the old Creeds have no religious importance. If we had a free choice, we should give our Creed the preference over all the forms varying from it, in consideration of the natural sequence of the words and the rhythm of the sentences.

THEOD. ZAHN.

CREATIVE DEVELOPMENT AND EVOLUTION.

1. NATURE OF THE QUESTIONS INVOLVED.

IRRESPECTIVE of Divine revelation, the minds of the more thoughtful and gifted men, inquiring as to the origin of the universe, have oscillated between the ideas of a Divine creative power planning and determining the cosmos, and a fortuitous concourse of particles or of energies working out unintelligently, and by an almost interminable series of trials and errors, the existing equilibrium of nature. The former has always appeared to the majority of men the more rational idea, because it postulates a First Cause akin to the only self-determining or primary power known by experience, viz. the human will and reason; and because

Luke 7. 12; 9. 38; Hebrews 11. 17 of the only child. In Genesis 22. 2, 16 which is quoted in Hebrews 11. 17, the LXX. gives the translation ἀγαπητός, as in many other cases. In Judges 11. 34 the same Hebrew word is translated in many MSS. of the LXX. by the double use of μονογενής and ἀγαπητός. The Vulgate has sometimes *unicus* (Psalm 22. 21; 35. 17; Luke 7. 12; 9. 38), sometimes *unigenitus* (Gen. 22. 2, 16; Judges 11. 34; Heb. 11. 17 and in the Johannine passages). St. Paul expresses what is in substance the same thought by τοῦ ἰδίου υἱοῦ (Rom. 8. 32, where Gen. 22. 16 is quoted), and by τὸν ἑαυτοῦ υἱόν (Rom. 8. 3).

[1] Matthew 3. 17 17. 5; Mark 1. 11; 9. 7; Luke 20. 13, cf. Ephesians 1. 6.

the resolution of all the complicated adjustments in the universe into mere blind chance seems to our mental constitution inconceivable, besides removing that bond which unites us with external nature, when considered as the product with ourselves of the power and wisdom of a common Creator.

In recent times, however, the vast growth of physical and natural science has so excited the minds of men that many have assumed to be gods to themselves, and the bold mechanical hypotheses of Spencer, Darwin, and others have gained much credence, not only among scientific specialists, but with the general public, so that evolution and its supposed accessories of Natural Selection, Struggle for Existence, and Survival of the Fittest, have become popular catch-words supposed to be sufficient to explain all the mysteries of nature and even of human progress.

More especially have these ideas obtained currency in the domain of life and organization, which at first sight seemed to present the greatest difficulties, as exhibiting—to use an expression of Louis Agassiz—"a wealth and intricacy of the higher mental manifestations, and none of the simplicity of purely mechanical laws."[1] Life indeed so manifestly overrides, controls, and dominates the merely mechanical and chemical forces, that it seems to afford an illustration of higher power in some respects intermediate between the merely mechanical and the spiritual spheres. Strange to say, however, biologists, professedly students of life, have been among the first to give their adhesion to a merely mechanical theory of this great and mysterious power, and thus zoologists and botanists, whose sciences are based on the stability of species, have freely given this up in favour of a perpetual flux of specific characters, which, if it actually existed in nature as supposed by Darwin, would have rendered any scientific classification

[1] Letter to the Duke of Argyll.

of organized beings, whether recent or fossil, impossible.[1] Thus the biological sciences may be said to exist in spite of principles held by many of their cultivators, which are rationally subversive of the facts on which those sciences rest. In the meantime the theory of evolution itself, as is the nature of such phantasms of the human mind, is undergoing rapid changes, and its followers are resolving themselves into antagonistic sects, while the unthinking multitude is using it in many ways not contemplated by its authors. To not a few students of the subject, all this portends a speedy dissolution of this philosophy, more especially in its agnostic and Darwinian form. This much at least is certain, that whatever may ultimately remain of the work of Darwin and his followers, it cannot continue to dominate the world of science as a system of merely mechanical evolution; and that the time has arrived when those who have been watching its origin, or revival, and progress, from its commencement in our own time, may endeavour to take stock of its present results, and to inquire as to how many of them are likely to be of permanent value, and how many are to be cast out on the great rubbish-heap of discarded philosophical notions. An opportunity to do this with some advantage, at least in so far as British science is concerned, is afforded by the discussion which has arisen from the reference made to the subject by Lord Salisbury in his address as President of the British Association, at its Oxford meeting in 1894, and in which discussion leading men of science, both in England and in Germany, have taken part. The Biblical and theological implications of the question, though important and even urgent, may be reserved till we have briefly noted the positions of the scientific combatants; carrying with us, however, the thought that we are in

[1] Romanes, the ablest of Darwin's followers, has admitted this in his posthumous work, *Thoughts on Religion.*

presence of doctrines whose tendency is to make nature give an entirely different account of its own interactions, and its relations to God and man, from that which has been generally accepted by the better and wiser minds in every age; and that it has been publicly maintained that in the near future the progress of science, in union with the philosophy of evolution, will leave "little but cloud-land" for the domain of its "rival" religion.[1]

2. Lord Salisbury on Darwinism.[2]

Salisbury introduces his reference to the Darwinian evolution with the remark, intended perhaps to mollify some fanatical Darwinians, that "the most conspicuous event in the scientific annals of the last half century" has been the publication of *The Origin of Species* in 1859. In this connection he takes the opportunity to refer to the change which this memorable work is supposed to have effected in the methods of research, which it has tended to make historical rather than merely statistical. In this, however, he fails to allow sufficient credit to the profound historical views of living beings which have resulted from the study of fossils by such great minds as those of Cuvier, Owen, Barrande, and Agassiz; and, on the other hand, to deprecate sufficiently the tendency which Darwinism has produced among the younger generation of working naturalists and popular writers on nature to occupy themselves with imaginary lines of development and loose reasonings as to possible phylogenies rather than with the careful investigation of facts, and to regard nature as a sort of mechanical perpetual motion machine, without plan or purpose, rather than as a cosmos of order, beauty, and fine correlation of parts; thereby rendering it less

[1] Huxley, *Nature*, 1895.

[2] Address as President of the British Association at the meeting at Oxford 1894.

attractive and less congenial to our higher thoughts and sentiments.

He also broadly asserts that Darwin "has as a matter of fact disposed of the doctrine of the immutability of species" of animals and plants. No claim could be more unfounded than this. So far as popular knowledge is concerned, there is the best evidence that cattle-breeders knew the variability of the higher animals, and applied it successfully in producing races capable of permanent continuance, under proper care, at least 2,000 years before the Christian era, and probably earlier.[1] The *stability* or fixity of species, it is true, is a natural fact; but this does not imply immutability, which probably no naturalist has ever maintained, and which we cannot absolutely affirm of anything in nature. Stability, within the limits of our observation, is, however, proved by experience, and is essential to any scientific study of organized nature. The evidence in favour of it has indeed been much strengthened, and its possible range in time immensely extended, by the facts disclosed in modern times in the study of palæontology. There are marine animals and land plants still living which have continued as identical species for enormous periods of time antecedent to man. Mollusks of the Eocene and Miocene Tertiary, for example, of the Atlantic coast of America, and of the Paris Basin in Europe, still live in the neighbouring waters. The late Dr. Newberry found the common sensitive fern of North America (*Onoclea sensibilis*) in beds of the Fort Union Group, now known to belong to the dawn of the Tertiary, and another fern (*Davallia tenuifolia*),[2] not now occurring in America, but living in the mountains of Asia, has been found in

[1] Genesis xxx. 34 *et seq.* Animals in tomb of Ti at Sukkarah and other Egyptian tombs of early dynasties.

[2] Newberry, *Later Extinct Floras of America*; Dawson, *Report on the Geology of the Forty-ninth Parallel.*

the same beds. Humble creatures of the group of Protozoa have been traced much farther back. Such examples show, as I have elsewhere contended, that frail and short-lived animals and plants may, by virtue of their unchanged and continuous reproduction, be more durable as species than the most refractory rocks or the greatest mountains, or the forms and dimensions of the continents and seas in which they have lived. It is true that species of the lower animals and of plants are more lasting than those of the more highly organized animals; but even these in many cases greatly antedate the origin of man, and we can show that, while retaining their specific characters, they can, under changed conditions, undergo considerable variations, especially in external and non-essential features. In some cases we can show that even temporary varietal forms, appearing and disappearing in consequence of physical changes affecting the species, may be of considerable continuance, and yet recur under suitable conditions to the primitive type. All this is matter not of speculation but of fact, and has greatly tended to enhance our ideas of the fixity and historical value of species in geological time, as well as in the short space measured by our investigation of contemporary forms.

To this great natural and well-known fact of the fixity of species with temporary variations under certain limitations, Darwin added the further hypothesis that variation may, under certain natural conditions, and without any intelligent purpose or agency, go so far as to transmute one species into another. Unfortunately, however, this doctrine remains at this moment as destitute of proof as before the publication of the *Origin of Species*, and, when properly understood, the facts as to domesticated animals cited by Darwin himself show its improbability, if not impossibility, yet we are required by Darwinian evolution to accept this supposition as the means of accounting for the vast multi-

tudes of species of animals and plants and their succession in the geological history of the earth.

But after making these somewhat unnecessary admissions as a sop to the more zealous evolutionists, Lord Salisbury turns to deal with the alleged cause of the mutation of species as held by Darwin, namely, Natural Selection, and more especially with the attempt by Dr. Weismann, an eminent German naturalist, to vindicate this supposed agency in lectures delivered in Oxford in the previous year. Weismann, who poses as a "pure Darwinian," though he is, perhaps, more noted for his much-disputed conclusions as to the non-inheritance of acquired characters, believes implicitly in Natural Selection as held by Darwin, but admits that its agency has not been proved, and probably cannot be established by the evidence of facts. He believes, however, that if it be rejected on this ground, evolution will have no alternative but that of giving some countenance to the, in his view, altogether inadmissible "principle of design." Salisbury naturally remarks that such an avowal indicates a great change of opinion from the time, not far distant, when the doctrine of design in nature seemed to be held by all reasonable men. He might have added that it must still be held by all such men, although some German specialists may not be amenable to this ordinary reason. We shall see evidence of this in Weismann's rejoinder. In the meantime it is only necessary to remark that the German biologist accepts natural selection as the cause of the origin of species, because it enables him to dispense with a living and intelligent First Cause, or, in other words, to hang up his science in vacancy, or to dream that it so hangs, without any support for its first link. It is instructive to notice here that, as we shall see in the sequel, Spencer and Huxley, the greatest English authorities on Evolution, decline to follow Weismann in

this great act of unreasoning faith, and regard the figment of Natural Selection as incapable of taking the place assigned to it by Darwin, while still holding "organic evolution" as in some way explaining the origin of living things without any intelligent plan or creative power.

Salisbury also expresses his inability to summon sufficient faith to accept Natural Selection as propounded by Weismann, though in opposition to its efficacy he dwells chiefly on the alleged slowness of its operation, which obliges its advocates to claim so great an extension of time that they have to place the beginning of life at a period so early that, reasoning from physical data as given by Lord Kelvin and others, we cannot suppose the earth to have been in a state in which organic bodies could exist upon its surface.[1] He then concludes his review of Weismann's advocacy of the Darwinian principle of Natural Selection with the following weighty words:—

"I quite accept the Professor's dictum that if natural selection is rejected we have no resource but to fall back on the mediate or immediate agency of a principle of design. In Oxford, at least, he will not find that argument is conclusive, nor, I believe, among scientific men in this country generally, however imposing the names of some whom he may claim for that belief. I would rather lean to the conviction that the multiplying difficulties of the mechanical theory are weakening the influence it once had acquired. I prefer to shelter myself in this matter behind the judgment of the greatest living master of natural science among us, Lord Kelvin, and to quote as my own concluding words the striking language with which he closed his address from this chair more than twenty years ago: 'I have always felt,' he said, 'that the hypothesis of natural selection does not contain the

[1] We have not space to discuss here this point; but it would seem that Spencer and Huxley do not so strongly as Darwin insist on excessively long time, and Poulton in his British Association Address (1896) is content to assume pre-geologic ages, altogether unknown to us, for the origin of life, but which no geologist can accept as probable or even possible. Thus evolution, in the attempt to escape from the observed fixity of species, comes into conflict with physical science on the one hand and geological science on the other. This may be designated as the dilemma of Darwinism, of which some of its advocates select one horn and some the other.

true theory of evolution, if evolution there has been in biology. . . . I feel profoundly convinced that the argument of design has been greatly too much lost sight of in recent zoological speculations. Overpoweringly strong proofs of intelligent and benevolent design lie around us, and if ever perplexities, whether metaphysical or scientific, turn us away from them for a time, they come back upon us with irresistible force, showing to us through nature the influence of a free will, and teaching us that all living things depend on one everlasting Creator and Ruler.'"

3. Weismann's Reply to Salisbury.

Weismann replies to Salisbury in the *Contemporary Review* for November, 1894. He endeavours to extenuate his somewhat unguarded statement respecting Natural Selection by the explanation that it refers to the fact that the action of Natural Selection is necessarily rather a matter of inference than of observation. He adduces, however, three agencies or factors by which, according to him, it manifests itself: viz., (1) Variability; (2) Heredity; (3) Struggle for Existence. Practically, therefore, these become the observed causes of evolution, or at least its outward manifestations. We have, therefore, to question them as to their capacity to produce new species. Variation is a well-known phenomenon, especially in the case of domesticated animals, and of some variable species which, so to speak, domesticate themselves, or are naturally domesticated, by being subjected accidentally or by choice to special external conditions. These are species of the higher and more intelligent animals. Other animals vary apparently because of their great simplicity of structure and the little differentiation or specialization of their tissues and organs. Thus among animals the most variable species are at the top and bottom of the scale. Still, in all ordinary cases, the variability refers chiefly to external and non-essential features, and unless the variety is perpetuated by isolation and care, and, if at all extreme,

by occasional crossing with normal individuals, it is liable to die out or to return into the ordinary type. There is probably no good case known where it has overstepped the limits of the essential characters of the species. In the case of extinct or fossil animals or plants, it may be supposed to have done so, but this, of course, cannot be proved by actual facts. If, therefore, nature be personified as a breeder, producing varieties, and then selecting the best, it cannot be affirmed that it is more successful than human breeders who can produce races capable, by careful management, of being perpetuated for several generations, but cannot make new species. This, of course, is not invalidated by the subjective condition that naturalists, especially those who are desirous to multiply new species, may mistake mere varietal forms for the specific types. What has been said of animals will of course apply to plants, except in so far as the intelligence and volition of the animal contribute either to the making or unmaking of varieties.

Heredity is another great and important fact in nature, though a very mysterious one. But independently of the doubt that Weismann himself has cast on the transmission of acquired characters, which Darwin apparently did not question, heredity certainly tells in favour of fixity, for it is the majority that transmit the ordinary characters to their progeny, while a variant minority labours under the double disadvantage of a less balanced development of parts and liabilty to reversion by intermixture, unless when artificially isolated or kept separate by some rare and exceptional natural accident.

Struggle for existence is not the ordinary law of nature, and modern experience as well as geological facts show that it tends not to elevation but to degradation or to extinction. No breeder would attempt to improve his stock by exposing it to cold or starvation, and in the

succession of geological formations we find that facility for expansion rather than struggle has been the condition (I do not say the cause) of the introduction of new species.

When the Natural Selection of Darwin is thus broken up into three factors, its validity is further placed in doubt by the question as to the possibility of these three independent agencies, without intelligent guidance, co-operating in one definite direction of improvement, and securing for the best modifications the necessary conditions of isolation and continuous favourable environment. We seem to require here that very principle of design which Weismann and other adherents of the Darwinian evolution so distinctly repudiate.

It is really this blunt revelation of Weismann's mental position as distinguished from the more reticent confessions of English evolutionists, who, though possibly of the same opinion, are less frank in its avowal, that gives the chief interest to his adherence to Natural Selection and the reason assigned for it. He expresses his own view as follows: "The scientific man may not assume a designing power. . . . His concern is with the mechanism of the universe." He adds: "It is inconceivable that a Creator should designedly interfere in the course of nature—inconceivable that He should, so to speak, intervene to supplement the forces of nature, just where they break down. As if, on the principle of theism, God is not merely over but in His works, or as if there could be any "forces of nature," or "course of nature," except as ordained of God and regulated by His laws. He speaks, it is true, of the possible evidence of a "power behind nature," but it is evident that this is merely an inanimate prime mover, an expansive steam-power within the boiler, and not an all-wise Creator.

4. Huxley and Zittel on the Questions at Issue.

The late Dr. Huxley, the foremost English exponent of Darwinism, was present at the Oxford meeting, and took the opportunity, in seconding the usual vote of thanks to the President, to parry the force of the anti-evolutionary argument in the address by congratulating the speaker on the admissions he had made as to the beneficial influence of Darwin's great work; but he evidently felt that damage had been done, for in the following autumn, in a brief article on the progress of evolution, on occasion of the 25th anniversary of the establishment of the scientific journal *Nature*, he takes occasion to define his own position, as having on the evidence of fossil animals, even before the appearance of Darwin's great work, indicated the probability of the introduction of new species by descent with modification; and proceeds to argue that this kind of proof remains valid even if the doctrine of Natural Selection should be abandoned, or should have to occupy a subordinate place. In support of this he appeals to the testimony of Zittel, who says in his great work on animal palæontology:—

"For the naturalist evolution (the theory of descent) offers the only natural solution of the problem of the development and succession of organic beings, but as to the causes which bring about the modification of species, and especially the change (continuously) in a given direction, opinions are yet greatly divided. That the principle of natural selection discovered by Darwin leaves many phenomena unexplained is no longer denied by even the warmest followers of Darwin."

This statement of Zittel, endorsed by Huxley, may be taken as authoritative on the behalf of evolution in geological time as held by Darwinians, though some pure or ultra-Darwinians, like Weismann and Wallace, continue to attribute the whole to Natural Selection, while others,

like Cope, Hyatt, Romanes, and Bateman, doubt the reality of Natural Selection, or its sufficiency to originate species, and seek for other and very different causes of change, which are, however, so far as known, equally unreal or ineffective. When Zittel says that descent with modification is the "only natural solution" of the problem, we have a right to inquire in what sense he uses the word "natural." Ordinary generation is the only natural mode in which the species can be continued at all, whether with or without modification; and when he assumes that this is the only way in which new species can arise, he is taking for granted that which he should be called on to prove, namely, that varietal modifications which may arise in the course of descent are pushed so far as to transgress the limits of the specific characters. The word natural, therefore, referring to ordinary generation, by his own observation, can apply only to that which the writer knows or can receive on credible testimony; and if he can point to no case in which a new species has been observed to arise in this way, he really excludes all natural cause for the origin of species except as a mere conjecture or supposition. Still, like Weismann with Natural Selection, he must accept this unwarranted supposition or have recourse to something which he would probably regard as "supernatural," that is, beyond the scope of his present knowledge of nature, and therefore inadmissible, simply because unknown in his experience.

It is instructive to note here that Zittel, in discussing this question before the International Congress of Geologists in 1896, admits certain remarkable defects in the supposed "natural" mode of introducing new species by descent as held by him. While he thinks that in the case of some species of the higher animals, as for example in the horse and its allies, we have the appearance of a continuous succession of new species, he does not pretend that

the continuity can be absolutely proved, and he admits that no links can be found to connect distinct classes, as the Mammals, Birds, Reptiles, and Amphibians, with each other. Intermediate forms seeming to connect these are found only in small and *diminishing* numbers as knowledge advances. Nor is the analogy perfect of the succession of animals in geological time with the stages of the development of the individual from the ovum to maturity. Thus, as I have pointed out in my work, *Relics of Primeval Life*, the evidence of transition from one group to another breaks down just where it is most desirable that it should be perfect, and room is left for the multitude of hypothetical phylogenies, subjective rather than objective in their character, with which enthusiastic evolutionists entertain us in speculating on the evolution of the animal kingdom, and which merely serve to show how each individual speculator would have carried on the development had it been left to him, but prove nothing as to how it actually proceeded, or could proceed, spontaneously, and with no plan whatever.

J. W. DAWSON.

(To be continued.)

THE FATHERHOOD OF GOD.

I.

IT is one of the chief glories of the Christian Gospel that it has revealed God as the Father; and the revelation is so wonderful that we ought to take some trouble to learn how the revelation was made and what it contains. We ought not to be satisfied with hasty thoughts about it. Nor ought we, having discovered that Christ has taught us to call God "Our Father," to proceed at once to construct out of our own head a theory of the mutual relations between man and God which this title implies. Here are the Four