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I. BERKELEY'S IDEALISM.

A splendid edition of Bishop Berkeley's works was issued, in 1871, by Professor Alexander Campbell Fraser, the incumbent of the Chair of Logic and Metaphysics in the University of Edinburgh—the chair once illuminated by the genius of the illustrious Sir William Hamilton. The elaborate dissertations in which the accomplished Editor expounds the Bishop's idealistic system, and the fact that they have emanated from one who has succeeded the great exponent and defender of Natural Realism, have had the effect of calling attention afresh to the principles of Berkeley's philosophy. In proceeding to discuss them we deem it important to furnish a brief preliminary statement of the main features of Berkeley's system :

1. The Denial of Abstract Ideas.
2. The Denial of the Existence of Matter as Substance. There is no such thing as material substance.
3. The Denial of even the Phenomenal Existence of Matter, separate from and independent of spirit: denial of Natural Realism. Material things have no reality in themselves. Whatever reality or *casuality* material things possess, is dependent and relative.
4. *Esse est percipi*: the so-called material world depends for existence upon the perception of spirit. A thing exists only as it is sensibly perceived.

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convinced; but as soon as he laid down the book, they slipped from his grasp and vanished into air? Yet what conviction needs more to be rooted within us, than this which underlies all worship and obedience to God, and all hope of enjoying the presence of His glory? To serve the purpose of religion, it must cease to be a probability resting on the shifting sands of finite speculation, and become an ascertained reality to us through a Divine revelation. Yet this is but one of many topics upon which certainty is brought to the soul by the Inspired Word.

We live in an age when freedom of inquiry is scarcely free from the insolence of trampling with scorn upon the faiths of the past, and construing their age into a presumption of error and superstition. It is necessary then to go down to the bottom facts of Christianity, as they rest in the ineradicable instincts of a spiritual nature—those internal evidences which come up from the depths of the system, and with its own voice proclaim it to be Divine and true. Our Christian beliefs will then be like the everlasting mountains, which seem to grow from the central granite of the earth itself. Their foundation will be laid in a Divine testimony mortised into the deepest necessities of the soul itself; and the structure which rises from that base will be as enduring as the nature from which it springs.

B. M. PALMER.

V. CREATION AS A DOCTRINE OF SCIENCE.

Until very recently the theory of Creation has been generally accepted by thoughtful men as giving the only credible account of the origin of our Cosmos, *i. e.* "Our world in all its beautiful order." This general acceptance of the theory is owing, largely, to the fact that it has been believed to be taught in the Scriptures, regarded by most as given by inspiration of God,—and by such as rejected this idea—as embodying the oldest and most authentic traditions of our race. Its general acceptance, however, has not been altogether for this reason. In part, it is owing,

doubtless, to the fact that the only competing theory which claimed attention was that of the eternity of the present order of things; a theory clogged with so many and such serious difficulties as to find favor with few.

Within the last half of the present century the hypothesis of Evolution has been brought forward, and its claim to supercede the old theory of Creation has been earnestly and persistently urged in the name of modern science. In the present article I propose to examine this claim.

In the Scriptures the word creation is used in two senses: 1st, in the sense of making out of nothing, causing to begin to be, and 2d, making out of pre-existing materials. By common consent, it is in the first of these senses the word is used in Genesis 1:1. "In the beginning God created the heaven and the earth." That it is used in the second of these senses in Genesis 1:27: "So God created man in his own image, in the image of God created he him; male and female created he them," is placed beyond all question by the record contained in Genesis 2:7-22: "The Lord God formed man of the dust of the ground." "And the rib, which the Lord God had taken from man, made he a woman."

On the doctrine of Creation, in so far as the creation of the heaven and the earth out of nothing is concerned, I have two remarks to make, viz:

1st. It concerns a matter confessedly beyond the range of investigation of human science. "It appears to me," writes Huxley, "that the scientific investigator is wholly incompetent to say anything at all about the first origin of the material universe. The whole power of his organon vanishes when he has to step beyond the chain of natural causes and effects." (*Order of Creation*, p. 152.) When the author of the epistle to the Hebrew wrote, "Through faith we understand that the worlds were framed by the word of God, so that things which are seen were not made of things which do appear," (Heb. 11:3.) he gave utterance to a profound philosophical truth, pointing out to us the only trustworthy source of information respecting this matter. If we are to know anything on this subject, it must be through a revelation from God the Creator.

2nd. It concern matters with which the hypothesis of Evolution, as that term is understood by such scientists as Darwin and Huxley, has nothing to do. That hypothesis assumes, not only the existence of matter, but, as expounded by its ablest advocates, the existence of one or more primordial beings, from which all others have been evolved. "The inquiry respecting the causes of the phenomena of organic nature, resolves itself into two problems: the first being the question respecting the origination of living, or organic beings; and the second being the totally distinct problem of the modification and perpetuation of organic beings when they have already come into existence. The first question, Mr. Darwin does not touch; he does not deal with it at all." (*Huxley's Origin of Species. Lect. VI.*)

As science has, and can have nothing to say about the original creation of matter out of nothing, and the hypothesis of Evolution does not propose to supersede the old doctrine, in so far as the original creation out of nothing is concerned, I dismiss such creation from further consideration in the present article; and when I speak of creation, must be understood to mean creation of materials already in existence.

THE DOCTRINE OF CREATION.

The doctrine of Creation, as now held by thoughtful men, and as believed to be taught in the Scriptures, embraces the following particulars, viz:

I. Creation was *immediate*; *i. e.*, effected without the intervention of any natural second causes. This idea the Westminster Divines express in the phrase, "making by the word of God's power." "Evolution supposes that * * * preceding the forms of life which now exist, there were animals and plants, not identical with them, but like them; increasing their differences with their antiquity, and, at the same time, becoming simpler and simpler; until, finally, the world of life would present nothing but that undifferentiated protoplasmic matter which, so far as our present knowledge goes, is the common foundation of all vital activity. The hypothesis of Evolution supposes that in all this vast progression there would be no breach of continuity, no point

at which we could say, 'This is a natural process,' and 'This is not a natural process;' but that the whole might be compared to that wonderful process of development which may be seen going on every day under our eyes, in virtue of which there arises, out of the semi-fluid, comparatively homogeneous substance which we call an egg, the complicated organization of one of the higher animals. This, in few words, is what is meant by the hypothesis of Evolution." (*Huxley's New York Lectures, Lecture I.*) If, with Darwin, we choose to speak of Evolution as "a mode of Creation," that creation must be a *mediate creation*, wrought not directly by "the word of God's power;" but—with the exception of the "one or more primordial forms" mediately created—through the intervention of living forms already in existence.

II. Creation, as the doctrine is understood by those who hold it, is not a single act of Almighty power, by which our world, embracing organic as well as inorganic nature, was brought into being; but a continuous work, or succession of acts, extending, probably, over a long period, and terminating with the creation of man. After giving in detail the work of six days, Moses adds: "Thus the heavens and the earth were finished, and all the host of them. And on the seventh day God rested from all his works which he had made." (Gen. 2: 1-2.)

One of the best established truths of geology is, that a long time was occupied in the work of creation. Without going into an examination of the evidence upon which this conclusion rests, it is sufficient for my present purpose to remark, that modern commentators, without exception, accept it as in no way inconsistent with the testimony of Scripture. This long time, this age, this era, which closed with the creation of man, may properly be styled the age, or era of creation. The present era, the era of providence as it may be termed, is one in which God, "resting from all his works which he has made," is preserving and governing his creation. And, it is the same God that in the beginning created, that is now preserving and governing.

1. Spencer objects to the theory of Creation in the words: "Among the unthinking there is a tacit belief in creation by *miracle*, which forms an essential part of the creed of Christen-

dom." (*Popular Science Monthly*, 1886, p. 754.) A miracle is an event out of the ordinary course of things. Now, if there was an era of creation, an era in which creation was God's ordinary, every-day work, just as in this our era of providence, the preserving and governing his creatures is his every-day work, an act of creation then was no more a miracle than an act of providence is now.

2. Prof. Huxley writes :

"A section of a hundred feet thick," of a certain rock stratum of England, "will exhibit, at different heights, a dozen species of ammonites, none of which passes from its particular zone of limestone or clay into the zone below it, or into that above it; so that those who adopt the doctrine of a special creation must be prepared to admit that at intervals of time, corresponding with the thickness of those beds, the Creator thought fit to *interfere with the natural course of events*, for the purpose of making a new ammonite. It is not easy to transplant one's self into the frame of mind of those who accept such a conclusion as this on any evidence short of absolute demonstration." (*Lay Sermons*, p. 281.)

In the creation, at certain intervals of time, of a certain number of ammonites, during the era of creation, when creation was God's every-day work, there is no interference, but perfect accord with what may properly be styled "the natural course of events." An illustration of the nature of God's providence we have from our Lord's lips in the words: "Are not two sparrows sold for a farthing? and one of them shall not fall on the ground without your Father. But the very hairs of your head are all numbered." (Matt. 10: 29-30.) This continual attention, in ten thousand particulars, to the wants and necessities of his creatures is the necessary outcome of such a nature as the Scriptures ascribe to God. Passing now from the consideration of God's work of providence to his work of creation, such a course in the creation of several species of ammonites as Huxley describes—bringing each into being as the medium in which it is to live becomes best adapted to it—is just what analogy would lead us to expect.

III. According to the theory of creation as commonly received, God created each particular species of plant and ani-

mal, endowing it with the power of propagating its kind, and so filling the portion of the earth intended for it. As Prof. L. Agassiz has expressed this truth in the language of science, "Breeds among animals are the work of man; species were created by God." (*Methods of Study in Nat. History*, p. 14.) This is believed to be taught in Gen. 1:11: "And God said, Let the earth bring forth grass, the herb yielding seed; and the fruit tree yielding fruit after his kind, whose seed is in itself, upon the earth; and it was so." See also, vv. 20, 22 and 25-29.

That each particular species of plant and animal, as a matter of fact, and in our day, possesses the power of propagating itself, and in this way alone can continue its existence on the earth, has long been known, in so far as the more perfect species are concerned. Careful scientific investigation has now demonstrated beyond all reasonable question, that this same law which governs the propagation of the higher species governs that of the lower also, even that of the lowest. On this subject Huxley writes:

"That the grubs found in galls are no product of the plant upon which the gall grows, but are the result of the introduction of the eggs of insects into the substance of the plant, was made out by Vallisnieri, Raumer and others, before the end of the first half of the eighteenth century. The tape-worms, bladder-worms and flukes continued to be the stronghold of the advocates of xenogenesis for a much longer period. Indeed, it is only within these last thirty years that the splendid patience of Von Siebold and other helminthologists has succeeded in tracing every such parasite, often through the strangest wanderings and metamorphoses, to an egg, derived from a parent actually or potentially like itself; and the tendency of inquiries elsewhere has been in the same direction."—(*Lay Sermons*, p. 367.)

IV. At their Creation, the different species of plants and animals were not brought into being as single individuals, or as pairs at the most—man, the species *Homo*, alone excepted—but when God spake, he said: "Let the waters bring forth abundantly (swarm with swarms, n. v. marg.) the living creature that hath life, and fowl that may fly above the earth in the open firmament of heaven." (Gen. 1:20.) As the result of such a work of creation as this, the air, the earth, and the seas were at once peopled with many individuals, or pairs, of every species designed to inhabit

them. To such a creation the fossiliferous rocks clearly testify. Not at one point alone does a particular species appear, but at many points at the same time, and these points often far distant from each other. This peculiarity in the mode of creation accounts for the observed wide distribution of certain species, possessing little or no power of locomotion, e. g., the oyster:—an order of things which Darwin confesses to be a very serious objection to the hypothesis of Evolution, as he held it.

According to express testimony of Scripture, man forms an exception to the general law. Not only does the account of Creation, in the opening portion of Genesis, tell of the Creation of one man and one woman only, but the plan of human salvation, as revealed in Scripture, postulates the unity of the human race as an essential element. The philosophy of that plan is set forth, in brief, in the words, "As by the offence of one, judgment came upon all men to condemnation; even so by the righteousness of one, the free gift came upon all men unto justification of life. For as by one man's disobedience many were made sinners, so by the obedience of one shall many be made righteous." (Rom. 5 : 18, 19).

V. The efficient cause in Creation was the power of an almighty God. "And God said, let the earth bring forth grass." "And God said, let the waters bring forth abundantly." "And God said, let the earth bring forth the living creature after his kind." "And God said, let us make man in his own image." (Gen. 1 : 11, 20, 24, 26.)

Huxley remarks that Creation, according to this view, is a "supernatural work," (*See Lay Sermons, p. 279*) and he would have us, therefore, consider it, if not incredible, incapable of proof. To this, I reply, Creation is supernatural only on the condition that we banish God from nature. As the Duke of Argyll has well said: The term supernatural, as used by Spencer, Huxley and other writers of the class to which they belong, is

"In the highest degree ambiguous and deceptive. It assumes that the system of nature in which we live, and of which we form a part, is limited to purely physical agencies, linked together by nothing but

mechanical necessity. There might, indeed, be no harm in this limitation of the word nature, if it could possibly be adhered to. But it is not possible to adhere to it, and that for the best of all reasons, because even inanimate nature, as we habitually see it and are obliged to speak of it, is not a system which gives us the idea of being governed and guided by mechanical necessity. No wonder men find it difficult to believe in the supernatural, if by the supernatural they mean any agency which is nowhere present in the visible and intelligible universe, or is not implicitly represented and continually reflected there; for, indeed, in this sense no Christian can believe in the supernatural, in a creation from which the Creator has been banished, or has withdrawn himself. On the other hand, if by the supernatural we mean an agency which, while ever present in the material and intelligible universe, is not confined to it, but transcends it, then the difficulty is, not in believing it, but in not believing it." (*Unity of Nature*, p. 274.)

VI. The work of Creation has been governed throughout by the intelligent purpose of the Creator. There is a plan which runs through it from beginning to end. At the close of each separate day's work, Moses tells us that "God saw that it was good," and he closes the whole account with the words: "And God saw everything that he had made; and behold it was very good." (Gen. 1: 31.) The result of the whole work of Creation was a Cosmos, not a Chaos.

"A phenomenon," writes Huxley, "is explained when it is shown to be a case of some general law of nature; but the supernatural interposition of the Creator can, by the nature of the case, exemplify no law, and if species have arisen this way, it is absurd to discuss their origin." (*Lay Sermons*, p. 282.) And, in this way he would summarily dismiss the theory of the creation of species from scientific consideration. Of the misuse of the word supernatural by Huxley, and others of his school, I have already spoken. On his assertion that creation is necessarily without law to govern it, I remark:

Creation, if it be the work of a Creator, perfect in wisdom and power, and, especially, if wrought after a plan, and with a definite end in view, and such, beyond all question, is the Creation of which we have an account in the Scriptures—it is as completely subject to law as any form of Evolution can possibly be. The proof of this is found in the fact that it furnishes us as sim-

ple and complete an explanation of "the gradual advance in the type of living creatures, and the natural grouping of plants and animals," as any form of the Evolution hypothesis professes to do. Adopting this theory, "in our study of nature, we are approaching the thoughts of the Creator, reading his conceptions, interpreting a system which is his, and not ours." (*Agassiz' Study of Natural History*, p. 14.)

"Let us examine a case of creation as closely analogous to that of the origin of species as our limited experience can furnish us, viz: the various forms of habitation or home which man has made for himself. The bark hut, the log cabin, the substantial farm house, the brown stone city residence, and the marble palace have succeeded each other in regular order, from 'the primordial to the most perfect,' as civilization has advanced. But these are not the only varieties we meet with. In Russia, houses are built with thick walls, and with openings small and few, and capable of being tightly closed. In the Southern United States they are built with many and large doors and windows, and open piazzas. In Venezuela, they are often built on piles, so as to be safe from floods. In China they are slight structures of bamboo and paper. In some parts of Africa they are hollow hemispheres of dried mud. There are all varieties determined by 'environment.' Man's wants have led him to build houses for other purposes than his own inhabitation; and hence, we have barns, and warehouses, and cotton factories, and railroad depots, and churches and court houses, and forts, each differing from all others in certain particulars, the exact nature of the 'differentiation' being determined by the purpose each was intended to serve. In all these structures there are certain 'homologies' which arrest our attention, such as their all possessing floors, and walls, and roof and openings of some kind or other; and, there are, at the same time, 'differentiations' which adapt each of them to some particular end or use. There is an order which pervades the whole; and the homologies and the differentiations they present would furnish a proper classification of houses, were we disposed to make such a classification."

“How shall we account for all this? Had we no knowledge of the way in which this result has been produced, some might say—the bark-hut ‘evolved’ the log-cabin, and the log-cabin ‘evolved’ the substantial farm-house; and the Venezuela house, built upon piles, was the result of ‘the survival of the fittest;’ and they might say this for many of the same reasons that similar assertions are made respecting order and species in the organic world. In this instance, however, none will say this, because we all know that this orderly variation is the result of human power, acting under the guidance of human intelligence, and for the attainment of definite ends. All these different structures are the product of man’s creative power, and not of Evolution, natural or artificial. And there is evidently a law which has governed this Creation throughout, viz: the law of adaptation to a specific end; that is just as truly a law, and just as certain in its operation, as the law of ‘the survival of the fittest,’ or any other law which the evolutionist has imagined to govern the origin of species.” (*Nature and Revelation*, pp. 146, 147).

Such is the theory of creation, in the sense of a making out of pre-existing materials, as it is held by the great majority of Christian scholars in our day, and as it seems to be set forth in Scripture. Turn we now to an examination of the hypothesis of Evolution, which it is proposed, in the name of science, to substitute for it.

THE DOCTRINE OF EVOLUTION.

What is Evolution? In attempting to answer this seemingly plain question, we are greatly perplexed, at the outset, by the many and essentially different senses in which the word is used by its advocates. In the words of Dr. McCosh, “the term is used to cover all sorts of meanings—is like ‘the great sheet, knit at the four corners,’ which Peter saw, ‘wherein were all manner of four-footed beasts of the earth, and wild beasts, and creeping things, and fowls of the air.’” (*Development*, p. 1). To the disgrace of modern science, a term which should have but one, definite meaning, is habitually used in this indefinite way; and

what is more, but yet a natural consequence of such a such a use, that which is predicable of it in one sense, is constantly assumed as true when the word is used in an entirely different sense.

I. When we turn to such definitions as that of Spencer, "Evolution is the transformation of the homogeneous, through successive differentiations into the heterogeneous," they do not help matters. These very terms might be used to define the word Creation as appropriately as the word Evolution. Darwin's definition is somewhat better: "Descent with modifications." And yet, this definition covers particulars the truth of which no man questions, along with others which are the very matters in dispute. In the production of new varieties there is "descent with modifications," as truly as in the production of new species.

As illustrating the confusion of thought hence resulting, take the following paragraph from Spencer's recently published "*Progress, its Law and Cause*:"

"It is settled beyond dispute that organic progress consists in a change from the homogeneous to the heterogeneous. Now, we propose to show that the law of organic progress is the law of all progress, whether it be in the development of the earth, in the development of life upon its surface, in the development of society, of government, of manufactures, of commerce, of language, literature, science, art—this same evolution of the simple into the complex through successive differentiations holds throughout. From the earliest cosmical changes down to the latest civilization, we shall find that the transformation of the homogeneous into the heterogeneous is that in which progress essentially consists."

Take, now, two of these cases of development or Evolution particularly mentioned, and examine them. 1st. That of the Earth, with which Spencer heads the list. Here "the homogeneous" in which the Evolution takes its rise, is a vast nebula, a mass of star-dust; the immediate agent in the "differentiation" which ensues, is a correllation of mechanical forces, such as gravitation and heat; and the "heterogeneous" is our Cosmos: this earth with all the vast varieties of plants and animals which have their home upon its surface. 2nd. Take now the case of Evolution of "Commerce," which is mentioned near the end of

Spencer's list. Here the "homogeneous" in which commerce originates, must be—

"Arrow-heads of chalcedony,
Arrow-heads of flint and jasper,
Smoothed and sharpened at the edges,
Hard and polished, keen and costly."

with a few—

"Bowls of bass-wood," and perhaps, occasionally,
"A deer-skin dressed and whitened,
With the gods of the Dakotahs
Drawn and painted on its surface."

The immediate agent in the "differentiation" which ensues is the free-will greed of man; and "the heterogeneous" which results is the babel which may be witnessed at the wharves, or in the crowded thoroughfares of a great commercial city. Is there anything worthy the name of law, which has governed in common these diverse evolutions? But for great confusion of thought, could Spencer have asked us to accept as a sound, philosophical generalization such an olla-podrida as this?

In the *Popular Science Monthly* for 1886, Spencer publishes a series of articles under the title of "The Factors in Organic Evolution," in which there is the same confusion of thought, the same confounding of things which differ. In these articles he discusses, not separately, but as if they were one and the same thing, (1) development as manifested in the growth of the individual plant or animal; (2) the development manifested in the production of improved varieties of plants and animals; and, (3) a development resulting in the origination of new natural species; and he treats them all as if subject to the same laws, and under the common title of "Organic Evolution."

1. The evolution of the mature plant or animal from its germ in the seed or egg, is often very wonderful, *e g.*, in the case of the silkworm moth, which exists first as an egg, then as a caterpillar, then as a chrysalis, and lastly as a perfect winged moth. The reality of this growth-development no one questions; and the study of it in all its particulars falls properly within the domain of science. But this kind of development is governed

by a peculiar law, which places it in a category entirely distinct from the other two, viz: that it is rigidly confined to the limits of a single life. In the case just cited, the egg, the caterpillar, the chrysalis and the moth, complete a series, and at the end we must go back to the starting point again. There is no abiding progress from a lower to a higher form of life. The silk-worm moth of to-day, although in its genealogy this series of changes has been gone through a thousand times, is just what the silk-worm moth was a thousand years ago. Such is the implicit testimony of science. Such an evolution can in no possible way account for the existence of the numerous species of moths known to Entomologists; nor can it take the place, or do the work of creation, in accounting for the origin of the moth population of to-day.

2. The evolution manifested in the production of new varieties of plants and animals, is an evolution, like that we have just considered, the reality of which no man can question. There is hardly a plant cultivated for use or ornament, that there are not numerous varieties known to cultivation; and these varieties sometimes differ so greatly from the original stock, that it is difficult to determine that stock with certainty.

But all this variation is governed and limited by two well ascertained laws, viz: (1). The variation, great as it may be, never extends beyond the boundary line of species; e. g., the rose never becomes a geranium, nor does the geranium ever become a rose. And (2), the law of reversion to type, as it is called, dominates the existence of all new and improved varieties. An intelligent interference on the part of man—artificial selections, as it is called—is as necessary in preserving these varieties as in producing them in the first instance. An evolution limited by these two laws—and science pronounces these laws inexorable—can furnish us with no explanation of the origin of species; and so can never come in conflict with, or take the place of the theory of creation, in accounting for our existing Cosmos.

3. Of an evolution resulting in the production of new natural species, and this is the only kind of evolution which is

in controversy, we know nothing from actual observation—absolutely nothing. On this point the Duke of Argyll writes :

“The founding of new forms by the union of different species, even when standing in close natural relation to each other, is absolutely forbidden by the sentence of sterility which Nature pronounces upon all hybrid offspring. And so it results that man has never seen the origin of any species. Creation by birth is the only kind of creation he has ever seen ; and from this kind of creation he has never seen a new species come.” (*Primeval Man*, p. 40.)

And Mr. Etheridge, whose connection with the British Museum has given him the largest range of observation on this point of any living scientist, says :

“In all this great Museum there is not a particle of evidence of the transformation of species. Nine-tenths of the talk of evolutionists is sheer nonsense, not founded on observation, and wholly unsupported by fact.” (*Central Presbyterian*, September 16, 1885.)

To confound these several kinds of Evolution is inexcusable :—and, from the acknowledged truth of one to infer the truth of another is but specious sophistry. And the fact that Spencer has selected a title for his essays which will cover all three, “The Factors in Organic Evolution,” is evidence, either of great confusion of thought on his part, or of a sophistry utterly at variance with the spirit of sound scientific investigation.

II. Prof. Huxley is not chargeable with the confusion of thought which characterizes much of what Spencer has written on this subject. His definition of Evolution is :

“The so-called transmutation hypothesis considers that all existing species are the result of pre-existing species, and those of their predecessors, by agencies similar to those which at the present day produce varieties and races ; and, therefore, in an altogether natural way ; and it is a natural, though not a necessary consequence of this hypothesis, that all living beings have arisen from a single stock.” (*Lay Sermons*, p. 279.)

Charles Darwin, the author of the hypothesis of Evolution in its modern form, distinctly recognizes its proper limitations : (1.) in the title he gives his book in which he proposes and

depends the hypothesis, *viz*: "The Origin of Species;" and (2.) in the nature of the agency to which he traces it, *viz*: "Natural Selection." This term is defined by Huxley in the words "The process of Natural Selection is essentially identical with that of Artificial Selection, by which man has originated the races of domestic animals, the struggle for existence taking the place of man, and exerting in the case of natural selection that selective action which he performs in artificial selection." (*Lay Sermons*, p. 292.)

As thus understood, Evolution concerns itself, (1.) With living organic nature alone, and has nothing to do with that development out of Chaos which the inorganic world has undergone, and which is the special study of the geologist; nor (2.) has it anything to do with the development of the individual plant or animal from the gem-cell; nor (3.) does it concern itself with the development of new varieties, under the operation of "artificial selection;" *i. e.*, the fostering care of free, intelligent man. These three several kinds of development differ essentially from that to which Darwin and Huxley apply the name of Evolution, in the laws by which they are governed, the agencies by which they are effected, and by the fact that they are taking place to-day, in the world around us, and so are proper subjects of scientific study. It is Evolution, in this sense alone, that comes in conflict with the old theory of creation; and, as already remarked, it is to the disgrace of modern science that the term is used, or rather *abused*, to designate kinds of development differing essentially one from the other.

III. The hypothesis of Evolution, as originally proposed by Darwin, has since been seriously modified by its ablest advocates. To an examination of such of these modifications as bear upon its claim to supercede the old theory of Creation, I will, briefly, ask the reader's attention.

1. Darwin taught that of each particular species of plant or animal there was produced by evolution but one individual or, at most, one pair, and that all others of the species were descended from these by natural generation. To the hypothesis in this form two serious objections were urged, *viz*: (1), It was

difficult, if not impossible to reconcile it with the wide distribution of certain species of animals, e. g. the oyster, which possesses little or no power of locomotion. Darwin himself confessed that this was an objection he did not know how to answer. And (2), The testimony of the fossiliferous rocks was found to be that many species appeared in great numbers, and widely distributed at, or about, the same time. To meet these objections the original hypothesis was modified, so as to embrace the idea that as the immediate product of evolution, many individuals of each new species were produced at the same time;—and those scientists who regarded man as evolved from the anthropoid ape, began to write about Pre-Adamite man, and of the negro race as originating in a different country, and at a different time from the Caucasian. Thus, Carl Vogt writes:—“We cannot see why American races of men may not have been derived from American apes, Negroes from African Apes, and Negritos from Asiatic apes.” (*Recent Origin of Man* p. 52.)

If the hypothesis be accepted with this modification, it is in irreconcilable conflict with the doctrine of the unity of the human race, and yet, the whole trend of modern scientific investigation is toward the establishment of that doctrine as one of the settled truths of science. “I cannot see,” writes Huxley, “any good ground whatever, on any tenable sort of evidence, for believing that there is more than one species of man.” (*Origin of Species*, Sect. 5.) In man, the world over, we find the same grand physical characteristics; the same number of teeth, and bones, and muscles; the same system of respiration and circulation, digestion, secretion; nerves, veins and arteries on the same plan. Man is everywhere capable of living on all kinds of food, in any climate; liable to the same diseases; grows to maturity slowly, and lives to the same average age. To say nothing of the identity in his intellectual and moral faculties, unity in such and so many particulars ought to place the unity of the human race beyond all further question.

2. Darwin taught that all living beings were subject to the operation of “natural selection,” the efficient cause of evolution; and so, that evolution affected all, if not to the same extent, in

identically the same way. To the hypothesis in this form, it was objected from the beginning, that the forms of plants and animals preserved in the Egyptian tombs, some of which were several thousand years old, when compared with those of the same species of the present day, showed no change whatsoever. Later investigation has brought to light facts of a similar character yet more remarkable. Huxley, speaking of the *globerigena*, the skeletons of which form, in large part, the English chalk, writes:

“These *globerigena* can be traced down to the *globerigena* which live at the surface^o of the present great oceans, and the remains of which, falling to the bottom of the sea, give rise to a chalk mud. Hence it must be admitted that certain existing species of animals show no distinct signs of modification or transformation, in the course of a lapse of time as great as that which carries us back to the cretaceous period.”

And, in the same lecture, speaking of the *Lingula*, he says:

“At the very bottom of the silurian series, in the beds which are by some authorities referred to the cambrian formation, where the signs of life begin to fail us—even there, among the few and scanty animal remains which are discoverable, we find species of molluscous animals which are so closely allied to existing forms that, at one time, they were grouped under the same generic name. I refer to the well known *Lingula*, of the *Lingula* flags, lately, in consequence of some slight difference placed in the new genus *Lingulella*. Practically, it belongs to the same great generic group as the *Lingula* which is to be found at the present day upon our own shores, and those of many other portions of the world.” (*New York Lectures on Evolution, Lect. II.*)

“Facts of this kind are undoubtedly fatal to any form of the doctrine of evolution which postulates the supposition that there is an intrinsic necessity, on the part of animal forms which have once come into existence to undergo continual modification; and they are as distinctly opposed to any view which involves the belief that such modifications as may occur must take place at the same rate in all the different types of animal and vegetable life. The facts, as I have placed them before you, indirectly contradict any form of the hypothesis of evolution which stands in need of these two postulates.” (*Huxley's N. Y. Lectures on Evolution, Lect. II.*)

This second modification of Darwin's hypothesis, made by Huxley in view of controvertible facts, is, in a scientific point of view, a very serious one, because, 1st, it admits that evolution, if it be a law of nature, is not a universal law. It is operative in

the case of some species and not in the case of others ; and this is hardly consistent with Darwin's conception of it as a mechanical law, *i. e.*, a law " acting without thought and independent of judgment." And, 2nd, it postulates the creation of a large number of primordial forms, some of which have remained unchanged from the beginning, *e. g.*, the globerigenæ and the lingula ; whilst others only, have by evolution given rise to new species ; and thus the hypothesis of evolution is exposed to the very objection urged against the theory of creation, *viz* : that it involves the idea of an extravagant expenditure of divine power in bringing our Cosmos into being.

3. A further modification of Darwin's original hypothesis has lately been proposed by Grant Allen, and seems to have been accepted by Prof. Huxley. Grant Allen, in so far as I know, is the only evolutionist who has ever attempted to carry this hypothesis out into the field, and apply it in detail to explain the phenomena there presented, to use it as " a working hypothesis," and then given the results of his attempt to the public. One of the conclusions to which this attempt at a practical use of the hypothesis has led Allen, I will give the reader in his own words. Speaking of the wood-rust, he says :

" Our fields are full of such degenerate flowers, with green or brown corollas, sometimes carefully tucked out of the way of the stamens, so as hardly to be seen unless you pull them out on purpose ; for, contrary to the general belief, evolution does not, by any means, always or necessarily result in progress and improvement. Nay, *the real fact is, that by far the greater number of plants and animals are degenerate types ; products of retrogression rather than of any upward development.* Take it on the whole, evolution is always producing higher and still higher forms of life ; but at the same time, stragglers are always falling to the rear, as the world marches onward, and learning how to get their livelihood in some new and disreputable manner, rendered possible by nature's latest achievements. The degraded types live lower lives, often at the expense of the higher, but they live on somehow ; just as the evolution of man was followed by the evolution of some fifty new parasites on purpose to feed upon him." (*Vignete's from Nature, Art. II.*)

Respecting the crab, which Allen regards as a degenerate lobster, he says :

“The crab, on the other hand, lives on the sandy bottom, and walks about on its lesser legs, instead of swimming or darting through the water by blows of its tail, like the lobster, or still more active prawn or shrimp. Hence, the crab’s tail has dwindled away to a mere historic relic, whilst the most important muscles in its body are those seated in the network of shell just above its locomotive legs. In this case again, it is clear that the appendage has disappeared because the owner had no further use for it. Indeed, if one looks through all nature, one will find the philosophy of tails eminently simple and utilitarian. Those animals that need them, evolve them; those animals that do not need them never develop them; and those animals which have once had them, but no longer use them for practical purposes, retain a mere shrivelled rudiment as a living reminiscence of their original habit.” (*The Evolutionist at Large*, Art. VI.)

I have said that Huxley seems to have adopted Grant Allen’s conclusion, “that by far the greater number of plants and animals are degenerate types, the product of retrogression, rather than of any upward development.” In his late controversy with Mr. Gladstone, he writes:

“If whales and porpoises, dugongs and manatees are to be regarded as members of the water-population, (and if they are not, what animals can claim that designation?) then that much of the water-population has as certainly originated later than the land-population, as birds and bats have. For I am not aware that any competent judge would hesitate to admit that the organization of these animals shows the most obvious signs of their descent from terrestrial quadrupeds.” (*Order of Creation*.)

The only meaning I can attach to these words of Huxley is, that he, and all others who, in his estimation, are competent judges, consider the whale and porpoise degenerate evolutes of terrestrial quadrupeds; having lost their limbs as, according to Allen, the lobster in becoming a crab has lost its tail. On the hypothesis as thus modified, I remark:

(1). If evolution results in retrogression as often as in “upward development,” and we have no certain means of determining, in any particular instance, in what direction the evolution has taken place,—and neither Grant Allen nor Huxley suggest any way of settling this point,—the hypothesis introduces inextricable confusion into the department of science which it covers.

If Grant Allen's "philosophy of tails"—"that those animals that need them evolve them; and those animals that do not need them never develop them; and those animals that once had them, but no longer use them for practical purposes, retain a mere shrivelled rudiment, as a living reminiscence of their original habit"—be adopted, it will not help matters. Take Allen's own illustration, the case of the lobster and the crab:—He decides, but gives us no reason for such decision, that the lobster is the original, and the crab its degenerate evolute. That is, applying his philosophy that at some time in the long-passed—millions of years ago, as Darwin would say—there lived an indolent old lobster "that did not use his tail for practical purposes," as most other lobsters did, and so his tail shrivelled somewhat, that his offspring inherited not only the shrivelled tail, but also the indolent spirit of their progenitor, and so, in the course of time, the tail in this family of lobsters became a mere historic relic, and they themselves were transmuted into crabs. But why may not the evolution have been in the opposite direction—the crab being the original and the lobster the evolute? We have but to suppose that "once upon a time" a frisky crab lived who, dissatisfied with his original means of locomotion, and feeling the need of a tail, began to use the posterior segment of his shell as a tail, and so started its development; and then, that his offspring inheriting not only his rudimentary tail, but his frisky disposition—and dispositions are subject to the laws of heredity—this tail gradually developed, and in course of time, the crab became a lobster. On what ground has Huxley decided that the whale is a degenerate quadruped? Why may it not be that the terrestrial quadruped is the product of an upward development from the whale? And yet, the whole force of his argument in answer to Gladstone depends upon his gratuitous assumption as to the direction in which the evolution has taken place.

(2). If evolution is as often downward as upward, as often a degeneration as an advance in the scale of being, if we have an illustration of its true nature, as Allen says, in the fact that "the evolution of man was followed by some fifty new parasites to feed upon him," the evolution of man taking place from the

upper end of the existing series, while that of the "fifty new parasites" must have been from the lower end of the same; then, it follows as a necessary consequence, that the original starting point of organic nature was not "some one or more primordial beings," some low "speck of protoplasm," but some living organism, in structure about half way between that and the most perfect animal, man. But this conclusion cannot be admitted, for it is in hopeless conflict with "the testimony of the rocks." If there is anything about which geologists are agreed, it is that the most ancient forms of organic living beings were the most simple and rudimentary. No one has spoken more emphatically on this point than Prof. Huxley:

"Preceding the forms of life now existing were animals and plants, not identical with them, but like them; increasing their differences with their antiquity, and at the same time becoming simpler and simpler; until finally, the world of life would present nothing but that undifferentiated protoplasmic matter which, so far as our present knowledge goes, is the common foundation of all vital activity." (*N. Y. Lectures on Evolution, Lecture I.*)

Several other modifications of the original hypothesis of Darwin have been proposed by later writers, but none of them affecting points in which it comes in conflict with the theory of "Creation; and for this reason, I pass them without particular notice in the present article.

Let us now place these two competing doctrines side by side, and carefully weigh their respective claims to our acceptance—premiering this one remark of Argyll:

"It would be well for those who speculate upon this subject to remember that whenever a new species or new class of animals has begun to be, something must have happened which is not in the ordinary course of nature as known to us. Something, therefore, must have happened which we have a difficulty, probably, an insurmountable difficulty in conceiving." (*Primeval Man, p. 48.*)

The doctrine of CREATION, as already set forth in this article, embraces the following particulars: (1) Creation was immediate, *i. e.*, effected, not through the intervention of natural second causes, but by "the word of God's power."—(2) It was not an

act, but a work, extending in all probability over a long period of time.—(3) God created species, endowing each with the power of propagating itself by natural generation.—(4) Of each species many individuals were created at one and the same time, man alone being an exception to this general law.—(5) The efficient power in creation was the power of an Almighty God; and—(6) This power was put forth under the guidance of a perfect intelligence, and throughout his work of creation, God was working upon a plan, and with a specific end in view. As thus understood this doctrine assigns for all the phenomena under examination a *true cause*, *i. e.*, a cause which has a real existence for all but the atheist;—a *sufficient cause*, *i. e.*, a cause commensurate with the effect;—and a *rational cause*, *i. e.*, a cause with which reason is satisfied, not only for the origin of our Cosmos, but for the beautiful order which characterizes it throughout.

To the hypothesis of EVOLUTION proposed by Darwin and defended by Huxley, I object that—

1. In assigning “natural selection” as the efficient cause in the origination of species, it assigns a cause which does not possess the character of a *true cause*; it has no real existence. Not only is all evidence of its existence, outside a few strained and far-fetched analogies, wanting; but the postulation of its existence is in conflict with the well established “law of reversion to type,” the practical effect of which is to preserve the “*status quo*” in organic nature. The fact that free, intelligent man has the ability to disturb this *status quo* within the narrow limits of species, and by continued care to maintain for a season results thus secured in opposition to this law of reversion to type, surely does not authorize the conclusion that a merely mechanical force, *i. e.*, a force destitute of intelligence and free will, has maintained a disturbance for ages, and of such an extent as to have modified the whole order of creation.

2. It is not pretended that the evolution of any new species of plant or animal has taken place in our day; or in the past, so far as authentic history can give us any information on the subject. Old species are from time to time disappearing, but the originator of a new species has no man seen. The most that can

be claimed is that, in the changes which occur in growth-development and in the production of new varieties by "artificial selection," possibilities of change are demonstrated such as evolution demands. On this point De Quatrefages has well said :

"When we get upon the ground of possibilities, I know not where we shall stop. Everything is possible except that which implies contradiction. Consequently, we are no longer on the ground of science, which demands positive, precise facts. We are living in the land of romance." (*Natural History of Man*, p. 82.)

If "natural selection" is limited in the range of its operation as "artificial selection" is—and I can see no reason why it should not be so limited—it does not furnish a *sufficient cause* for the effect which evolution ascribes to it.

The hypothesis has been modified, I may be told, so as to obviate many of the difficulties it encountered in its original form. True, I answer, but 1st, these modifications do not concern the two fundamental objections stated above; and 2nd, in the modifications which have been proposed, in avoiding one difficulty, another, often a greater, is encountered, as we have seen. The hypothesis of Evolution would seem to be one of those "crooked things" of which Solomon tells us, they "cannot be made straight." Immediate creation, it has been said, is inconceivable. This I do not admit; but even granting that such is the case, I reply: "An hypothesis which escapes from particular difficulties by encountering others that are smaller, may be tolerated, at least, provisionally. But an hypothesis which, to avoid an alternative supposed to be inconceivable, adopts another alternative encompassed by many difficulties greater, or quite as great, is not entitled to provisional acceptance." (*Argyll's Primeval Man*, p. 48.)

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