GENESIS AND GEOLOGY

THERE is a widespread belief that a scientist, especially a geologist or a biologist, cannot be true to his science and at the same time believe in the truthfulness of the Old Testament. Genesis and Geology are generally supposed to be mutually destructive. This belief is mainly due to conclusions based upon the teachings of Charles Darwin and others on the origin of species and the descent of man. Man was held to have evolved from the anthropoid ape, which in turn was the product of a long continued series of progressive changes in the animal world. This doctrine was interpreted by many people to mean that there was now no necessity to believe in the existence of a Creator, that man could never have suffered the "Fall," and was therefore in no need of redemption. As a result, the account given in Genesis of the origin of the earth, the animal world, and man was attacked, and came to be regarded by many as myth. A doctrine so destructive to their most cherished beliefs, has been fiercely and continuously attacked by those who hold that the Bible is the Word of God, divinely inspired, and therefore accurate in its statements of historic fact.

Controversy has usually raged around the evidence of so-called "missing links," the total absence of which would probably not induce scientists to modify the theory of evolution, because of the large amount of other evidence which they regard as conclusive. Had the supposed monkey-man of Java, Neanderthal man and the remains from Piltdown never been discovered, the theory of evolution would still have its powerful advocacy. It is the question of this other body of evidence which needs to be considered in relation to the Bible account of Creation, and this has usually been overlooked by writers for evangelical communities. Certain papers in the Transactions of the Victoria Institute are very helpful, and Colgrave and Short have given the subject careful and scholarly treatment in *The Historic Faith in the Light of To-day*.

The following questions should be answered:

1. Whether there exists a sufficient body of evidence upon which the theory of evolution has been built?

2. Whether the facts will legitimately bear the interpretations put upon them by scientists ?
3. Whether there is any reasonable interpretation which will satisfy both the scientific evidence and the Biblical statements ?

In this paper, the essential principles of geological science are given, the palæontological evidence upon which the theory of evolution has been based is summarised, and finally, the relation between the scientific facts and Genesis i. is discussed.

The principles of geology germane to the present discussion are as follow :

The geologist is not really concerned with the origin of the earth, but all theories concerning its growth agree that the earth in its primitive state, whether derived from a glowing nebulous mass, or from colder meteoritic solid matter, passed through a stage when a primitive crust of rocky material was formed upon the more heavy metallic interior, and also a stage during which the earth was " blanketed " from solar radiation by planetesimal dust or clouds of the primitive atmosphere. Osborn[1] says : " It is possible that in the earlier stages of the earth's history the sun's light and heat may have been different in amount from what they are at present. . . . if they were greater the atmosphere must have been more full of clouds—as that of Venus apparently is to-day—and have reflected away into space much more than the 45 per cent. of the incident radiation which it reflects at present."

A study of the way in which earthquake waves travel through the earth reveals that the crust of the earth is irregular in thickness, being thicker (perhaps forty miles) under the continental mountain ranges and much thinner beneath ocean areas. Examination of the rocks exposed on continents and islands shows that the crust is not a homogeneous layer but is composed of different kinds of rock, which have been piled upon and against one another. These rocks can be classified into two main groups, namely " Primary rocks," which have consolidated from a molten state and " Secondary rocks," the materials for which were provided by detritus from the Primary or igneous rocks. The " secondary " or sedimentary beds were originally laid down

[1] Osborn, p. 43.

horizontally in lakes or seas, but may subsequently have been disturbed by earth movements or intruded by molten igneous material. Fossils are found in sedimentary rocks such as limestones, sandstones, and clays, but none are found in rocks which have crystallised from the molten state. The *relative* ages of beds of rock are established by the *law of superposition*, that is, newer beds were laid down above older ones. Except in places where earth movements have altered the original relative positions of beds this law is axiomatic.

Knowledge of the relative age of fossils depends fundamentally upon the same principle—superposition of younger rocks upon older. In this way the time of appearance of fossils at any place is determined by its position relative to other forms below and above. It is now known that in all parts of the world where the succession of rocks has been examined there is agreement as to the general sequence of fossil forms. It used to be thought that migration of faunas would lead to reversal of the order of faunal assemblages in different places. This has been found by experience to be a rare exception and not the rule.

Fossils can therefore be used to correlate rocks in different areas, even in places as far apart as separate continents. The "*principle of faunal dissimilarity*, which postulates that the fossils found in the several rock formations are peculiar to those strata" is the second important principle of geology. It is therefore possible to follow the history of life upon the earth by means of the fossil remains. The pages of this record are not absolutely complete because fossils need special conditions for preservation, land animals and land plants standing smaller chances of being preserved than animals which lived in lakes and shallow seas, and of the latter only the hard parts have usually survived, although occasionally every organic structure has been so well preserved by natural chemical means (for example, fossil plant remains of various ages), that under the microscope the details are as easy to study as in present day ones. Complete insects, marvellously preserved in amber, from the Oligocene of the Baltic area represent probably the most perfect fossils.

That the series of sedimentary strata, many miles in thickness (estimates of up to sixty miles have been made) took immense ages to build up is believed by all geologists. Indisputable evidence for this lies in the fact (to take only one argument), that the size of the individual grains composing for example the

sandstones and conglomerates of all ages are comparable with those forming in different places to-day, and must therefore have been transported by currents of water and winds having similar speeds to those of to-day. In addition, time must be added for local gaps that occur in the normal rock sequence. These *unconformities*, as they are called, are due to the wearing away of ancient land surfaces by rain, river, and sea action. To this must be added the time necessary for the earlier history of the earth before life appeared. The earliest fossiliferous rocks must therefore have been in existence millions of years before man appeared. This general statement is not invalidated by the fact that scientists have arrived at various numerical results by using different methods of computation. Perhaps the most trustworthy method of calculation is based upon the rate of accumulation of sediments. It will be realised that as these rates vary from place to place and from time to time, different observers will get various results, but all values are in excess of 34 million years (Sollas 1909) and most fall below 100 million years.[1]

The earliest well developed faunas appear in rocks of Cambrian age and are all invertebrates. A few evidences of life (referred to Algae) have been found in Pre-Cambrian rocks, but whereas it is believed by geologists that the Cambrian faunas must have had a long series of ancestors, *undoubted* fossil remains are rare. *Beltini danai*, claimed as a fossil crustacean from the Pre-Cambrian shales of the Algonkian Belt Series, has not been accepted as such by all. All the principal phyla of invertebrates were well established in Cambrian times.

Following the invertebrates of the Cambrian come in turn the first vertebrates (fish), amphibians, reptiles and birds, mammals, and lastly man. The following table summarises the main features of faunal succession.

TABLE SHOWING THE ORDER IN WHICH FOSSIL FORMS FIRST OCCUR IN THE GEOLOGICAL SUCCESSION.

Age of Man	Tertiary	Neogene	Pleistocene	Man.
			Pliocene	Living species of mammals and plants.
Age of Mammals			Miocene	Living genera of mammals.
		Palæogene	Oligocene	Living families of mammals.
			Eocene	Living orders of mammals and genera of plants.

[1] Osborn, p. 29.

Age of Reptiles	Mesozoic	Cretaceous	Flowering plants.
		Jurassic	Birds (Archæopteryx) Sea reptiles.
		Triassic	Early mammals.
Age of Amphibians	Palæozoic	Permian	
		Carboniferous ..	Large amphibians.
		Devonian	Trees and other land flora.
Age of Fishes		Silurian	Fish, insects.
		Ordovician	Early vertebrates.
Age of Invertebrates		Cambrian	All principal invertebrate phyla. Seaweeds.
	Eozoic	Pre-Cambrian ..	Doubtful algæ and invertebrates.

Note.—By further search representatives of some of the above groups may be found lower in the sequence, but the general order is well established.

The successive appearances of higher forms of life as shown above is one of the great facts of geology. This fact forms an important part of the evidence upon which the theory of evolution is built. Further, within many series of sedimentary beds are preserved fossils which show such small progressive changes as they are traced vertically from one horizon to another that it is difficult to believe that the later forms are not the descendants of the earlier ones. Examples such as the minute progressive changes in the Cretaceous echinoid *Micraster*, the Jurassic *Ammonites*, and the *Ostrea-Gryphæa* succession in the Lower Lias, can be given. The existence of these more gradual sequences is a second fact which has been used to uphold the theory of evolution. About the existence of the above *evidence* there is no divergence of opinion amongst specialists in the subject.

These in brief, then, are the fundamental contributions of Palæontology to evolutionary evidence. How the evolutionist regards them may be given in Osborn's own words (Osborn, p. 276):

"The evidence for this continuous and more or less adaptive direction in the simultaneous evolution of numberless characters which can be observed only by means of an ancestral fossil series was unknown to the master mind of Darwin during the preparation of his *Origin of Species* through his observations on the variation of domestic animals and plants between 1845 and 1858; for it was not until the discovery by Waagen, in 1869, of a continuous series of fossil ammonites, in which minute changes originate and can be followed continuously, that the rudiments

of a true conception of the orderly and continuous modes of evolution which prevail in nature were reached. Among invertebrates and vertebrates this conception has been abundantly confirmed by modern Palæontology in all its branches, namely, that of a well-ordered continuity as the prevailing mode of evolution. This is the greatest contribution which palæontology has made to biology and to natural philosophy.

" Discontinuity is found chiefly in those characters in which a continuous mode of change is impossible. As to the physico-chemical constitution of animals and plants it has been well said that there can be no continuity between two distinct chemical formulæ, or in many physicochemical functions and reactions. There are also certain form and proportion characters in which continuity is impossible—for example, the sudden addition of a new tooth to the jaw, or of a new vertebra to the backbone.

" From these well-ascertained facts of the sudden or saltatory appearance of characters, some have rashly inferred that there can be no continuity between species, whereas it is now known in mammalogy in palæontology, and to a less extent in ornithology that a large number of so-called species in nature show a complete continuity."

The question might now be asked whether on this evidence, the evolutionist is justified in believing that life has originated in some lowly cellular organism and has continued to advance continuously through the various stages of invertebrates, fishes, amphibians, reptiles and mammals until finally man was evolved ? Some have maintained that even in the most perfect and gradual series of fossils, such as those already quoted, no proof of genetic relationship is forthcoming. For example Davies remarks,[1] " What the evolutionist, to my mind, has to prove, is not the succession of forms (to which the rocks give ample witness), but the actual genetic continuity between those forms. Palæontology is the only branch of science to which we can appeal for evidence upon this point, and Palæontology in my experience is incapable of demonstrating genetic continuity anywhere" ; and, again, " there is no method known to science whereby even one single step in descent can be established apart from historic testimony," and in support he quotes Dr. Bather (of the British Museum and who is an evolutionist) as saying, " The palæontologist cannot assist at a single birth."[2]

[1] Davies, (1), p. 38. [2] Davies (2), p. 221.

Major Davis' view will appear to many scientists to be extreme, and indeed he himself confesses (*op. cit*, 4) that in describing a succession of certain Tertiary Echinoderms the temptation to "regard modifications of type found at certain horizons as evidence of progressive evolution through descent was almost irresistible." In the same paper it is suggested that each group of slightly modified forms was separately created, or, alternatively reached their present positions by local changes in conditions (migrations ?). The present writer firmly believes in special creative acts of God, but thinks that in cases similar to that quoted above, the attempt to defend separate creation for each successive assemblage makes more difficulties than are necessary. For, if the sequence is not admitted to be a genetic one no descendants of lower groups can occur at higher horizons. This means that either *all* the progeny migrated to another locality or that the creatures were sterile—both suppositions being more difficult of belief than that the sequence is a natural genetic one. If it be maintained that the sequence of such closely related forms is due to incoming migrations, it is difficult to see how the *accident* of migration resulted in so orderly and progressive a series. Statistical studies of such groups have recently begun. One instance will suffice in illustration, namely, the *Gryphæa* sequence in the Lower Lias.[1] If numerous specimens are taken from one horizon, and a variation curve is made for any one character in which the group as a whole progresses such as the coiling of the shell, it will be found that the community is homogeneous. If the variation curves at successive horizons are plotted with respect to horizon and number of whorls, it will be seen that whereas the group progresses as a whole, the successive curves overlap somewhat. The point to be noticed is this—that some specimens from one horizon can be fitted into place at other near horizons, but occupy a different relative position in their new setting. This is strong evidence for continuity. "Such a progressive stock must be regarded as a 'plexus' or a bundle of anastomosing lineages" (Trueman, 1926),[2] and not as a simple lineage.

The elucidating of long lines of descent throughout the geological sequence is fraught with many difficulties. Complications may arise because of convergence, by which two forms which are heterophyletic display similar form or structure.

[1] Trueman (1). [2] Trueman (2).

Gaps may occur in the sequence. The possibility of these being bridged in the future must be borne in mind. Work being done at the present time in Asia is bringing to light many hitherto unknown forms of mammals, &c. Studies based upon the law that " ontogeny (life history of the individual) repeats Phylogeny" (history of the race)," have been made. But this law has many exceptions. Not only does the ontogenetic development sometimes skip previous stages, but cases have been cited by Berg[1] which indicate that ontogeny may sometimes be prophetic and not only recapitulative. Again new forms have a habit of appearing as if from nowhere, as do the Angiosperms (flowering plants) in Cretaceous times, and groups like the Carboniferous amphibians simply disappear. The position of the geological genealogist is described thus by Coulter,[2] " It is something like the difference between the tracks in a switchyard and the main line. We have succeeded in investigating the switching, but the through trains are baffling."

We may summarise the position fairly by saying that Palæontology presents to our gaze a succession of fossil forms of life from primitive extinct invertebrates to living species of mammals, some groups showing apparently continuous changes. Man has, relatively to the geological time scale, appeared very recently indeed, and last of all.

Is the evolutionist justified in basing a theory of evolution upon this evidence ?

For eighty years scientists have worked intensively at the problem of the cause of evolution. Darwin's thesis has been weighed in the balance and found wanting. Osborn[3] says, " it is incumbent upon us to discover the *cause* of the orderly origin of every single character. The nature of such a law we cannot even dream of at present, for the *causes* of the majority of vertebrate adaptations remain wholly unknown." Coulter[4] states, " There is as yet no adequate explanation of progressive evolution, the advance from one group to another of higher rank." Other scientists have made like confessions.

Surprise has been expressed that, having frankly confessed ignorance as to the *causes* of evolution, scientists have not given up the theory. This is hardly to be expected of them, for what is believed in the scientific world depends upon evidence and not

[1] Berg, p. 74.
[2] Coulter, p. 325.
[3] Osborn, 277.
[4] Coulter, p. 324.

upon knowledge of causes. The palæontological record is held by scientists to be indisputable evidence of continuous change in organisms, and as long as this evidence remains scientists will have *ground for faith* that evolution has taken place, *at least in the past.* Scientists have no evidence that progressive change is now taking place. In nature at present, the type is preserved, and modifications in animals and plants introduced by the interference of man are lost when the organism is left to breed freely. "The parent cannot pass on to offspring an element, and consequently the corresponding property which it does not itself possess."[1] It is stated that Pavlov is inclined to withdraw his views on inheritance of acquired characters.[2]

So we may conclude: In the first place, that there is a large body of evidence, perhaps imperfectly understood, but certainly witnessing to orderly changes in whole communities of organisms *in the past,* and that these changes appear sometimes in continuous sequence, sometimes suddenly.

In the second place, the cause of these changes is absolutely unknown to science.

And lastly, no proof exists that comparable changes are taking place in nature to-day.

COMPARISON OF GENESIS I. AND THE FINDINGS OF GEOLOGY

We are now in a position to discuss the relation of the conclusions of geological science to the record in Genesis i.

"In the beginning God created the heaven and the earth." Here is revealed the First Cause. This is something beyond the ken of science and comes not by research, but by revelation. The geologist measures time in millions of years and goes only part of the way into the earth's past history. The astronomer visualises changes taking place through ages beyond these again, so that of the vast antiquity of the earth no doubt can remain, but how far back this beginning was we cannot say.

It will be best first of all to compare the geological record of life with the order of creation as given in the sacred record.

[1] Bateson.

[2] Rendle Short, p. 6 of advanced copy of paper; footnote.

If a comparison is made between the table given on pp. 348-9 and the sequence of events from verses 11-13; and 20-26, a close parallelism will be seen, with one outstanding exception—that of the plants. In the Biblical account land plants are created first. These include the cryptograms (" Deshe," not " grass " as in the authorised version), it also contained seed-bearing herbs, and trees bearing fruit. Next in verses 20, 21, and 22, appear the marine invertebrates together with insects, fishes and amphibians.

" *Sheretz* " or " swarmers " (the moving creature, v. 20) includes all the lower animals of the waters with the fishes and amphibians, as well as land snails, insects, spiders, scorpions, and small reptiles.

" *Oph* " translated " fowl " (verse 20) is a wide term which also includes winged insects (Lev. xi. 20-23).

" Tanninim," verse 21, translated " great whales," means crocodiles, serpents or elongated animals. It could refer to the amphibians of late Palæozoic times and the sea reptiles of Mesozoic times like Ichthyosaurus or Plesiosaurus. On the sixth day groups of land animals are brought into being, and lastly, man.

The " living creatures " of verse 24 are designated by three words, " Behemah," " Remes," and " Haytho-eretz." The first denotes not only cattle but the larger herbivorous quadrupeds, the second refers to small quadrupeds of both mammalian or reptilian classes, and the last includes especially the larger carnivora (Dawson, 1888). This section obviously introduces the mammalia.

This order presents so striking a similarity to the sequence of life represented by the fossils, that it is difficult not to believe that the written account refers to the very events of which the fossils are also a record.

The one exception must be noticed. Plants come first in the Genesis account and the oldest plant remains have only been found fossil in rocks of Devonian age. This is really no difficulty. All biologists would agree that before animal life could exist plants would be necessary to support it. Indirect evidence of plant life is to be found in Pre-Cambrian rocks in the occurrence of graphite and bitumen which may possibly have had a vegetable origin, similar to that of coal.

The Bible states that the seed bearing plants originated very early. Up till a few years ago, it was thought that this

could not be correct, but seed bearers are now commonly found in the Palæozoic rocks, in which a flora as diversified as that now living existed. It will be found no doubt, as time goes on, that our knowledge of fossil floras will be extended farther down into the Lower Palæozoic.

"It has been the habit of geologists and biologists alike to think of the ocean as the probable habitat of the earliest forms of life, and not unnaturally; the larger part of the imperfect record of early life was preserved in marine deposits. . . . The oceanic view of the origin of life is . . . however, little more than a cosmogonic assumption."[1] While Chamberlain, from whom this quotation is taken, does not favour the presence of an all enveloping ocean as a stage in the growth of the earth, he proceeds to show that the earliest plants could only get the chemical nourishment they need, and the stability necessary to plant life in the soil of the primitive earth, or in pools on the continental surface. Osborn[2] reaches a similar conclusion as to the habitat of the earliest forms of life: "Thus we reach our first conclusion as to the origin of life, namely: it is probable that life originated on the continents." These later views agree with Genesis i. 11.

Does this remarkable similarity between the written and the fossil records mean that the former describes events which resulted in the latter? The present writer so thinks.

Believers in the accuracy and inspiration of the Bible are divided into two schools on this question. They might be called (to follow a well known precedent), the Catastrophists and the Uniformitarians. The former maintain that a catastrophic judgment fell upon the primitive perfect world, and translate verse 2, "the earth *became* waste and empty." Taking this view, it is necessary to "relegate the fossils to the primitive creation and no conflict with the Genesis cosmogony remains" (Schofield Bible), and to reckon the days as of twenty-four hours each.

The other view regards the written record as a description of a continuous series of events, the creative days being ages. It is far from the writer's intention to be rigidly dogmatic, and, to one who believes in miracle, the catastrophic theory could be accepted if very weighty evidence was not against it. It appears that the theory was first propounded by Dr. Thomas Chalmers

[1] Chamberlain, p. 250.
[2] Osborn, p. 35.

in 1814 to reconcile the geology of that time with Scripture. The science of geology has made vast additions to its knowledge since that time, and Dr. Chalmers had no information as to the order of life through the ages. A study of history shows how the views of men as to the science of the Bible has always reflected just the amount of their own knowledge and no more, and in each age Scripture has been quoted in support of erroneous views. This can only be done successfully when texts are taken from their contexts and words given rigid meanings which their use in Scripture does not warrant. To divorce two records which are so closely linked " creates scientific difficulties greater than those it is intended to solve, especially with regard to the fauna and flora of islands—to quote one instance out of many, the persistence of marsupials and monotremes in Australia, allied to those found all over the world in Rhaetic and later Mesozoic times. Again it seems very improbable that those Miocene, Pliocene and Pleistocene animals and plants which are identical with modern species should have been annihilated, and then recreated."[1] It is this question of the absolute continuity of the fossil record with the present day animal and plant life, coupled with the fact of its remarkable agreement with the Mosaic account that prohibits their separation on any grounds except that of conclusive proof. The creative days may thus be reckoned to have been ages.

The body of evidence supplied by geology is to be reckoned with, for it cannot be explained away. It cannot be ignored, because Christians are challenged on these problems, and must be prepared " to give an answer to every man that asketh you a reason." To place the fossil evidence between Genesis i. 1 and 2 is one way out of the difficulty, but the new problems that arise are very great indeed.

Perhaps it will be well to summarise the evidence for continuity between the fossil record and modern species :

The evidence for continuity between the fossil sequence and the present *plant and animal* world is overwhelmingly strong. Present day species of plants and animals descend far down into the geological strata. For example, " The plants found in the Forest Bed (Pliocene) include upwards of 130 species of flowering plants which are nearly all living in Norfolk at the present day." In the Norwich Crag (still older) of the marine molluscan fauna

[1] Colgrave and Rendle Short, p. 51.

" nearly 90 per cent. of the species are still living."[1] A summary of the gradual decrease of living molluscan species at earlier and earlier horizons in the Pliocene is given :

	Not known living.
Icenian	11 per cent.
Butleyan	31 „
Newbournian	32 „
Waltonian	36 „
Gedgravian	38 „

Lower still, "In the Marine Tertiary faunas, gastropods and lamellibranchs are extremely abundant, and, in general, approximate closely to existing assemblages, though most of the species are extinct."

Among the older Tertiary floras preserved in Britain are genera of poplar, laurel, acacia, oak, elm, willow, maple, and many genera of plants allied to those now only found in tropical countries.

"By the end of Cretaceous times the flora had assumed the general aspect that it has to-day. The cycadophytes had virtually disappeared, being replaced in the position of dominance by the angiosperms, but ferns and conifers still remained an important element in the flora."

It remains now to discuss briefly the attitude of the Christian to both the geological and Biblical evidence.

The materialistic evolutionist regards the process of evolution as a continuous one ; as taking place according to fixed laws—therefore no room is left for miracle ; and as continuing by means of resident forces—that is, no room is left for a Creator. It is obviously impossible for a man to hold this theory and be a Christian. The Christian with the same evidence before him must come to a different conclusion. What shall it be ?

The normal evolutionist sees continuity everywhere. There is evident discontinuity in the scriptural account, the points of discontinuity usually emphasised by Bible students being the three places where " bara " (create) is used in the original, namely Genesis i. 1 ; verse 21, and verse 27, to express the creation of matter, the *lower* animals and man. The command in the case

[1] Neaverson, pp. 483, 467, 431, 432.

of the formation of plants is "Let the earth bring forth," and in the case of the higher animals (verse 24), "Let the earth bring forth" coupled with "God made" (*asah*—"make" or "develop"). Sir J. W. Dawson says,[1] "It is remarkable that the animals of the sixth day are said to have been 'made,' not created, as if, after the first peopling of the world with lower creatures, the introduction of the higher forms of life was an easier process. The modern evolutionist may take this much of comfort from our ancient authority." The exegetists who emphasise the discontinuities marked by the use of the word "bara," do not satisfactorily explain its omission from the account of the creation of the first living forms, namely, plants, where one would expect to find it.

Without going into these questions, it is important to notice that discontinuity is shown in Genesis i. in at least five cases, namely in creation of matter, plants, lower animals, higher animals, and man. Now although this discontinuity is emphasised at these points, the Biblical account nowhere says that each species, living after the birth of each new group, was separately created. It might be so inferred, however, from the fact of fixity of species to-day. The remarkable fact is this, that throughout geological ages, species in the sense understood to-day were apparently not fixed.

It might be argued that the animals which were created were commanded to reproduce after their kind. It has been pointed out elsewhere that the use of this phrase in Leviticus xi. gives it the sense of "in all their varieties."[2] But Berg's concept[3] might help us here. And Berg is not a theologian but a scientist. He visualises the varieties of animal life as having arisen from *many original forms*, the descendants of which changed progressively along their own lines regardless of other and independent stocks. Whole communities of living forms change according to some law. From the Bible account we understand that many forms were originally created and that they had descendants. Were these descendants absolutely fixed, and never changed, or did each group reproduce "after his kind"—"his kind" (descendants) being changed in form according to some law? If they did not change at all but were immutable, then it

[1] Dawson, p. 29.

[2] Rendel Short, p. 17 of article.

[3] Berg, p. 404.

appears that the Genesis story is not the one seen in the rocks. But we have already demonstrated the continuity between the living unchangeable forms and the fossil record. It therefore appears that the progressive change ceased about the time when man appeared—intensive experiment having proved the present fixity of species.

After the creation of man, we are told (Genesis ii. 2 and 3), God " ended the work which He had made " and " rested from all His work which God created and made." This *creative* work (and this only), having been finished, it would follow that both the apparently continuous and saltatory changes in organisms would be arrested.

Many scientists have considered the continuity of forms seen in the strata to lead through a series of intermediate " links " to man. It is the province of Archæology to trace the early history of the human race, but on the boundary between the two sciences there lies the evidence of the peculiar skulls of the Javan monkey-man, the Neanderthal " men," the Piltdown " man " and others. They have been found in association with worked flint implements of lower Palæolithic age. Piltdown " man " is thought by some authorities not to have had the power of distinct speech. Whether these members of a lost race or races were men in the Biblical sense no one can say. The restoration of the Javan remains is exceedingly doubtful. Certain it is that man as he is, finds a great gulf fixed between himself and the animal creation. There is no bridge to span the break that lies between the earth-grubbing animal and man who, with the great endowments of a moral and spiritual nature, can by God's grace hold communion with his Maker.

As to the age of the human race, geology can only say that man has appeared very recently indeed. Human remains are found in the Pleistocene, or Ice Age. Various estimates as to the time of the retreat of the ice from the northern continents have been made. The nearest estimates to the ones which have been based on the Biblical record are 7,000 years (Wright) and 9,000 years (de Geer).

The writer has sought to show that it is possible to accept the main conclusions of the science of geology without in any way being an evolutionist, and that while he may believe in progressive changes in species in the past, this in no way commits him to any sort of belief in an animal origin of man or lessens his regard

for the Bible as the Word of God. The marks of its Divine origin become plainer and more numerous as true knowledge grows.

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