

FAITH  
AND  
THOUGHT

1976  
vol. 103  
No. 3

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A Journal devoted to the study of the inter-relation of the  
Christian Revelation and modern research

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The Roles of the Bible and of Science in  
Understanding Creation

Many mutually inconsistent views on the subject of creation have gained acceptance among Christians. In this paper Mr Byrt outlines their strengths and weaknesses and examines the status of creation in Christian faith.

Since the creation-evolution controversy erupted about a century ago following the publication of Charles Darwin's *Origin of Species*, there have been significant contributions to the evidence available. It might have been expected that this would have clarified the main issues and led to some clear-cut answers; but this has not been the case. The subject is so inextricably linked with philosophical issues that it is virtually impossible to separate established facts from the predispositions and prejudices of the individuals contributing to the discussion. Nevertheless, every thinking person feels a need to fit 'the facts' - at a level appropriate to his depth of study - into a self-consistent picture. It will therefore be our aim to formulate a positive view of creation rather than content ourselves with pointing to weaknesses in the generally accepted theories of evolution.

*Defining Evolution*

The word '*evolution*' of itself signifies merely an unrolling or unfolding. The aspect with which we are concerned is designated '*organic evolution*' or '*biological evolution*'. This is the theory that all existing forms of plant and animal life have arisen by natural descent from one or more simple forms. That the topic is philosophically '*loaded*' is indicated by the definition of evolution included with others in the Shorter Oxford Dictionary: "The origination of species conceived as a process of development from earlier forms and not as due to '*special creation*'."

*Micro-evolution.* Almost all higher forms of life show some potentiality for variation, and in response to changes in environment (either in different places or at different times), one variant may be selectively favoured with respect to another variant of the same species. Many evolutionists argue that these small changes, allowed

to accumulate over many generations, will produce new species, and then new families, and finally all the changes from single celled ancestors through invertebrates, fishes, reptiles and mammals to man. They therefore feel justified in including these supposed changes in their definition of evolution.

Many small evolutionary changes have been observed either in nature or in the laboratory. One that is frequently quoted is 'industrial melanism' in certain moths. Before the advent of industrialization, light coloured moths were 'normal', and darker ones were seen only occasionally. As the trunks of trees in industrial areas became blackened with soot, the predominant variety became the darker one, and the light variant became 'abnormal'. (H.B.D. Kettlewell, 1959) This is readily explained by the vulnerability of moths of dissimilar colouring to predation by their natural enemies, the birds. In fact, all such cases can be viewed by the creationist as demonstrations of the wisdom of the Creator in equipping living things with an inbuilt protection against limited fluctuations in their environment. There is *no* experimental evidence that such changes can accumulate indefinitely; to believe that elephants and men have arisen in this way from the same parent stock represents an act of faith on the part of the evolutionist. It is therefore a source of confusion that the same term 'evolution' is applied both to these small, demonstrable changes (sometimes termed *micro-evolution*) and also to those large changes necessary to the doctrine of transformism resulting in new families, classes and phyla (sometimes termed *macro-evolution*). Dr. G.A. Kerkut of the University of Southampton comments:

There is a theory which states that many living animals can be observed over the course of time to undergo changes so that new species are formed. This can be called the 'Special Theory of Evolution' and can be demonstrated in certain cases by experiments. On the other hand there is the theory that all the living forms in the world have arisen from a single source which itself came from an inorganic form. This theory can be called the 'General Theory of Evolution' and the evidence that supports it is not sufficiently strong to allow us to consider it as anything more than a working hypothesis. It is not clear whether the changes that bring about speciation are of the same nature as those that brought about the development of new phyla. The answer will be found by future experimental work and not by dogmatic assertions that the General Theory of Evolution must be correct because there is nothing else that will satisfactorily take its place.

*The Origin of Life.* When Prof. J.B.S. Haldane (1949 p.8) represented the Rationalist Press Association in a debate against spokesmen of the Evolution Protest Movement, he agreed to do so "provided that the question of the origin of life be excluded and that the discussion

should be limited to organic evolution — the theory that existing animals and plants, and also mankind, are descended from simple forms of life." Since that time there has been much speculation on the stages by which life might have been generated by purely 'natural' means, and most evolutionists would now include the spontaneous generation of life as an essential part of their theory.

Life is often pictured as arising by steps something like the following:

1. The earth's primeval atmosphere is supposed to have consisted of reducing gases such as hydrogen, methane and ammonia with water vapour and nitrogen.
2. Radiation or electric discharges acting on this mixture produced simple organic compounds such as amino acids, containing carbon, oxygen, hydrogen and nitrogen.
3. These simple molecules combined to form very large molecules such as proteins, which are necessary for even the lowliest forms of life.
4. It chanced that one or more of these molecules possessed the ability — in the presence of a suitable nutrient medium — to replicate itself, and so many similar molecules were produced.
5. Details like the formation of a containing membrane and the presence within this membrane of the other molecules necessary to catalyse the replication reaction being conveniently assumed, life followed automatically under the influence of physical and chemical forces.

The part of this chain supported by experiment is that if the right gas mixture is carefully chosen in the laboratory, simple compounds can be produced by repeated electric discharges; and even somewhat larger molecules may accumulate, provided steps are taken to remove them from the destructive environment of the experiment as soon as they are formed. All the other links rest largely on faith, as the following points show:

1. There is no evidence that the earth's atmosphere ever consisted of the gases demanded by the theory and much evidence that it did not. "The composition of sea water and atmosphere have varied somewhat during the past; but the geologic record indicates that these variations have probably been within relatively narrow limits." (Rubey, 1951) "Sedimentary rocks exhibit much the same characteristics [especially as regards the ratio of ferrous to ferric iron] throughout

geological time. This would be unlikely were the composition of the atmosphere at some earlier date radically different from what it is now." (Mason, 1952, p.183). There is no evidence that the nutrient nitrogen-containing medium ("soup") ever existed, especially as the earliest rocks are not associated with high N-containing deposits (Brooks and Shaw, 1973). Dissociation of water vapour by the sun's actinic rays (see Cloud 1968f) would leave oxygen in excess, the hydrogen escaping into space. This makes intelligible the fact that Martian soil evolves oxygen when moistened. Methane and ammonia are not found on the moon, Venus or Mars and both are absent in volcanic gases (for analyses of these, see Rubey, 1951; Fridriksson, 1975, p.48 gives analysis for Surtisi). Hydrocyanic acid which could give organic compounds, has often been postulated (Raff and Meaburn, 1969) but the absence of Prussian blue as a mineral seems to rule it out. According to Brinkmann (1969) oxygen build-up in the atmosphere must have been rapid from the start which "precludes biological evolution as presently understood".

2. Before the oxygen in the atmosphere had produced a protective ozone layer, life could not have existed on earth unless protected, either by a considerable depth (estimated at 10 metres) of water, or in some other way.

3. Coppedge (1973) applies probability theory to the formation of the types of molecule necessary for life. He concludes that there is about one chance in  $10^{161}$  that a single usable protein would have been produced by chance during the time claimed as the age of the earth.

4. Even if a 'soup' of protein molecules were produced in some warm pool, there is no good reason to suppose that life would appear. No one understands just what physical and chemical factors distinguish a living amoeba from one that has just died; and no one has ever succeeded in bringing lifeless matter to life in the laboratory.

#### *"Genesis" and Theories of Creation*

Genesis 1 teaches that God created the heavens and the earth. As soon as we venture beyond this basic statement, however, we encounter among Christians a bewildering collection of theories purporting to explain or interpret the Genesis account. Most of these theories have been tabulated by Donald England (1972, p.116), and we here present his list in note form to illustrate the range of theories put forward, all by scholars anxious to do justice to the words of Genesis:

1. Literal days, young earth... Fossils mostly due to global Flood.
2. Young earth, but series of catastrophes including Flood.
3. Gap or restitution theory; earth became void.
4. Multiple gap; 24-hour creation days separated by long ages.
5. 'Days' of Gen.1 equated with geological ages.
6. Days of revelation in which God revealed creative acts.
7. Poetic presentation; futile to attempt correlation with science.
8. Theistic evolution: God created matter and laws, evolution followed.

To every one of these interpretations some objection has been raised on either biblical or scientific grounds. Some of these objections we shall be considering in greater detail; for the moment it suffices to note very briefly the general grounds of objection:

1. Not only light but "evening and morning" exist before sun, moon and stars. Temperature too is 'normal', since water exists in both liquid and vapour forms. Vegetation (and presumably photosynthesis) appears before the sun. The work of the Flood in creating several km of sedimentary rocks with many millions of fossils appears excessive.
2. Like the first interpretation, this is confronted by many indications of earth's antiquity — radioactivity and associated dating methods, continental drift, ice ages, coal formation, etc.
3. The rendering "became" has been opposed by a number of scholars. See this JOURNAL, 72, 207. E.J. Young (1964, p.9) goes further in insisting that, quite apart from any catastrophe, "the chapter is not concerned merely with the reformation of already existing material. Its theme is far grander than that." However, the thesis is defended on linguistic grounds by A.C. Custance (1970). On the scientific side, one might expect a global catastrophe such as to necessitate the re-creation of all life forms, and even of the sun, to present an obvious feature of the geological record.

4. This is a "hybrid" theory lacking the appeal of simplicity -- a feature the more desirable because of the extreme brevity of the Genesis record.

5. The Hebrew *yom* is often used of an indefinite period -- even in Gen. 2:4, "In the day that the Lord God made the earth and the heavens." It has been claimed, e.g. by J.C. Whitcomb (1972), p.27 that "in historical narratives the numerical adjective *always* limits the word to a twenty-four hour period." However, the whole contention of some of the other interpretations is that the Genesis account is *not* an historical narrative; and for some expositors Whitcomb's appeal to the evenings and mornings of Dan. 8:26 as 2300 literal days would weaken rather than strengthen his case. However, even with "days" involving millions of years (as in W.J. Beasley, 1955), exact correlation between Genesis and geology is difficult; e.g. the appearance of trees bearing "fruit" before land animals or even aquatic life.

6. This thesis is argued cogently by P.J. Wiseman (1949). It has the advantage that the order of revelation need not follow rigidly the actual order of appearance. The background of the sabbath law given in Exod. 20:11 presents an exegetical problem; "for in six days the Lord made heaven and earth, the sea, and all that is in them, and rested the seventh day." However, the point here made about the Sabbath is that man is to imitate God by ceasing to work on the seventh day, and on this view Adam must have noted that this is just what God did. But the impact would surely have been greater if the devout Israelite had himself been the witness of the creation plus resting, rather than merely the recipient of some form of message about how Adam had witnessed it.

7. M.G. Kline (1970, p.81) states that "the prologue's literary character ... is that of simple observation, and a poetic quality, reflected in the strophic structure, permeates its style." As against this, E.J. Young (1964, p.105) says: "The characteristics of Hebrew poetry are lacking. There are poetic accounts of the creation and these form a striking contrast to Genesis one."

8. Some writers see incompatibility with particular biblical phrases such as "according to its kind". However, this is to place rather heavy weight on a few words. More important are the scientific problems such as the origin of life and the discontinuities in the fossil record -- perhaps the more telling because the theistic evolutionist is not under the same philosophical compulsion to believe as is the atheist.

*Hermeneutics*

It is evident that most of the above interpretations are mutually contradictory, and we must ask: On what grounds is one interpretation to be rejected, and another accepted?

When we look at the range of the objections listed, it becomes evident that the answer to this question will depend not on clear-cut evidence but on *hermeneutics*: the general principles of interpretation we apply in our study of the Bible. Many variants can be detected in this area, but for simplicity we shall distinguish three main approaches.

*Literalist.* Some would use the word 'Fundamentalist' here. However, this word is ambiguous. As John Stott (1970, p.43) reminds us, "The Oxford English Dictionary has preserved the early meaning of 'fundamentalism' as 'strict adherence to traditional or orthodox tenets ... held to be fundamental to the Christian faith' and mentions biblical inerrancy only as an example." The attitude to which we refer here claims not only that the Bible is inerrant but that its language must be taken literally when ever possible. It sees the Bible as authoritative for every field on which it touches, however incidentally; any conflict with, say, geology means that the geologists must be wrong.

*Liberal.* For this group, the Bible reflects a progression in man's understanding of God and his universe, penned by men living lives enlightened by his Spirit. Views on scientific themes are likely to be those current at the time of writing, and are frequently erroneous; but this does not diminish the Bible's value on spiritual matters.

*Moderate.* While the original documents are accepted as divinely inspired, the wording is accommodated to the social and cultural environment at the time of writing and the need to be meaningful to readers of widely differing background over many centuries. Numerous figures of speech, types and allegories are used, and the 'true' meaning will not always be self-evident. When, e.g., the Bible attributes psychic properties to bowels, kidneys, heart, liver and bones, this neither proves the Bible "unscientific" nor disproves its inspiration, but "the divine revelation came in and through these modes of expression and the infallible truth shines *through* them" (Ramm, 1970, p.211).

In some areas these different approaches yield only marginally different conclusions, and it might be thought that they are of interest only to the academics. Applied to the age of the earth, however, they make the difference between a few thousand and a few



thousand million years. Further study in such areas thus becomes virtually impossible until some decision is made on the general approach to Bible interpretation.

It is important to realize that there is no single answer which is self-evidently *the correct* one. Interpretation of a particular passage, or of a whole theme, inevitably has some subjective element. There is one NT passage (2 Pet. 1:20) which deals with the interpretation of Scripture, and significantly that passage has itself been the subject of different interpretations. "First of all you must understand this, that no prophecy of scripture is a matter of one's own interpretation..." Peter precedes this by a reference to the fact that he and the associated apostles, as eye-witnesses of the majesty of Jesus, had "the prophetic word made more sure." (The RSV, used in most places throughout this essay, gives a different slant from AV in this passage.) He follows it by noting that the *giving* of scripture was a work of the Holy Spirit: "men moved by the Holy Spirit spoke from God." These and other NT passages suggest that our spiritual vision in the understanding of scripture is at its keenest, when

- (i) we relate all that has been written, whether in OT or NT, to the work of our Lord, past, present and future;
- (ii) we acknowledge the utter inability of a human being, using simply his own intellectual prowess, to understand correctly the words of scripture; and
- (iii) we seek the help of God's Spirit in this task. (See Rom. 10:5-9).

It is likewise important to note that to interpret language literally is *one type of interpretation*. In a particular passage it may be right, or it may be wrong. In dealing with a Book which abounds in figures of speech (it is instructive to look even at the Table of Contents in Bullinger's 1100-page "Figures of Speech Used in the Bible"), there is nothing inherently more reverent in a literal interpretation than in one which detects metaphor or allegory. Very frequently there is room for both literal and figurative applications of the same passage. (See Gal.4:21-31)

While the last word has not been spoken on this subject (and will not be, in this life), a useful approach has been suggested by Dr. D.C. Spanner (1970): "My conclusion therefore to the question of how we are to decide the issue of the origin of Man is this. Where the points at issue are theological and ultimate they must be answered on biblical grounds. Where they are biological and phenomenal they must be answered on scientific grounds. Where there seems to be a double reference, i.e. an issue which touches

both the theological and the scientific, care must be taken to do justice to both. Sometimes, indeed the way to do this may not be at all clear. In such a case we must be willing to live with the problem, until the God of all Truth is pleased to bring us to a right understanding, and to a grateful appreciation of the consistency of all His avenues of instruction."

The basic premise underlying this attitude is that the Bible is — for want of a better word — a *theological* or *religious* book; one which makes no claim to instruct its readers on cosmology, geology or any branch of natural science beyond the stage they might reach by natural studies. This is *not* to assert (as has sometimes been urged) that the Bible must be full of technical errors. Rather does it maintain that the Bible is not full of technical *statements*, erroneous or otherwise; where it makes statements that appear *to us* to have technical content, these should be regarded as couched in language chosen for intelligibility, without any implication as to the correctness of the 'science' that gave rise to that language. And we must have sufficient technical humility to realize that if ever there is a 21st century, some of the science of the 20th century will appear as a very childish approximation to truth. Why then should the divine Author make special provision to satisfy the technical consciousness of our particular era?

We should learn from the mistakes of an earlier generation who insisted on interpreting expressions like "the four corners of the earth" literally or "scientifically". Those who delight in the "scientific accuracy" of Job 26:7, "... and hangs the earth upon nothing", should be aware that they use a different basis of interpretation in v.11, "The pillars of heaven tremble". A similar willingness to vary our 'feel' for a passage will be detectable in many other instances — usually without any formulation of a definite policy. Given enough perversity or lack of knowledge it is possible to build a quite fantastic scientific picture of the structure of the universe, as was done, in fact, by the sixth century monk Cosmas Indicopleustes (McCrindle 1897).

*Identifying the Questions.* When this principle is applied to the study of origins, it becomes possible to consider two questions on their respective merits:

1. How much can we determine as to the mode of creation, its date and its duration? The answer to these problems should be sought from natural science, with the possibility that the Bible might contribute marginally in areas of overlap or 'interface'.
2. How does the Bible describe God's creative work? For what purpose is the topic of origins introduced in certain contexts? These problems can be answered — if at all — only from the Bible, which is the ultimate and sole authority within this realm.

This separation of scientific and theological aspects enables us to examine specific problems in an objective way, without restraints imposed before the investigation begins. We shall not have time in this essay to examine every one of the problems that are commonly encountered. Instead we shall deal with a few typical examples, in the hope that the interested reader will then be in a position to apply the same techniques to other examples as they arise.

*Evidence claimed to support evolution.*

Various books propounding evolution deal with certain lines of evidence that are supposed to support the theory; the books opposing the theory are commonly subdivided in a similar way. For instance, a debate between H.S. Sheldon (for) and D. Dewar (against) (1947) has the following chapter headings:

Causes of Evolution  
 The Geological Record  
 Geographical Distribution  
 Morphology (i.e. physical form) and Classification  
 Experimental Evidence (i.e. breeding and genetics)  
 Embryology  
 Nascent and vestigial organs  
 Some Instincts and Habits of Animals  
 The Origin of Man

Somewhat similar groupings of topics are adopted by Davidheiser (1969), Heinze (1973) and Carron (1957, 1973). Of these various lines, we shall confine our attention to the geological aspects: the dating of earth and its rocks, and the fossils found in sedimentary deposits.

*Age of the earth and rocks*

While the mechanism by which evolution is supposed to have occurred is still a matter for debate, on one point evolutionists agree: the changes involved must take place very slowly over millions of years. It is not surprising, then, that Charles Darwin's *Origin of Species* appeared somewhat after the uniformitarian understanding of geology was propounded by Sir Charles Lyell about 1830.

Dating methods other than by radioactivity measurements — e.g. the concentrations of salts in the ocean, the rates of deposition of sedimentary rocks — are quite unreliable, and virtually all dating of rocks is nowadays by radiometric methods. Various elements (or

more accurately the isotopes of those elements that undergo radioactive decay) undergo spontaneous disintegration to produce different elements. The relative amounts of mother and daughter elements *at the present time* can be determined by analysis whilst the Geiger counter enables the present rate of radioactive decay to be measured. This can be compared against the known present rates of decay for many isotopes.

Quite apart from attempts to date rocks more or less accurately, the elements found on earth suggest that a few thousand million years must have elapsed since the oldest rocks solidified. This follows because all of the nearly 300 non-radioactive isotopes of the elements are found in nature but none of those with half lives of a few hundred million years or less. Isotopes with half lives in the thousand-million year range (U-238; 4.5 thousand million years; Th-232, 13.9) are found in fair quantity, but at the lower range (U-235, 0.7; K-40, 1.0) only traces remain, or even none (e.g. Pu-244; 82 million years; I-129, 17 million years).

It is urged by some that radio dating for a rock is only possible if the following conditions hold:

- "1. None of the daughter element was present in the rock when it was formed;
2. The rate of decay of the element has remained constant since the time the rock was formed;
3. All of the daughter element in the rock was derived from the parent element that was previously in the rock." (Moore and Slusher, 1974 p.425)

It is true that these conditions are beyond rigorous proof and that the results obtained by radioactive dating are dependent to this extent on the assumptions made. On the other hand there are limits also to the extent to which the conditions are likely to be *untrue*. It is worth while considering each in further detail.

1. Gish (1972 p.42) writes: "While very accurate methods are available for determining the *present* ratios of uranium-lead, potassium-argon, and other isotope ratios in mineral-bearing rocks, there is, of course, no direct method for estimating the *initial* ratios of these isotopes in the rocks when the rocks were first formed." However, there are many cases where isotopes occur apart from any present evidence of radioactive systems and these permit meaningful calculation of original or apart-from-radioactivity ratios. Thus all lead found in minerals lacking in uranium contains 23.6% of Pb-206. But this isotope of lead is the final product formed in the U-238 series. It is reasonable therefore to suppose

that in uranium minerals, Pb-206 over the 23.6% level has been formed radioactively and it is from this excess that ages are calculated by the so-called method. Similarly in the rubidium/strontium isochron procedure the natural ratio Sr-87/Sr-86 is 0.71 but if Rb-87 (which gives Sr-87) is present, the ratio is larger and from the difference the age is calculable. (For details, see for e.g. Yorke and Farquhar, 1972)

2. There is a limit to the error in radioactivity methods that can be attributed to greater decay rates in the past. Radioactive processes result in heat generation of sufficient magnitude to contribute appreciably to the warming of the earth's surface today. An attempt to compress, say, an age of 5000 million years to 10,000 years on the basis of this factor alone would be likely not only to subject any living creatures to a lethal barrage of radiation, but to convert the whole planet to a boiling inferno.

The suggestion is often made that although rates of decay are found to be constant over a considerable range of laboratory conditions, other factors such as cosmic ray intensity might influence them profoundly. Nevertheless rates of radioactive decomposition are the same in high flying balloons where cosmic rays are plentiful, as in mine shafts where the latter are almost completely cut off.

It is urged that the discordant results sometimes obtained, especially in the earlier days when techniques were poorly developed, lead many to suspect that all is not well. Among the most widely used of the radiometric methods are those based on the decay of uranium isotopes, in several stages, to yield an isotope of lead. Geological time scales reproduced in countless books are based ultimately on a few measurements of this sort. Knoph (1957, p.227) states: "Ultimately, however, they are tied to three dates based on atomic disintegration: 60 million years, the age of the pitchblende at Central City, Colorado; 220 million years, the age of the pitchblende at St. Joachimstal, Bohemia; and 440 million years, the age of the uranium-bearing shale at Gullhogan, Sweden ... All other absolute ages have been derived from the three radio-active tie points by interpolation based on thickness of strata or by 'reasoned guesses'." If this 1957 claim is still true, it is fascinating to compare this high level of confidence with the words of Henry Faul (1966, p.61): "Uraniferous shale is another unreliable system ... Uranium and lead both migrate in them in geologic time, and detailed analyses have shown that useful ages cannot be obtained from them. Similar difficulties prevail in attempts to date pitchblende veins." (But see whole

rock method below)

For himself, Paul (1966, p.53) feels that "volcanic-ash falls and lava flows are now probably the best reference points for the time scale. They were deposited quickly - instantly in geologic time - and many of them are interstratified with fossiliferous sediments without any significant break in sedimentation ... Layered volcanics are the mainstay of the geologic time scale."

In contrast we may compare the frequently made claim (Clementson 1970, p.237 etc.) that volcanic deposits known to be very recent may give ages anywhere from 180 to 10,000 million years. The difficulty here is that when volcanoes erupt, stones and small particles which do not become molten at the time of the eruption are mixed with lavas. These (xenoliths) often give great and probably genuine ages whereas if determinations are made on the recently molten magma, low ages are obtained. (Thus Funkhouser and Naughton, 1968 used the K-Ar method to date lava from a Hawaiian volcano which erupted in 1800-1. The xenoliths gave large and variable ages, but the recently molten magma gave figures no higher than the lower limits possible by this method of dating. The xenoliths in this case contained high pressure gas and even liquid CO<sub>2</sub>, proving that they could not have melted near the earth's surface.)

3. This has been largely covered under (1) above. A somewhat related problem is the possible leaving or diffusion of products of radioactive decay leading to high estimates of age.

Leach of constituents, or diffusion of gaseous elements such as helium and argon might be quite considerable, if ages are great. Loss of intermediate elements in the uranium series is also possible (notably Rn-222 in U-238 series). Such leaching would normally have the effect of diminishing the estimates of age. Rather discordant results are obtained therefore, as expected, when specks of mineral are analysed, though age estimates are unlikely to vary by more than ±50%. In the Rb-Sr isochron entirely consistent results were obtained when the 'whole rock' was examined, since this contains the leached Sr. It appears that in the uranium method, lead can leach out and that the 'whole rock' technique will remove discrepancies.

*The "Young Earth" School*

Despite sources of error, we should probably decide that many of the fossiliferous rocks have ages of millions rather than thousands of years, if we accepted the principle that the answer should be sought by purely scientific studies. However, IF Genesis is taken as the overriding authority on this matter, and IF its language must be interpreted literally, then an age of 10,000 years or less is demanded. This idea has enjoyed a considerable revival during recent years, especially in USA. In practice the "young earth" is usually linked with a "Flood geology" which attributes almost all the fossiliferous strata to the Noachian deluge. Several organizations make this a definite part of their platform:

(a) *Creation Research Society*, for which full members (now numbering about 500) must have at least a Master of Science degree. A quarterly journal of high standard is produced, and two volumes of collected papers from the years 1964 to 1968 ("Why Not Creation?", and "Scientific Studies in Special Creation") have appeared. Each copy of the Quarterly carries the Haec credimus: "For in six days the Lord made heaven and earth, the sea, and all that in them is and rested on the seventh. — Exodus 20:11."

(b) *Institute for Creation Research*, headed by Dr. Henry M. Morris, co-author of "The Genesis Flood", a major work putting forward the "young earth" approach.

(c) *Bible-Science Association*, headed by Rev. Walter Lang. A substantial News-Letter is produced, dedicated to:

Special Creation  
 Literal Bible Interpretation  
 Divine Design and Purpose in Nature  
 A Young Earth  
 A Universal Noachian Flood  
 Christ as God and Man — Our Savior  
 Christ-Centered Scientific Research

A perplexing feature of the "young earth" approach is that two arguments have been advanced, largely incompatible with one another. On the one hand, the "Principle of Apparent Age" admits that good scientific work yields results pointing to an earth of vast antiquity but attributes these 'incorrect' results to a built-in appearance of age; on the other hand, evidences of earth's youthfulness are sought along purely scientific lines.

*Principle of Apparent Age.* When Whitcomb and Morris published "The Genesis Flood" in 1961, they not only listed the objections given above to the use of radiometric age determinations but also introduced the idea of a "grown" creation having an "apparent age". All aspects of creation were said to exhibit this apparent age, "analogous to the 'apparent age' of a mature Adam at the first instant of his existence." As applied to radioactivity, they suggest that "all the elements of the chain were also created simultaneously, most likely in a state of radioactive equilibrium." They maintain that "it is eminently reasonable and consistent with the basically efficient and beneficent character of God, as well as with His revelation concerning the fact, that He would have created the entire universe as a complete, operational, functional mechanism" (p. 345). They acknowledge the existence of critics who feel that it would be deceptive of God to "cause things to look as though they were old and had come into their present form by a long process of growth when actually they had just been created"; but they respond that "there could be no *genuine* creation of any kind, without an initial appearance of age inherent in it."

The word "genuine" in this connection appears to mean 'de novo', 'ex nihilo', with no 'process' and no intermediate stages. Elsewhere (1972, p. 29), Whitcomb states, "The supernaturalism and suddenness of creation provide a necessary background for the concept of creation with a superficial appearance of history or age." However — for the present writer, at least — his case is not helped by the claim (p. 33) that "the proper context for understanding the events of creation week is ... the person and work of the Lord Jesus Christ as unveiled in the New Testament. If nearly every miracle performed by our Lord on earth involved the creation of built-in history, should we expect anything less during that unique period when He brought the world into existence?"

But the creation narrative of Genesis does *not* suggest that living things appeared out of nothing. If we are to insist on language being taken literally, we must give due weight to expressions such as "The earth brought forth vegetation"; "Let the waters bring forth swarms of living creatures"; "Let the earth bring forth ... cattle and creeping things." It is, moreover, very doubtful whether a concept of instantaneous creation was envisaged by any of the Bible writers.

*Evidence of Youth.* In the Institute for Creation Research's *Acts and Facts* for Sept. 1974, Dr. Morris gives a list of 76 estimates of the age of the earth based on standard uniformitarian assumptions. Many of these concern the influx of salts into the ocean via rivers; and even within this single method, the application to different elements yields a not unexpected diversity of results — from 100 years for aluminium to 164 million years for chlorine. Dr. Morris's



conclusion is that "those ages on the low end of the spectrum are likely to be more accurate than those on the high end". An equally valid conclusion — to say the least — is that the figures point not to the youthfulness of the earth but to the uselessness of the methods of dating.

Other lines of evidence said to point to a young earth include: the low helium content of the atmosphere compared with what we would expect from production by radioactive decay (though helium would easily escape from the earth's gravitation field); the low nickel of the earth's crust compared with the rate of addition in the form of meteoric dust; the retention of relatively high pressures in oil/gas deposits; and even the decline in the earth's magnetic field which, it is argued (apparently without any knowledge of magnetic reversals) cannot have preceded for millions of years.

Apart from the technical problems involved in these lines of evidence, a serious source of perplexity is that *if* God did in fact build an apparent age into the whole creation, one would expect that he would do it *consistently*. One would not expect evidences of youth to pop up here and there, as if God had forgotten to "artificially age" these few aspects of his work.

#### *Historical Geology versus Flood Geology*

Even if no attempt is made to place absolute ages on the rocks, collision between the rival interpretations of geology is inevitable. Proponents of a young earth point to fossils whose position in the strata is anomalous as judged by the composite sequence of sedimentary strata on which historical geology is based. Three examples are quoted in the C.R.S. text book, (Moore and Slucher 1970, p.417):

1. Fossil pollen grains of the pine family have been found at the bottom of the Grand Canyon, in rocks supposed to be Precambrian, and therefore more than 600 million years old. Only very primitive plant life, if any at all, would be expected at this level.
2. Footprints of dinosaurs are found in the bed of the Paluxy River, Texas, in rock classed as Cretaceous and dated at about 100 million years. But the same bed contains also undoubted human footprints (some 15 in. long see also Morris and Whitcomb, 1961, pp. 166-175 and A.E.W. Smith, 1968, pp. 293f etc.).
3. In 1968, fossil trilobites (associated with Cambrian deposits, dated at the order of 500 million years) were found

embedded in the print of what looks remarkably like a human sandal, near Delta, Utah. If both the trilobites and the sandal are genuine, this one find would of itself be sufficient to annihilate the science of historical geology; for they link the very first of the definite fossil groups with the very last — man.

The question is whether these problems represent the norm, and show historical geology as an edifice built on imagination, or whether there is some very abnormal explanation for findings of this type. Again, if the alternative explanation is that all the world's fossils were the result of a single, global flood, are we left with problems of greater magnitude than those we solve? We must ask, for instance:

1. Could a single Flood really be of such a magnitude as to produce all the sedimentary — or at least all the fossiliferous — rocks, which in some places measure several km in thickness? If this is the thickness after consolidation into rock, what must have been the thickness of mud swirling around the earth?
2. If rocks were formed by the deposition of vast quantities of sand, clay boulders and debris, would we obtain the stratified effect, often with sharply defined boundaries, that in fact we observe?
3. Why do volcanic intrusions into fossiliferous strata, which must then be only a few thousand years old and which should not be part of the original creation covered by an "apparent age", often yield ages of millions of years?
4. If the earth's surface was at the time of the Flood covered by a vast depth of mud in which were distributed the remains of all the plants and animals that perished in that Flood, would the depths at which fossils formed have any consistency at all, such as to give rise to the science of palaeontology? Do differential settling rates really offer a sufficient explanation, as Morris claims, of the generally well-defined zones in which different fossils appear?
5. Could the earth have supported at any one time a sufficient population of living things to account for even the many millions of fossils that have already been unearthed? For instance, Alan Hayward (1973, p.211) notes: "Although only a small part of the earth's crust has been explored, a million million tons of coal have already been discovered ... Coal is almost pure carbon, whilst vegetation contains only a small proportion of carbon. Consequently it must have taken something like a ton of vegetation to produce a hundredweight

of coal. Even if Noah had lived when the earth was completely covered with dense jungle, there would still not have been nearly enough vegetation in his world to produce all the coal that exists today."

Questions such as these have provoked rebuttal of the Flood geology not only from atheists but from Christian geologists. One such is Dr. van der Fliert of the Netherlands, who draws attention, for example, to the Paris Basin, a system of rocks covering a large part of France. Here, he says, "we have a huge bowl-shaped structure, consisting of strata dipping gently towards the centre, which implies of course that the younger strata are exposed in the central, the older in the peripheral, parts of the basin." When we move to the American continent we find "in the Gulf Coast Area of Mexico, Texas, Louisiana and Florida ... a huge structure of low-dipping strata very well known as a result of thousands of bore holes drilled in the search for oil." He claims "that surface and subsurface data permit an unquestionable correlation, layer by layer, and thus the establishment of the sequence of normally superimposed strata attaining a thickness of many thousands of meters."

A rejoinder is given by Clifford L. Burdick, (1970, p.142) a consulting geologist of the catastrophist school, who notes that "in numerous places in the world a reversed order exists, as in Glacier National Park, Montana; in Banff, Canada; Wyoming, Arizona; and the Alps." However, while this poses problems for the historical geologist, it hardly disposes of the many instances where a predictable order *is* maintained. One may be excused for wondering whether the "highly selective sorting action" claimed by Whitcomb and Morris (1961, p.274) on the basis that "the organisms found in the lowest strata, such as the trilobites, brachiopods, etc. ... are very 'streamlined' and quite dense" is really adequate to explain the spread of fossilized structures over depths of thousands of metres.

### *The Origin of Man*

Again the dating of fossil remains is a major area of controversy, and again it is not possible to provide, on purely technical grounds, answers that are beyond dispute.

*Radio-carbon Dating.* Most atoms of carbon have a mass of 12 units. Atoms of mass 14 units, designated C-14, are formed by the reaction of cosmic rays with nitrogen atoms in the upper atmosphere. These radioactive carbon atoms are incorporated in molecules of carbon dioxide, and diffuse into the lower atmosphere. They thus form a normal part of the "carbon dioxide cycle", and come to form a definite

proportion of the carbon dioxide circulating in this fashion. Living things continually renew their stock of C-14 through the food chain, so that a sample of carbon dioxide produced by oxidation of the organic matter of any creature immediately after its death will always yield the same result for radioactive emission. As the years go by, radioactive carbon atoms disintegrate and are not replaced, so the radioactivity steadily diminishes. The number of disintegrating atoms drops to half its initial value in about 5700 years, and then to half of this value in another 5700; after about 50,000 years the residual radioactivity is so low that the method is no longer useful.

Even values of this order are too high for acceptance by proponents of the 'young earth' interpretation, and weaknesses of the method have frequently been noted. It relies on several basic assumptions:

1. That the rate of *formation* of C-14 atoms, and hence the intensity of cosmic rays controlling that rate, has remained constant during the 50,000 years for which the test is applied.
2. That this rate and various factors were stabilized well *before* 50,000 years ago, so that the loss of C-14 atoms by disintegration and the formation of fresh C-14 atoms in the atmosphere had led to an equilibrium state.
3. That the carbon contents of reservoirs (atmosphere, ocean) containing cosmic ray produced C-14 on which living matter draws for its supply of carbon have remained steady. (See Suess, 1965)

These assumptions are not exactly correct. Suess (1965) gives a calibration curve connecting apparent C-14 dates with actual time elapsed. Clark (1975, 1976) has attempted to correct the Suess corrections but Suess is unconvinced. (See also Watkins, 1976)

Much of the C-14 dating has been carried out on samples cut from sections of very old trees - in particular the bristlecone pine in parts of USA - so as to include only a narrow band of tree rings. The growth rings themselves can be dated by a tedious counting of thousands of rings whose varying widths reflect changes in climate from year to year. When a tree died many years ago its ring pattern must be linked with a pattern known to extend to the present time, and since this may prove tedious it is usual to locate the position of overlap roughly by means of radio-C dating, so some measure of circular reasoning is (or used to be) involved (Sorensen, 1973). As a result of such work corrections are applied to old radio-C dates. Ferguson claims that by piecing together the results of many different trees it becomes possible to obtain "a continuous

tree-ring chronology of 7117 years". A repetition of his work, (La Marche and Harlan, 1973) using different trees confirmed his findings with a maximum error of at most two years back to 3535 BC at least. Baxter (1974), points out that although individual corrected datings on trees are doubtless correct, variations in C-14 content of carbon dioxide depending on locality and altitude are likely: a 2% margin of error may be allowed when applying the C-14 correction curve to a different locality.

On the basis of the published work it seems that radio-carbon dates of around 2500 BC must be increased by about 700 years (to 3200 BC) and 3000 BC by about 1000 years (to 4000 BC).

There have been several instances where the effect of checking by the C-14 method has been to reduce drastically the dates assigned by other methods. There was, for instance, the Keilor Skull, found in 1940 in a river terrace about 15 km. from Melbourne. Initial estimates, based on the assumption that the terrace was formed by the silting up of a tidal lake during a warm period between Ice Ages, were in the vicinity of 130,000 years (Brunton, 1961). Other geologists decided the terraces were laid down by river floods, and the age tumbled to 25,000 years (Tugby, 1952). After radio-C fluorine determinations it was revised to 8500 years.

*African Ape-Men.* It is not possible here to give even passing attention to each of the fossils which have been included from time to time in the supposed chain of man's ancestry from some common link with the apes. Those most in the news at present are the *Australopithecines*, which means 'southern apes'. The first of this group was described by R.A. Dart in 1924; he gave it the name *Australopithecus africanus*. More recently Dr. Louis Leakey made the headlines with his *Zinjanthropus boisei*, now classified as an australopithecine; this was followed by "Handy Man", *Homo habilis*; the work has been carried on by Richard Leakey with the discovery at Lake Rudolf of finds such as Skull 1470. Two things contributed to the excitement surrounding these skulls: their supposed human characteristics and their vast age.

The ages attributed to the Leakey finds are of the order of 2-3 million years. This is on the basis of the potassium-40 to argon method, the estimates being made on volcanic tuff at approximately the same level as the sedimentary deposits. This particular method is subject to all the limitations listed above for radioactivity methods in general; it is all the more doubtful because the half-life of potassium-40 (some of which disintegrates to an isotope of calcium) is about 1000 million years, so that a mere 2-3 million years is right at the bottom end of the range for which reliability can be claimed. William Straus and Charles Hunt (1962) of Johns Hopkins University comment: "Until the contradictory dates and the existence and duration of the unconformities are resolved, the dates

are of doubtful value in formulating hypotheses about the rates of evolution of man and his culture, rates of other vertebrate evolution and migration, rates of accumulation of volcanic ash, and the persistence of ancient lakes. Whatever the hypothesis, it must be frankly admitted to be speculative".

As to the human characteristics, these have varied in a rather mysterious way. The cranial capacity has been typical of that for apes, 400-600 cm<sup>3</sup>, as compared with a capacity of 1200-1400 cm<sup>3</sup> for man. The australopithecines had been divided into two species: *afrikanus* with smaller jaws and teeth, and *robustus* with heavy eye-brow ridges. But Richard Leakey says they represent the female and male forms of the same species. On the basis of fragments of pelvis, limb and foot bones it was claimed that they walked upright. But Richard Leakey (1971) says they (not including *Homo habilis*) were long-armed, short-legged knuckle-walkers, similar to extant African apes.

That man has evolved from an ape-like ancestor therefore remains very much an act of faith. The lack of clear lines of development is witnessed by the variety and complexity of theories attempting to fit the fossil finds into a single scheme. For instance, the Melbourne *Age* of 13.7.74 features an article headed "These Skulls Tell Different Tales". Four skulls all found near Lake Rudolf in Kenya between 1969 and 1973 are consigned to four different branches of hominid evolution, separating about 5 million years ago. The branch containing Skull 1470 leads on to *Homo sapiens*, and the other three to extinction. Even in 1953, Douglas Dewar was able to distinguish 12 theories advanced at that time, all to some extent mutually contradictory. A more up-to-date account is given by Frank Cousins (1971). The words of W. Straus, quoted by Dewar are still relevant: "I wish to emphasize that I am under no illusion that the theory of man's ancestry which I favour at the present time can in any way be regarded as proven ... One cannot assume that man is a made-over anthropoid of any sort, for much of the available evidence is against that assumption."

#### *Where Does Adam Fit*

When we turn from the purely scientific evidence and the problems of the evolutionist and attempt a positive view of creation, we find that the Bible student too has his problems; and again they involve hermeneutic principles. We may summarize them in the form of the question: In what sense was Adam the first man?

In an age when anthropology, archaeology and geology were practically non-existent, one would probably never ask such a question;

or if it were asked it would be answered, "In every sense, of course; why try to complicate things?" There are many today who, ignorant of the problems arising from the increasing knowledge in these areas, echo a similar sentiment. One would not wish to create problems where none exist, or to disturb in any way the peace of mind of sincere folk who wish only to be left in that peace. But for the sake of those who do see a problem and whose minds are greatly exercised by it, some answer must be attempted, even if it can at best be extremely tentative.

One answer is to deny the problem by denying Adam. It is of course a fact that the Hebrew noun '*adam*' (or *ha'adam* with the definite article) means 'man', and is so translated throughout the O.T. except for the early chapters of Genesis. Alison M. Grant, (1973) suggests: "A story about 'Adam' (= mankind) suggests that the writer's intention was to get across a message about 'Everyman' (you and me and everyone else), not something about a particular man who lived a long time ago." Our only real guidance here comes from the way in which the OT was understood by the inspired writers of the NT. Although direct references are few, they are (to the present writer at least) conclusive; e.g.,

Rom. 5:14: "Yet death reigned from Adam to Moses, even over those whose sins were not like the transgression of Adam, who was a type of the one who was to come."

1 Cor. 15:45: "Thus it is written, 'The first man Adam became a living being'; the last Adam became a life-giving spirit."

Of those who accept that Adam was the first man in some meaningful sense, some understand that he was the first to have a physical form essentially similar to modern man. This implies that all fossils showing this form (especially as regards the skull) must be more recent than Adam, and must be his direct descendants. This creates a problem with dating, and in an attempt to reconcile the Bible and archaeology, dates have been 'pushed' from both directions. Dates obtained by radiometric methods have been either rejected as worthless, or a 'correction' has been applied on the basis of severe interference to dates at the time of the Flood. On the Biblical side, it has been noted that Hebrew genealogies can often skip over one or more generations; and that versions other than the text used for the AV yield different ages for Adam. One of the attempts to reconcile Biblical and archaeological dates is by Patrick O'Connell (1969); who states (p.111), that the time from Adam to the call of Abraham is 2032 years in the Hebrew text, 2324 years in the Samaritan, and 3389 in the Septuagint. He concludes that "8000 or 10,000 years at most is more than sufficient to account for the development of the human race between the time of the earliest fixed settlement in Mesopotamia and the creation of Adam and Eve", and that the maximum estimate of

the time before the Deluge need not exceed 15,000 years.

If we follow the hermeneutic principle of looking at the major purpose of the Bible records, we shall probably place less emphasis on the physical form of Adam. There have been many explanations of the "image and likeness" of Gen. 1:26; the true interpretation must be sought by noting the direction of emphasis in the NT. This leads us unmistakably to our Lord: to those qualities of worship, spiritual discernment and subjugation of will which were present in potential form in Adam and manifested in all their beauty in this "last Adam". "He reflects the glory of God and bears the very stamp of his nature" (Heb. 1:3).

It is idle to speculate on the extent to which these capacities are a function of physical brain size and form, and the extent to which they require a special, divine implantation. But *if* there did exist at one time a race of beings more man-like than any of the existing apes — with larger brains and higher intelligence — but without the spiritual potential of Adam, then we can conceive that they would not be classed as 'men' in this Biblical usage of that term. A specific example of a possible 'near-man' is the Neanderthal race, of which quite a number of skeletons have been unearthed. At one time this race was pictured as brutish, stooped, and with a shambling gait, and was given the status of a separate species within the genus Homo. But at least two features create problems for this view. One is that when the fossils are placed in chronological sequence (insofar as this is possible) the *earlier* ones appear closer to Homo sapiens than the later specimens. The other is that finds in Palestine (at Magharet-et-Tabun and Mugharet-es-Skuhl) show a mixture of Neanderthal and Cromagnon (modern) types strongly suggesting interbreeding of the two races (Le Gros Clark, 1967, p.302; see Custance, 1968, pp. 30,34).

A different approach is taken by Victor Pearce (1969). Looking at the cultural setting presented in the early chapters of Genesis, he notes that Adam evidently lived before the Bronze Age, since Tubalcain rates special mention in this connection in Gen. 4:22. On the other hand, Adam's family did cultivate crops and breed animals: this provides "a clear and unmistakable guide, as man had never practised farming before 10,000 B.C. or thereabouts." It is hard to share the confidence in dating methods reflected in Pearce's statement, "For 500,000 years it had never occurred to man to grow his own food. Then comparatively suddenly he became a farmer ... During that half million years or more, we have a worldwide record of stone tool-making." But the direct appeal to Scripture is appealing in his conclusion (p.21) that "in Genesis 1, Old Stone Age man is described, the Hebrew collective noun *adam* meaning mankind as a whole;" whereas the account commencing at Gen. 2:4 using the noun "The Adam" relates to a special individual, "a New Stone Age farmer of about 10,000 to 12,000 years ago."



*Creation in the Framework of Genesis*

Recent expositions of Genesis by professional theologians have tended to view the first 11 chapters as a unity, rather than to dissociate creation from the rest of the book. This 'unity' is often attributed to the work of redactors living many centuries after Moses but we can welcome the tracing of unifying themes without at all embracing these theories of the development of the O.T. In particular one notes the works of the German scholars Gerhard von Rad and Claus Westermann, summarized for example by J.J. Scullion (1974).

In particular, four stories are seen to illustrate the theme that man oversteps God's limits: God punishes man's wilfulness, and at the same time God offers a way of protection. The creation story finds its place as the first of these: the initial and typical transgression of God's law, the resulting alienation from God, and the protection symbolized by the coats of skin. In the next episode, man rises up against his brother, "he takes life which belongs to and comes from God." God "steps in with punishment, and drives Cain from his presence. But as he punishes, God puts a mark on Cain so that no one can take it upon himself to avenge himself on Cain." In Gen. 6, man's rebellion is illustrated in the strange story of the sons of God: "man sought to rise above himself by union with the divine ... God steps in and throws man back within his limits—120 years ... The punishment is the flood ... God saves through Noah and the ark."

Finally in Gen 11 we have the story of Babel, where man strives to "use technology to make himself like the gods." God's punishment in this case is to scatter man over the face of the earth. But if this is to follow the pattern, "where is God's gracious intervention?", the answer suggested is one which identifies Gen. 1-11 as a prologue to the whole of the Bible: "In the very land of the ziggurats, where the story of the tower would have arisen, God chose ... Abraham ... and formed the beginnings of the people through which he was to bring salvation to mankind."

There remain one or two aspects of the creation account which find specific reference later in the Bible, and which could therefore suggest that the *details* are relevant to our understanding of the *meaning* of creation. We should therefore examine the *way* in which these aspects are used in Scripture.

*Six Days.* The fact that creation in Gen.1 occupied six days is used in Ex. 20 in connection with the fourth commandment: "Six days you shall labour ... for in six days the Lord made heaven and earth, the sea and all that is in them, and rested the seventh day; therefore the Lord blessed the sabbath day and hallowed it." The questions

this usually evokes are whether this usage proves that the days of Gen. 1 were literal, "24-hour", days; and if so whether they were days of creation, or of re-creation, or of revelation to man; and if of creation, how they could be described in terms of "evening and morning" before the creation of sun, moon and stars. But are these the questions of greatest relevance? Suppose we ask instead how the reference to God's *creative* work might be expected to reinforce the command for the special observance of one day in seven. Here we note that the parallel account in Deut. 5 does not use the "creation week" as the basis for the commandment, but rather: "You shall remember that you were a servant in the land of Egypt, and the Lord your God brought you out thence with a mighty hand and an outstretched arm; *therefore* the Lord your God commanded you to keep the sabbath day."

Putting these two bases together, we see how the seventh day was not intended merely as a refraining *from* toil, but was to be "a holy sabbath of solemn rest to the Lord" (Ex. 35:2). It was a token offering to God of the energies of *every* day, a recognition that as both Maker and Redeemer he was entitled to their total and wholehearted response in service. It was *God's* sabbath not because the almighty Lord of the universe *needed* to rest in any real sense; but because in the final analysis any hope of release from toil and bondage must lie in a sharing of *His* sabbath. This is precisely the emphasis of Heb. 4:9f: "So, then, there remains a sabbath rest for the people of God; for whoever enters God's rest also ceases from his labors as God did from his."

*The Image of God.* "God created man in his own image ... male and female he created them," we are told in Gen. 1:27. In chap. 2 we are told of the creation of a particular man and woman; the man is pictured as formed "of dust from the ground", and the woman from "the rib which the Lord God had taken from the man."

Here it would be an extreme literalist who would find the major significance of these verses in the mode of creation. The lessons drawn in the references in other parts of Scripture are of a different type, viz:

1. The sanctity of marriage. Gen. 2 itself adds the note: "Therefore a man leaves his father and his mother and cleaves to his wife, and they become one flesh." Even here, it would be possible to read more into the words than could possibly have been intended, and see some reason why the newlyweds might live with her parents but not with his. But the more general application to the status of the newlyweds as a unit gains confirmation not only from the general practice under the Mosaic law but from the lips of Jesus (Matt. 19:5) and Paul (Eph. 5:31).

2. The household hierarchy. Paul uses the fact that Eve was created after Adam to reinforce his dictum that a woman — evidently a *married* woman — should "learn in silence with all submissiveness" (1 Tim. 2:11; see also 1 Cor. 11:8f).

3. Conduct and ethics. Because man is a direct creation of God, he is responsible to God. In particular, he must accept the moral dictates of his Creator. As God says through Isaiah (45:9): "Woe to him who strives with is Maker, an earthen vessel with the potter!"

4. The status of man. The Psalmist sees man (8:5) as made little less than Elohim ("God" in RSV). This is not a cause for glorifying man; rather (v. 9), "O Lord, our Lord, how majestic is *thy* name in all the earth!" Again it is in the Letter to the Hebrews that we find the implications of this passage particularly traced; and characteristically we find it leading us directly to the Lord Jesus. We do not yet see a complete fulfilment of God's intention in Gen. 1:26 to "let them have dominion over the fish of the sea, and over the birds of the air, and over cattle, and over all the earth ..." But we do see the vital step towards the goal: "we see Jesus ... crowned with glory and honor" (Heb. 2:9).

5. The new nature. Because Jesus has blazed the trail and brought many sons to his Father, these begin — even in this mortal life — to partake in that new nature which is in a real sense the image of their Creator. They are urged: "be renewed in the spirit of your minds, and put on the new nature, created after the likeness of God in true righteousness and holiness" (Eph. 4:23f; so also Col. 3:9f).

### *The General Message of Creation*

Leaving now these rather specific aspects of the usage of creation in later sections of the Bible, we ask: In what more general ways do we find creation used as the basis for moral or theological teaching? And perhaps of almost equal significance, in what ways is it *not* used? For if details such as the time of creation, or the order of creation, or the mode of creation have interest only as history, then they seem to miss the mark of the real subject matter of the Book, which is man: his plight and his hope through the grace of God.

The first thing that strikes us when we undertake this study is the *very large number* of passages in which reference is made back to the first few chapters of Genesis. The subject in fact becomes

a vast one, and we shall be able to do little more than list the major types of usage.

1. God is the Creator, and his creation demonstrates his power and wisdom. Prov. 3:19, "The Lord by wisdom founded the earth; by understanding he established the heavens." Prov. 8:22;31.
2. While God did cease from his creative work in one sense, it is also true that he has a continuing role as creator-sustainer of his works. Psa. 104:30, "When thou sendest forth thy Spirit, they are created; and thou renewest the face of the ground." Job 33:4.
3. The whole physical creation was an integral part of a Plan embracing both man's origin and his destiny. Isa. 45:18, "For thus says the Lord, who created the heavens (he is God!), who formed the earth and made it (he established it; he did not create it a chaos, he formed it to be inhabited!): 'I am the Lord, and there is no other'." Num. 14:21; Hab. 2:14; Rom. 8:18-23.
4. The God who made man understands man, his weaknesses and his needs, and has provided accordingly. Isa. 63:16, "Thou, O Lord, art our Father, our Redeemer from of old is thy name." Ex. 4:11f; Psa. 94:9-11; Psa. 119:73.
5. This provision leads directly to our Lord, who is so central to the whole Plan as to be described not only as the firstborn of all creation but even as Creator. Col. 1:15f: "He is the image of the invisible God, the first-born of all creation; for in him all things were created, in heaven and on earth, visible and invisible, whether thrones or dominions or principalities or authorities — all things were created through him and for him." Heb. 1:10.
6. Many aspects of creation were completed only in a very limited sense in Adam and the Adamic environment. All such will find fulfilment in and through Jesus, who now exemplifies the glory which he had in God's firm purpose before the world was created, and to which his brothers and sisters are called. Phil. 3:20f: "But our commonwealth is in heaven, and from it we await a Saviour, the Lord Jesus Christ, who will change our lowly body to be like his glorious body, by the power which enables him even to subject all things to himself." Rom. 1:4-6; Rom. 8:23.

*Summary*

Any attempt to summarize what is so sketchy an outline of an enormous subject must necessarily be inadequate. Rather we shall try and indicate the principles we have used in attempting to form a coordinated thesis.

1. Gen. chap. 1 (and/or chap. 2) is commonly regarded as presenting a *narrative of events*, in more or less chronological sequence. While various interpretations of the account have been put forward, they have almost invariably been within this basic framework, usually without any realization that the framework could be different. So long as this framework is present, there is an expectation that some correlation with the scientific "facts" of creation should be possible — even when it is acknowledged that science is constantly changing, and many of today's 'facts' are certain to be modified tomorrow. No one interpretation of the first chapters of Genesis is self-evidently correct, and in fact every one of the interpretations advanced to date has been subject to criticism on either biblical or scientific grounds.
2. The Bible does not claim to be an encyclopaedia, and there is no good reason for expecting it to offer guidance — let alone infallible guidance — in any scientific discipline, except insofar as a particular point has a necessary association with the theological purpose of the book — man's need of redemption and God's provision for this need through his Son.
3. The study of the usage of the first few chapters of Genesis in the remainder of the Bible suggests that the mode of creation plays very little part in the importance and significance of the record, and throws doubt on the need to regard the account as an ordered or chronological setting out of a series of events. Rather do we find the chapters used to illuminate the character and purpose of God with men and women both during their moral lives and in future consummation.
4. This does not solve — and may in fact rob us of some 'solutions' we thought we had — problems as to the time, duration or mode of creation. It does, however, give us that peace of mind that comes from the realization that these things are not central to the real message of the Bible, are not essential for our comprehension, and may be allowed to wait on the accumulation of further scientific evidence, and on our own spiritual growth.

We may, for example, consider on its merits the question of whether the creation narrative is so basic as to stamp on the number seven a significance which it retains through the remainder of the Bible; or whether some more basic significance attaching to the number (as also to 10, 12, 40 and others) dictates the framework within which creation is cast.

6. This does not mean that evolutionary theories of origins are to be welcomed. However, it may modify the grounds on which they are to be rejected. Rather than because of incompatibility with some few verses of the creation narrative — or with a particular interpretation of these verses — these notions become suspect because:

(a) The history of their development, and the impetus for their promulgation, can be traced to a spirit of naturalism and materialism, a frequently conscious desire to eliminate God from his universe.

(b) The facts of science, insofar as it is possible to extricate these from the mass of accompanying theories, do not support the idea of continuous and purposeless development, but rather of discontinuity, of limited catastrophism, and of an overruling wisdom vastly greater than man's.

(c) While the tendency to exalt human reason and the invincibility of 'science' is reduced, it is not eliminated in the idea of 'theistic evolution'. While it is acknowledged that such ideas are held by many sincere students of the Bible, it cannot but render more difficult the humble acceptance of that book as authoritative in the areas for which it is authoritative: the status of man, his moral responsibility, the fact that his hope is based not on human effort but on divine grace.

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