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EARTH'S PREHISTORY - AN ALTERNATIVE TO UNIFORMITARIANISM

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Introduction

Dinosaurs, the age of the earth, fossil men, and other such topics are still capable of stirring up much debate in our Reformed circles. The recent report of Synod (#44) even permits the notion that new scientific interpretations in these areas might occasion a re-examination of what the Scriptures do and do not say regarding the prehistoric earth.¹ Before we undertake such a re-examination of our understanding of earth's prehistory, however, we might ask this basic question: Through what "instrument" will we seek to look back upon prehistory? That is, what presuppositions will guide us in our search, and by what criteria will we know that we have arrived at a correct understanding?

The dominant presupposition currently guiding discussions regarding earth's prehistory is uniformitarianism (a concept receiving much attention--pro and con--in recent issues of The Banner). The purpose of this article is to show why uniformitarianism is an unacceptable guide to earth's prehistory, for both scientific² and Scriptural reasons, and I propose for consideration an alternative view, alloformitarianism.

Uniformitarianism Defined

Uniformitarianism is a broad concept that can be defined on several levels.³ In simplest terms, uniformitarianism is the doctrine that "the present is the key to the past." That is, the "instrument" through which we can view prehistory is simply extrapolation, or projection into prehistoric time of those trends and processes which we observe going on around us in historically observable time. A person observing the speed and direction of an automobile, for example, could calculate where the car had been before it came into his view, if he assumed its speed and direction had remained uniform. Such extrapolation is used to connect Darwin's theory of natural selection with the much broader concept of evolution. Natural selection has been observed to change a population of moths from predominantly light to predominantly dark winged, and current biology textbooks typically offer this as evidence that the same process, when projected back over a vast amount of time, could change a simple life form into man and all other complex creatures.

On another level, uniformitarianism is a promise or commitment on the part of the in-

investigator that he will permit no interpretation of prehistoric data that is inconsistent with processes he can observe historically. This uniformitarian commitment is evident in Newell's comments on Cuvier's appeal to catastrophes to explain certain fossil findings (*Sci. Amer.*, Feb., 1963, p. 77). Newell admits that the fossil data are consistent with Cuvier's interpretation, but insists 'the objection is that he [Cuvier] dismissed known processes and appealed to fantasy to explain natural phenomena. He believed that 'the march of nature is changed and not one of her present agents could have sufficed to have effected her ancient works'."

On the grandest level, uniformitarianism is the belief that the universe has "One Form," i.e., that the laws of nature are immutable, and that the laws we observe in operation today are the same laws that have always, and will always, describe the workings of nature. Some even try to connect the immutability of nature's operational laws with the immutability of God Himself.

Uniformitarianism is a bold doctrine with several intellectual merits. Its prime directive, that any interpretation of earth's prehistory be consistent with present knowledge of natural process, does provide definitive criteria by which to judge competing theories and it provides each man with the same set of "spectacles" for peering into prehistory.

Uniformitarianism Rejected

Although not devoid of praiseworthy features, uniformitarianism suffers severe deficiencies, both scientifically and Scripturally.

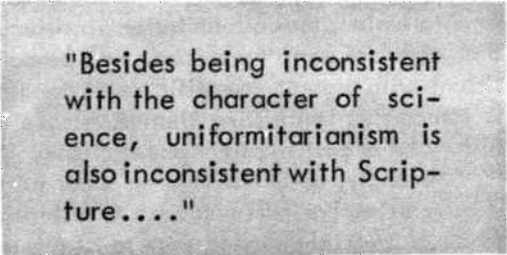
Uniformitarianism is inconsistent with the character of science on at least three levels. In the first place, uniformitarianism fails to appreciate the changing and developmental character of science. Consider "continental drift," the theory that all earth's continents were once a single land mass which broke up late in the fossil period.⁴ Continental drift was ridiculed as unscientific in the 1920's because no observation of continental drift could be made nor any driving mechanism postulated. But continental drift is the geological panchreston of the 1970's.⁵ Catastrophists

were once ridiculed for suggesting that large celestial bodies interacted with the earth somewhere in the past, but new measurements on the moon's recession from the earth suggest that it must have been dangerously close to the earth during the fossil period. Because of the continuing development of science, including both changing theories and changing "facts," and even changing concepts of uniformitarianism, the uniformitarian's insistence that models of earth's prehistory must be consistent with present scientific understanding is tantamount to insisting that models of prehistory be at best transient and unstable.

Secondly, uniformitarianism is not sufficiently objective in its approach to historical data. If a social historian were to take principles describing observable political interaction in 20th century America and project those principles upon data regarding Rome's decline, he would come up with a coherent theory that could be "scientifically" supported by observation of present processes, but he would be roundly criticized by his colleagues for projecting a bias and for tending to select only those data which would support his presupposition. Uniformitarians tend to proceed deductively from present concepts of principles to descriptions of past data. A better procedure (though more difficult, and never perfectly attainable) would be to proceed inductively, from the data to the theory, allowing the prehistoric "facts" to "speak for themselves" as much as possible, even if they do suggest a world order whose principles or descriptions of operation might be different from our own. Radioactive dating data, for example, have never really been allowed to "speak for themselves." So entrenched were ideas of the earth's great age, for example, that Libby did not even question the validity of the "equilibrium assumption" of the carbon-14 dating procedure--only to find out years later that the assumption was invalid. Freshman geology and biology textbooks often quote exact dates for fossil periods plus or minus an impressively small figure, but in my graduate paleontology and geophysics classes at a secular university the data were presented as being so discordant (in disagreement with one another) that definite interpretation of radioactive ages could

not be made.⁶

In the third place, although not inherent in the principle, there is, in the practice of uniformitarianism, the problem of over-extrapolation. Extrapolating present world population trends, for example, suggests so many billions by 2000 A.D., and would suggest so many trillions by 3000 A.D., if it were not



"Besides being inconsistent with the character of science, uniformitarianism is also inconsistent with Scripture...."

for obvious limits on extrapolation, such as the point where the total number of people would weigh more than the earth.⁷ It is usually easy to find the limits of extrapolation and to distinguish between following a trend to its logical or its illogical conclusion. Uniformitarian biologists, however, have often been unintentionally guilty of overlooking certain logical limits of extrapolation. The mutation theory which may explain the change from DDT-sensitive to DDT-resistant flies, for example, is often extrapolated to explain the change from "fish to philosopher" (to use Homer Smith's phrase). Mutations, however, are only changes in already existing genes. This is a severe limitation on extrapolation, because mutations, which are perhaps able to explain a fly-to-fly change, are obviously unable to bring about the massive addition of genes required in the fish-to-philosopher change.

Because of its emphasis on understanding present natural laws and on observable processes, uniformitarianism is often touted as the scientific approach to prehistory. However, because of its tendencies (1) to ignore the developmental character of science, (2) to organize data into preconceived models, and (3) to over-extrapolate, uniformitarianism ought to be rejected as inconsistent with the true character of science and a "blind guide" to earth's prehistory.

One need not be a Christian, of course, to recognize the scientific deficiencies of

uniformitarianism; and the following quotation from a modern textbook indicates that this dogma is being challenged even in geology, the science that gave birth to uniformitarianism:

From a scientific point of view, it is unwise to accept uniformitarianism as unalterable dogma. As discussed in Chapter 1, man's experience with geologic processes is restricted to only a minute fraction of the total span of earth history. He should not close his mind to the possibility that conditions in past geologic time were different in some details than today, and that the doctrine of uniformitarianism may not apply in every case. (Zumberge and Nelson, Elements of Geology, 3rd ed. John Wiley and Sons, 1966).

Besides being inconsistent with the character of science, uniformitarianism is also inconsistent with Scripture, both as a method for generating and testing models of prehistory and as a description of the structure of the universe throughout time.

Without, of course, calling it by name, Peter seems to associate the doctrine of uniformitarianism with the scoffing of the last days:

...scoffers will come in the last days with scoffing, following their own passions and saying, 'where is the promise of his coming? For ever since the fathers fell asleep, all things have continued as they were from the beginning of creation.' They deliberately ignore this fact, that by the word of God heavens existed long ago, and an earth formed out of water ... was deluged with water and perished. But by the same word the heavens and earth that now exist have been stored up for fire.... (II Peter 3:3-17, RSV).

The belief of the scoffers here is the belief of the uniformitarians: that "all things have continued as they were from the beginning of creation," i.e., that the universe has "One Form," or one set of laws that always describes its operation.

Peter points out that this view differs with the "fact" of earth's history, including earth's formation by God's creative Word, its deluge with water in a unique, nonuniformitarian event, and its future history, the Second Coming of Christ.

In contrast to the "continuous" theory of history proposed by uniformitarians, then, Peter asserts that nature's history is "discontinuous." The Scriptures describe at least three or four major discontinuities in earth's history, namely, those associated with the Creation, the Curse, the Second Coming, and (probably less profound in scope) the Flood. In Creation, for example, God artfully imposes His will on matter to bring forth a dazzling array of life forms that could not have been produced by matter working out its natural potential. The Curse that God pronounces on the ground because of Adam's sin, however, alters much of what would have been described as natural laws in Eden.⁸ Before the Curse, for example, it was natural for men to expect to live forever, in radical contrast to present biological laws. Thorns and thistles posed no problems at that time. And it was natural to expect little or no pain in child bearing. But after the Curse, the "struggle for survival," aging, death and pain, and, in general, Paul's "bondage to decay" (Rom. 8:19-23, RSV) all become natural. In the "new heavens and new earth," which may reflect something of God's will for the original Creation, it will be natural that

...the wolf shall dwell with the lamb,
...and the calf and the lion and the
fatling together...they shall not hurt
or destroy in all my holy mountain,
for the earth shall be full of the
knowledge of the Lord as the waters
cover the sea (Isaiah 11:6-9, RSV).

And after the Flood, God even introduces a change in what was formerly to be the natural diet of man and his natural relationship to the animal kingdom (Gen. 9:1-3, RSV); moreover, the natural life expectancy of man also appears to begin its dramatic change at this time, as demonstrated by the sharp reduction in life span of Shem and his descendents.⁹

Uniformitarianism is no more able to spot these discontinuities in earth's history than the usual telescope is able to see around sharp

corners. Its presuppositional "straight jacket" makes uniformitarianism an instrument that can "view" the past only along uniform lines, and it will, therefore, always extrapolate its view past those points in history where God caused a sharp turn of events. This was precisely the problem with the scoffers of Noah's day, who saw no natural "clues" pointing to the need for so huge a ship so far from the sea. "If God made nature, would he have planted clues that lied?" some of them might have asked. Similarly, the scoffers of Peter's "last days," willing to admit that Christ and the apostles had made waves on history, still insisted that all things would continue indefinitely as they were from the beginning--so that, as Jesus said,

As were the days of Noah, so will be the coming of the Son of man. For as in those days before the flood they were eating and drinking, marrying and giving in marriage, until the day when Noah entered the ark, and they did not know until the flood came and swept them all away, so will be the coming of the Son of man (Matt. 24:36-39, RSV).

Deuteronomy 13:1-3 (worthy of a separate study) suggests that we should not listen to predictive assertions, not even those verified by a scientific "truth test," that would lead us away from God, for God is testing our heart.

Alloformitarianism Defined

The alternative to uniformitarianism may be called alloformitarianism (G. allos, other). Alloformitarianism can be described in terms of three characteristics.

First, in contrast to the uniformitarian tendency to over-extrapolate, the alloformitarian emphasizes the limits of extrapolation and seeks to define boundary conditions. This is a difference in practice and attitude, rather than in principle, but is still an enormously important difference.

Secondly, in contrast to the uniformitarian tendency to deduce models of past structure from projection of present processes onto pre-historic data (with the promise to find no process inconsistent with the present ones), the

alloformitarian seeks to derive a model inductively from the facts, even if such a model is inconsistent with what is presently regarded as natural process.

Finally, in contrast to the uniformitarian belief that the universe has had "One Form," or one set of natural laws describing its operation "from the beginning," the alloformitarian is willing to believe that the universe had "Other Forms," or periods and places where natural laws, or predictive descriptions of what to expect from "nature," differed from those we presently observe.

Alloformitarianism Supported

It must be admitted at the outset that alloformitarianism has a host of problems all its own. In searching for the limits of extrapo-

"The alloformitarian assumption, that the universe may have had natural laws or properties other than we presently observe, is certainly more 'open-minded'...."

lation or in building models inductively, the alloformitarian is just as imprisoned by our present scientific knowledge (and present scientific ignorance) as the uniformitarian. The alloformitarian, however, is more conscious of these limitations and, presumably, therefore, somewhat freer from bias and less dogmatic in approach than the uniformitarian. These differences are not to be taken lightly. The data of science and limitations on present processes point directly to a supernatural origin for life on earth, or at least to its origin by processes other than the natural laws that we presently observe operating.¹⁰ Such a scientific model of creation will have to be continually revised, even as several scientific models of an evolutionary origin for life have come and gone at various times in the past century.

The alloformitarian assumption, that the universe may have had natural laws or properties other than those we presently observe, is certainly more "open-minded" than the uniformitarian insistence on "One Form." Allo-

formitarianism, though, can be accused of being too open-minded. If there are other forms, what are they? How can we determine what they are, and how can we test our models? Indeed, in the hands of a non-Christian intellectual, alloformitarianism might simply lead to agnosticism or skepticism. For example, certain scientists, especially mathematicians and physicists, delight in showing biologists that evolutionary theory is untenable, although they are unwilling to propose alternatives.

In the hands of a Bible-believing Christian, however, alloformitarianism becomes a positive tool through which to interpret earth's prehistory. As already mentioned, the Bible presents a view of earth's history that falls within the alloformitarian category, where different natural laws describe expectations of nature on either side of such events as God's creative acts, the Curse, the Second Coming, and probably even the Flood. The Bible also guarantees periods of uniformity¹¹ between such great events; but the Bible also insists that its revelation takes priority over the "clues" of nature that permit scoffers to extrapolate past the Flood, Second Coming, or Creation, as discussed earlier.

Perhaps this is the time to approach the inevitable question: "Can the Bible be treated as a science textbook?" Whenever that question is asked, it is usually tacitly assumed that the history of earth's rocks, plants, and animals is a scientific question. But it is not. Certainly it is not in any sense that which distinguishes scientific questions from philosophical, historical, or artistic questions. Scientific questions are those which can be investigated by public and repeatable observations and experiments. To be sure, scientists often conduct experiments to show what could have happened if an observable process were projected back in time, but determining what sequence of events did occur, and why, belongs to the methodology of history.¹² The question might be better asked, then, "Is the Bible a history textbook?" The answer must be yes, in the sense that the Bible rather clearly purports to include a history of God's dealings and covenants with man and nature (cf. Gen. 9:8-9, Rom. 8:19-23, Rev. 21, 22, RSV) and often

quite clearly offers interpretive comments on the history of nations.

With the Bible as his guide, then, the alloformitarian can be busy at the task of analyzing the data to reconstruct the processes and events, both regular and irregular, of earth's history. The view will be alloformitarian because the Bible's picture of earth's history is clearly alloformitarian. But the Bible also restrains and limits the incredible fictional wanderings to which an "alloformitarian mind" might otherwise be subject; for the Bible not only guarantees periods of uniformity, but also identifies the comparatively rare alloformitarian events, which are often more like bends in a continuous road, rather than disconnected segments.

Summary

If the natural historian puts on the spectacles of uniformitarianism, he will blind himself to the "curves" in earth's history; he will project his thought right past God's great acts and find himself not only in conflict with God's Word but also with God's World and its clear testimony to His "eternal power and deity" in Creation, Judgement, and Redemption (cf. Rom. 1:18-23, RSV). If he puts on the spectacles of a purely rationalistic aliformitarianism, he will be blinded by the dazzling array of potential models and the lack of means to test them, and, therefore, find himself most likely to become only a skeptic without a positive approach to science. With Scripture as his guide, however, the alloformitarian has both a means for seeing around history's corners (at least as "through a glass darkly") and a means of testing at least the outlines of his models.

It is sad indeed that so many Christians in science secretly moan within that God has given us the Genesis account and all the problems it causes us with our scientific colleagues. We ought rather to rejoice in Genesis and to thank God for His revelation, for without it, as either uniformitarian or alloformitarian, we are only prisoners of time and space and ignorance, for God "has put eternity into man's mind, yet so that he cannot find out what God has done from the beginning to the end"

(Eccl. 3:11, RSV).

With the Scriptures as our guide, then, we can build alloformitarian models of earth's history. The task is obviously difficult. There is no doubt that the historical scientist will identify areas about which he must state that in principle he can know nothing, even as the physicist has identified areas of inherent theoretic uncertainty even in observable phenomena. Still, Christian model building in historical science is valuable, not only as it glorifies God, edifies His Church, and works out the cultural mandate, but also as it provides science with a framework for predictive statements more nearly attuned to the true structure of reality, of a universe created by, for, and through the Person of Christ, for "in him all things hold together" (Col. 1:15-17, RSV).

It is my hope that these initial thoughts will encourage discussion of the scientific and Scriptural faults of uniformitarianism, and that it will serve to help develop a positive Christian alternative.

¹"Prehistoric" is used in this paper to refer to periods in earth's history, such as those associated with fossil periods, which occasion much disagreement. In the sense that the Bible is a written record, covering all of earth's time of existence, earth has no real prehistory. This paper actually views prehistory, history, and future history as one piece.

²"Scientific" is used rather loosely in this paper to indicate simply the range of theories and methods commonly discussed at meetings of professional scientific societies, such as the AAAS. Late in the paper, the "scientific" domain is distinguished from "historical" and "artistic" domains.

³Uniformitarianism is often defined only in relation to geology, the science which gave it birth and gives it greatest credence. In this paper, however, uniformitarianism is treated

as the broader epistemological assumption it really is. (Personally, I find it much easier to point out the inconsistencies of geological uniformitarianism with geological data than to challenge the broad assumption.)

⁴For more information on continental drift, see Sci. Amer., Oct., 1970, or Read. Dig., Apr., 1971.

⁵Uniformitarians once strenuously objected to "flood geology" because it explained too much in terms of one unique catastrophe of unknown mechanism. Now geologists are explaining practically everything in terms of continental drift, which also is one unique "gradual catastrophe" (to use Newell's phrase) of unknown mechanism. Geology has been the science most dominated by uniformitarianism, and it is possible that continental drift may deliver geology from uniformitarianism's inherent tendency to stunt the development of a science by insisting that all models comply with present (and soon past) understandings.

⁶In one graduate geology class, the instructor even noted that the assumptions involved in radioactive dating were so tenuous that groups like fundamentalists could make a strong case against the whole dating procedure and he closed by admonishing us to "keep the faith."

⁷A humorous, but tellingly significant example of ever-extrapolation is provided by Mark Twain in Life on the Mississippi, (Harper & Bros., Publ., New York, 1917) p. 156: In the space of one hundred and seventy-six years the Lower Mississippi has shortened itself two hundred and forty-two miles. That is an average of a trifle over one mile and a third per year. Therefore, any calm person, who is not blind or idiotic, can see that in the Old Oolitic Silurian Period, just a million years ago next November, the Lower Mississippi River was upward of one million three hundred thousand miles long, and stuck out over the Gulf of Mexico like a fishing rod. And by the same token any person can see that seven hundred and forty-two years from now the Lower Mississippi will be only a mile and three-quarters long, and Cairo and New Orleans will have joined their streets together, and be plodding comfortably along under a single mayor and a mutual board of alderman. There

is something fascinating about science. One gets such wholesale returns of conjecture out of such a trifling investment of fact.

⁸"Natural" is used in this paper in the common sense manner to refer to our regular observations and expectations of nature and to the properties of matter and the processes which cause this regularity. Natural "laws" are our codified predictive assertions of what to expect from nature in terms of properties, processes, and observations.

⁹Experience has taught me that many people find it nearly impossible to imagine "natural" could mean anything other than what we presently regard as natural. Yet the Scripture indicates that we do not even live in the world as God created it, but in a world reflecting both His creative and judgmental power, and looking forward to His redemption--thought that may require extra meditation by the "scientific man" of the 20th century.

¹⁰For discussion of scientific arguments in favor of creation, see my article, "The Origin of Life on Earth," Creation Research Society Quarterly, Sept., 1970, pp. 97-103.

¹¹The Bible is not "wildly" alloformitarian, of course, and speaks of "the fixed order of the moon and stars" (Jer. 31:35, RSV) and of a guarantee of summer and winter cycles (Gen. 8:22). A certain uniformity, or guarantee of the regular operation of nature apart from God's own declarations of exceptions, is Scriptural, but uniformitarianism is not. The principle of uniformity simply asserts that "the present is the key to the present" (i.e., that uniformity is reasonably observable in historical time and is applicable only so long as it is applicable), but uniformitarianism projects uniformity past God's turning points of both the past and the future, and that on no evidence beyond its own presupposition.

¹²It might also be suggested that the question of how God created might better be regarded as an artistic question rather than a scientific one, since science deals with form that can result from particles following their own natural tendencies, whereas art deals with the imposition of form on naturally resistant matter. Surely God fashions considerable variety and makes some aspects of things "pleasant to the sight" (Gen. 2:9, RSV).