

Creation Research Society Quarterly

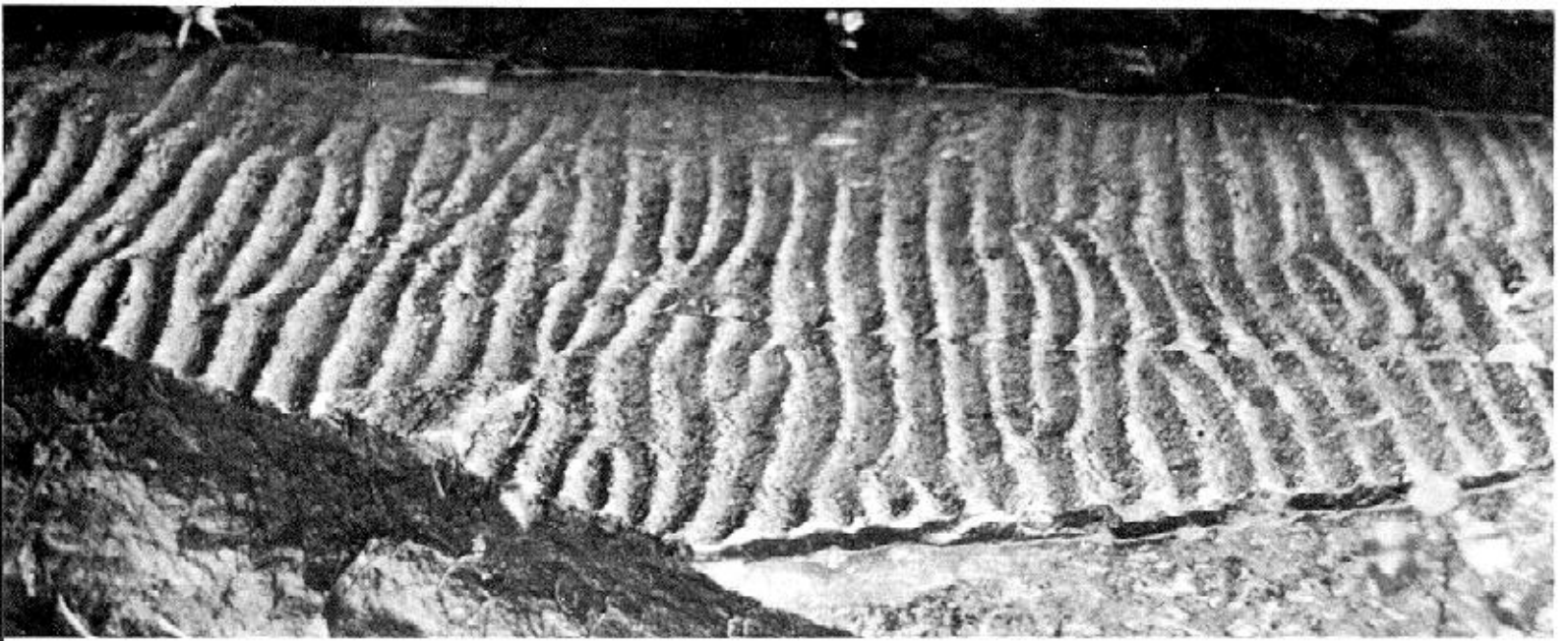
Haec credimus:

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

VOLUME 24

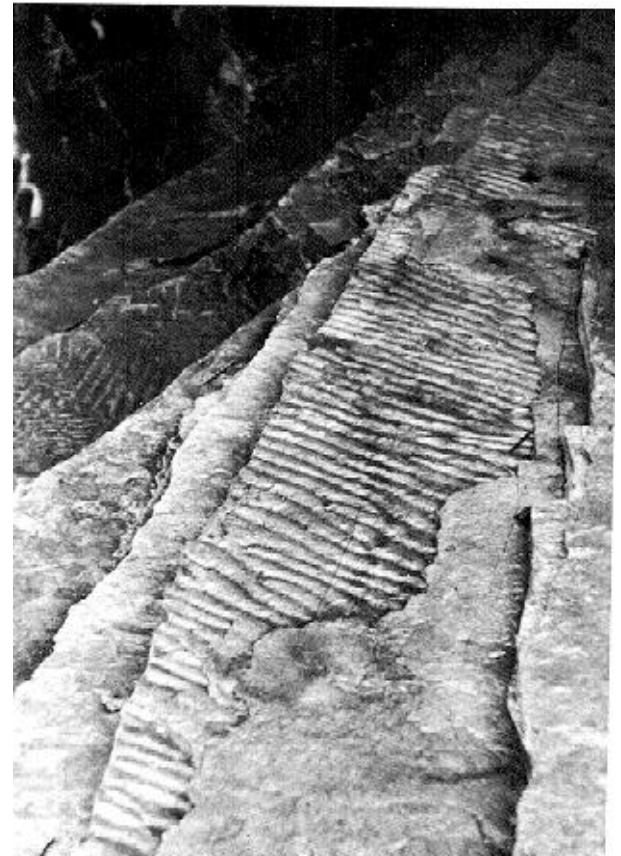
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NUMBER 3



RIPPLE MARKS

Ripple marks in the Potsdam Formation (Cambrian) at Ausable Chasm, New York. Ripples are common in sandstone formations and they are usually well preserved. They are identical to ripples that can be seen in a present-day stream or river bed. Ripple marks are considered to result from surface water flow. Did these sedimentary structures form as the Flood waters receded?



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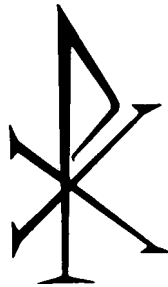
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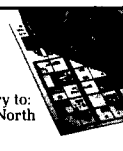
Instructions to authors can be found in June Quarterly.

Erratum

Delete lines 13-17, column 2, p. 103, December 1986
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COVER PHOTOGRAPHS
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MEMBERSHIP/SUBSCRIPTION APPLICATION FORM
CREATION RESEARCH SOCIETY

See the current *CRSQ* for membership information

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CREATION RESEARCH SOCIETY

History The Creation Research Society was first organized in 1963, with Dr. Walter E. Lammerts as first president and editor of a quarterly publication. Initially started as an informal committee of 10 scientists, it has grown rapidly, evidently filling a real need for an association devoted to research and publication in the field of scientific creation, with a current membership of over 600 voting members (with graduate degrees in science) and over 1100 non-voting members. The *Creation Research Society Quarterly* has been gradually enlarged and improved and now is recognized as the outstanding publication in the field.

Activities The society is solely a research and publication society. It does not hold meetings or engage in other promotional activities, and has no affiliation with any other scientific or religious organizations. Its members conduct research on problems related to its purposes, and a research fund is maintained to assist in such projects. Contributions to the research fund for these purposes are tax deductible. The Society operates two Experiment Stations, the Grand Canyon Experiment Station in Paulden, Arizona and the Grasslands Experiment Station in Weatherford, Oklahoma.

Membership Voting membership is limited to scientists having at least an earned graduate degree in a natural or applied science. Dues are \$16.00 (\$18.00 foreign) per year and may be sent to Glen W. Wolfrom, Membership Secretary, P.O. Box 14016, Terre Haute, IN 47803. Sustaining membership for those who do not meet the criteria for voting membership, and yet who subscribe to the statement of belief, is available at \$16.00 (\$18.00 foreign) per year and includes a subscription to the Quarterlies. All others interested in receiving copies of all these publications may do so at the rate of the subscription price for all issues for one year: \$19.00 (\$21.00 foreign).

Statement of Belief Members of the Creation Research Society, which include research scientists representing various fields of successful scientific accomplishment, are committed to full belief in the Biblical record of creation and early history, and thus to a concept of dynamic special creation (as opposed to evolution), both of the universe and the earth with its complexity of living forms. We propose to re-evaluate science from this viewpoint, and since 1964 have published a quarterly of research articles in this field. In 1970 the Society published a textbook, *Biology: A Search for Order in Complexity*, through Zondervan Publishing House, Grand Rapids, Michigan 49506. All members of the Society subscribe to the following statement of belief:

1. The Bible is the written Word of God, and because it is inspired throughout, all its assertions are historically and scientifically true in all the original autographs. To the student of nature this means that the account of origins in Genesis is a factual presentation of simple historical truths.

2. All basic types of living things, including man, were made by direct creative acts of God during the Creation Week described in Genesis. Whatever biological changes have occurred since Creation Week have accomplished only changes within the original created kinds.

3. The Great Flood described in Genesis, commonly referred to as the Noachian Flood, was an historic event worldwide in its extent and effect.

4. We are an organization of Christian men and women of science who accept Jesus Christ as our Lord and Saviour. The account of the special creation of Adam and Eve as one man and woman and their subsequent fall into sin is the basis for our belief in the necessity of a Saviour for all mankind. Therefore, salvation can come only through accepting Jesus Christ as our Saviour.

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Remarks by the President

A Louisiana law requiring a balanced treatment of both creation-science and evolution-science has been voted down this year by a majority of the Supreme Court. Creation-science was defined by the defense as "abrupt appearance in complex form" and, as such, did not include any reference to the Creator.

Even though the Creation Research Society is vitally concerned about this issue, it officially was not involved in the politico-legal maneuvers involving this case during the past six years because CRS is a scientific society. Our mission is research and publication.

We do believe, however, that the best interpretation of the facts from nature support the so called abrupt-appearance (or "kinds") model and we are endeavoring to establish this model within the scientific community. But additionally, we hold that the kinds were created by God and so we also are working within the scientific community to close the conceptual gap between the Creator and His creation.

Many leading scientists of previous centuries felt perfectly comfortable considering the Creator along with His creation. Now, our modern research tools may be different but people basically are not; so human nature needs the Christian message which not only helped set the stage for modern science but also meets the needs of individuals.

As we enter 1988 let us with renewed determination accept the challenge of utilizing the best scientific procedures in our thinking, research, speaking and writing for the glory of God.

Wayne Frair

Editorial Comments

At my request Dr. Eugene F. Chaffin prepared an in-depth literature review of the young earth concept. Dr. Chaffin reviewed all past Quarterlies and included some other creationist writings. The first in a series of two articles by John Meyer on another research project in which he is involved in the Grand Canyon is presented. Dr. Meyer reviews the history of a famous Shiva Temple exploration of about 50 years ago as an introduction to his work in that area.

The final selections in the minisymposium on orogeny organized by George Howe are in this issue. This topic is one of those which is of considerable interest to the Research Committee. Sedimentation, mountain and canyon formation should concern all creationists. Much study and research in these areas is necessary in developing the creation model of science.

Paul DuBois points out some misrepresentations of "Lucy" by anticreationists in his paper. Dr. Dudley Benton calls attention to some sloppy referencing practices and urges creationists to be more careful. As he discusses the young earth hypothesis, Dr. Benton also develops a model for the effects of nonuniform density on solar contraction energy.

Lawrence McGhee demonstrates that the mechanism of chance is detrimental to science and the understanding of the universe. Several Panorama of Science items and letters to the editor may be of interest to you. I wish that many of you would be willing to contribute to the Quarterly as well as to the research effort of the Society. Likely there are many research opportunities in your area and you could conduct a pilot study and write a preliminary report.

Emmett L. Williams, Editor

INVITED PAPER

A YOUNG EARTH?—A SURVEY OF DATING METHODS

EUGENE F. CHAFFIN*

Received 15 July 1987 Revised 21 August 1987

Abstract

A survey of various dating methods and age indicators is given, including Lord Kelvin's result involving the Earth's thermal gradient, various methods relying on radioactive decay, the relevance of the geologic column, carbon 14 and attempts to calibrate it using tree ring chronologies and Egyptian archaeology, etc., the Earth's decaying magnetic dipole moment, indicators from astronomy, fission track dating and other miscellaneous indicators. In each case, an effort is made to indicate the major creationist contributions that have been made in exposing the errors of evolutionary dogma.

Introduction: Lord Kelvin, the Earth's Thermal Regime, and the Early Days of Radioactive Dating

In the nineteenth century, before the discovery of radioactive dating methods, geologists felt that macroevolution would require at least hundreds of millions of years. Hence, great embarrassment resulted for some when Lord Kelvin published studies of the Earth's thermal regime. Eventually he concluded that the Earth's crust could not be older than about 40 million years and could be much younger (Slusher and Gamwell 1978). Although the rate of cooling of the Earth is extremely slow, and nearly 100 percent of any

original heat present when the Earth acquired its nearly spherical form must still be present, it nevertheless would require only a very short time, geologically speaking, for the modern thermal gradient present in the Earth's crust to be established. Regardless of the particular hypothesis of how the Earth formed, geologists were not able to explain Kelvin's results without resorting to special creation.

In the first decade of the twentieth century, Rutherford and Boltwood studied uranium-lead methods of radioactive dating and the age of the Earth leaped into the billion year time range (Badash 1968). In 1906 R. J. Strutt published studies of the amount of radioactive radium in various rocks and concluded that there should be more than enough radium present to account

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for the earth's internal heat (Strutt 1906). Today we know that when uranium, radium, potassium-40 and other radioactive materials decay, they emit charged particles such as alpha particles, energetic electrons or positrons, as well as gamma rays. In the process of giving up their energy, these particles plow through the surroundings, increasing the average kinetic energy of the atoms, hence increasing the temperature. Historically, it is said that Rutherford gave a lecture in London in 1904 at which Kelvin was present. Although he dozed during much of the talk, Kelvin was said to have awakened in time to be impressed when Rutherford claimed that the quantities of radioactive radium present in the Earth must supply enough heat to invalidate Kelvin's thermal regime studies.

Unfortunately, most geologists of the time were not very capable mathematicians, and were quite willing to blame Kelvin's results on the neglect of radioactivity. The same attitude of indifference to Kelvin's results seems to persist today. At the recent meeting of the American Physical Society in Crystal City, Virginia—April 1987, Lawrence Badash, a noted historian of physics, presented a lecture in which he described this early controversy. Unfortunately, he too described it as if the case were closed with the discovery of heat from radium (Badash 1987).

Nothing could be further from the truth. As early as 1908 doubts were raised as to whether radioactive heating was really such a large effect (Becker 1908). In 1955, while building a theory of Earth formation by gradual accumulation of a large number of comparatively small chunks of material, Hoyle attributed the degree of heating of the Earth by radioactive sources to be 1500°C at most (Hoyle 1955, p. 26). Part of the problem is that granite rock, such as occurs in continental crust, generally contains more radioactive material than the rocks of the ocean crust and no direct measurements can be made on the quantity of radioactive material in the Earth as a whole. Hence, only guesses based on meteorite compositions, etc. are possible. However, the best modern scholarship, exemplified by Slusher and Gamwell 1978, shows that Kelvin's problem still remains: the present rate of heat flow through the Earth's crust would have been reached in too small of a time span to be consistent with evolutionary chronology. Improvements in the data and calculational theory are still possible, though, if convection currents in the mantle prove to be significant (Bluth 1983, Anderson 1981). Further problems are that the temperature of the Earth's core has recently been pushed upward to 6900 ± 1000 K using new experimental data on the melting curve of iron (Q. Williams et al. 1987), while other data require certain diamonds formed in the mantle to have been crystallized at only 1200°C or less (Boyd and Gurney 1986). These latter developments make a long time scale more difficult to justify and support the young Earth position.

Radioactive Dating of Rocks

Rutherford and Boltwood's main problem was that although they introduced a dating method based on uranium and lead, their studies predated the discovery of isotopes and modern data on the abundances of different nuclides. They did not therefore know

enough about what had occurred and was occurring in the samples. Later in the twentieth century when we do have more information from over 80 years nuclear experimentation, many proposed radioactive dating methods are now discounted even by the evolutionists. The problems are leaching of daughter or parent nuclides from the rocks, diffusion of nuclides into the rocks, possible variations in isotopic abundance ratios over geologic time, uncertainties in decay constants and branching ratios, lack of reliable methods of determining how much daughter nuclide was already present in a rock at formation, etc. (Slusher 1973).

For the uranium-lead methods, "concordia diagrams" were introduced in the 1950s to graphically show "thermal events" which would reset a clock" (Wetherill 1956, 1963, Wasserburg 1963). However, many assumptions are needed to use the diagrams and interpretations giving essentially zero age are possible.

A method to which evolutionists seek to give great respect is potassium-argon dating. Clementson 1970, following the lead of Whitelaw 1968, 1969, Cook 1968, Armstrong 1966, Acrey 1965, Lammerts 1964, Morris and Whitcomb 1961 and no doubt many others, criticized this method and argued that it is impossible to adequately distinguish between argon 40 which was produced after a rock was formed and argon 40 which was carried with the magma and encapsulated with the potassium 40. Some classic work on Hawaiian lava known to have erupted in recent history, which nevertheless dated as geologically old rock, was cited as dramatic support of this idea (Noble and Naughton 1968). Similar arguments were made for the uranium-lead method, and supported by literature searches for isotopic data on volcanic rock of recent origin. Kofahl and Seagraves (1975 and 1984) have made further extensive studies along these lines. In particular they showed the vast discrepancies in "ages" given by potassium-argon and lead-thorium-uranium methods for volcanic rocks from Reunion Island. There seems to be a tendency in the technical literature to report only those ages which agree with pre-determined chronologies.

Possible variations in isotopic ratios over geologic time make suspect any method of correcting for initial amounts of decay products. Whitelaw (1969) argued that using the present 295.6 ratio of Ar-40/Ar-36 in the air to correct for initial Ar-40 is a questionable procedure, since this isotopic ratio is not necessarily constant in the Earth's magma and certainly not in the Earth's atmosphere due to cosmic rays and other changes such as outgassing from the Earth.

In the late 1970's an improvement in the accuracies of experimental techniques was made possible by the use of mass spectrometry. This made possible the detecting of individual atoms as a means of determination of atomic concentrations, rather than the older, less accurate technique of using radiation counters, spectrum analyzers, etc. This does not necessarily mean that more accurate ages are obtained, since the old assumptions involving initial isotopic ratios, leaching, etc. are still necessary. However, it does make very small concentrations accessible to measurement and allows application of the assumptions of radioactive dating in situations never imagined previously. For example,

Edwards et al. (1987) applied U-238, U-234, Th-230, and Th-232 measurements to coral to obtain ages ranging from 180 years to 125,500 years. M. J. Oard (1984a, 1984b, and 1985) has examined the theory of ice ages from a creationist perspective and his comments would be relevant to the theory of ice ages examined by Edwards et al. The dating method assumes that the Th-230/Th-232 ratio of sea water has been constant in time, an assumption which creationists might well question (on the basis of contamination of sea water caused by the deluge and/or the associated volcanic and crustal catastrophes). One sample, CH-8, dated by calibrated C-14 methods at 10,000 years was found to be 8294 ± 44 years old by the new uranium-thorium method. The authors had no explanation stating that the discrepancy merited serious thought.

A number of young Earth creationists: Gentry (1966, 1968, 1986), Kofahl and Seagraves (1975), DeYoung (1976), Morton (1982, 1983a, 1986), Schneider (1984) and Chaffin (1985) have felt that time variations in the so-called decay "constant" might be necessary to explain the data and correlate them with other phenomena. R.V. Gentry, an expert in the study of radioactive halos, has been saying this since the 1960's. In fact the story of radioactive halos goes back to Joly and the early 1900's, predating Rutherford and Boltwood. Joly was convinced that Boltwood's uranium-lead method gave too large an Earth age, not only from the study of halos, but also from studies of sedimentation and of the amount of sodium in the sea, both of which gave lower age estimates for the Earth (Badash 1968, Gentry 1974, 1986). Camping (1974) has shown that most elements other than sodium which have dissolved in the sea give much shorter age estimates of the sea. Morris (1975) reached similar conclusions. As Gentry (1973) has noted

Joly perhaps not realizing all the subtle factors which may influence radii sizes, announced in 1923 that U halo radii were indeed variable in rocks from different geological periods and suggested this was evidence for a change in λ .

Although Joly's experimental reasons for saying that halo radii indicate variable decay constant are now quite questionable, Gentry has proposed that halo radii could be nearly constant and the decay constant still be variable (Gentry 1966, 1968, 1974 footnote 16). His discovery of polonium halos in granite indicates a young Earth and possible variable decay constant for different reasons. The problem is that the polonium halos in question result from isotopes of very short half life and there are no old Earth cosmological models which can successfully explain this in the face of Gentry's extensive experimental results using ion microprobe, x-ray fluorescence and other modern techniques. Also, Gentry's study of secondary halos in coalified wood indicates they formed in normal ways but that old Earth models of the formation of the fossilized wood are not adequate. Instead, Gentry finds that uranium to lead ratios in the halo inclusions indicate they are only several thousand years old instead of the 60 to 200 million year age required by evolutionary epoch schemes and that furthermore the flexibility of freshly collected coalified fragments indicates rapid deposition and coalification—such as

would occur in a worldwide flood (Gentry 1986 pp. 51-59, Connor 1977).

Glenn R. Morton has gradually developed a model of Earth history which involves variable permittivity of free space and hence a variable decay constant λ (Morton 1981, 1982, 1983a, 1986). The "permittivity of free space" is a "constant" appearing in Coulomb's law of electrostatics. In the 1982 paper, he discussed the problem of the "missing isotopes." Isotopes with half lives less than a million years are either non-existent naturally or if they do exist can be explained as products of natural nuclear reactions or nuclear decays of longer lived isotopes. The existence of such short lived isotopes in quantity would be hazardous to life, which might be why the Creator omitted them. However, this creates an appearance of age and Morton argued that it might be more likely that decay "constants" changed in an episodic manner, resulting in more rapid decay for a short period, followed by modern rates of decay. This more rapid decay would remove the short lived isotopes. Morton showed by dimensional analysis that the decay constant λ should be proportional to $1/\epsilon_0^2$ where ϵ_0 is the permittivity of free space. Hence the variability of the permittivity of free space is equivalent to variability of the decay constant.

Akridge (1983) in a letter to the editor objected that "within the framework of classical electrodynamics" a variable permittivity of free space would violate the principle of conservation of energy and would result in light from distant stars being too dim. However, the admission of variable permittivity of free space takes us out of the realm of classical electrodynamics, since Maxwell and the other nineteenth century framers of the theory never had reason to consider such a secondary effect. It is not difficult to fashion field theories which conserve energy but yet allow the strength of electric forces to vary relative to gravitational ones. An example is given in Dirac (1973). In Dirac's theory, which is similar to the scalar-tensor theory of gravity of R. H. Dicke, there is a scalar field β which can absorb or give back energy and momentum. Only experiment can decide the correct theory and further work is needed to develop a consistent picture.

Setterfield (1981) gave an analysis of measurements of the speed of light showing that they displayed a statistical tendency to decrease as time progressed. However, his mathematical treatment could be questioned at points. For example, his value for the speed of light inferred from measurements by Roemer in the 1670's is not supported by the original data (Goldstein et al. 1973).

Morton's thoughts led rather naturally to the "outrageous hypothesis" that the Earth's radius has expanded (Morton 1983a). Morton used models from solid state theory to show that a change in the permittivity of free space would cause a differential expansion of the Earth. This is not quite the same as continental drift, which he had shown in an earlier article does not fit very convincingly into creationist time frames (Morton 1981). Instead, the Earth expansion hypothesis is one receiving some respect in conventional geology, but which Morton adapted to young Earth creationism. The continents almost seem to fit together like a jig saw puzzle on an Earth about 55 percent of its present

radius. Hence, Morton hypothesizes a sialic covering for the earth, which would crack apart and separate about the time of the Genesis Flood, due to God's modification of the permittivity of free space. This would involve greater repulsion between protons in the nucleus, increasing radioactive decay rates and a decrease in density of solid rocks due to mutual repulsion of electrons winning out over attraction of the nucleus for the electrons. Morton showed that granite would under these conditions expand less than the interior of the Earth and the ratio of land to water would consequently change. Baumgardner (1981) reached a similar conclusion. Unfred (1986), considering the topography of the Earth's surface, found much more that could be explained with this model.

Chaffin (1985), in studying the Oklo natural uranium reactor, found much that could possibly be better explained about the distributions of uranium 235, uranium 238 and the various neodymium and samarium isotopes if the relative strength of the Coulomb field could change, shifting the fission mass yield curve.

Radiometric Dating and the Geologic Column

One aspect of the young Earth-old Earth argument which must be addressed is whether the geologic column correlates with radiometric dating. In the creationist-diluvialist paradigm the geologic column, which was historically invented by diluvialists in the 1800's, must represent different types of sedimentation laid down largely during the Genesis Flood. Morton (1982, 1984, 1986) makes a case for further episodes of catastrophism following the Flood. Morton's recent book (1986) puts the age of the Earth at 125,000 years or more. This is squared with the Scriptures by assuming that gaps exist in the genealogies of Genesis, a view which was considered by Schaeffer (1972) with contrary evidence or rebuttal given by Whitcomb and Morris (1961), Whitelaw (1970), Strickling (1973), van der Werf (1977), Hanson (1977), Dillow (1981), Niessen (1982, 1984), Osgood (1984) and Seaver (1985). Morton arrived at the 125,000 year date by an estimate of the age of the Green River laminated formations in Wyoming and Colorado. Needless to say, it would take many omissions in the genealogies to push the age up to 125,000 years and this does not seem very plausible. Morton needs the larger age to justify what are considered to be world wide systems of geologic strata on the basis of post-Flood deposition. Nevins (1974) also considered extensive post-Flood deposition to be necessary, but not on as extensive a scale as Morton. In any case, whether post-Flood deposition is needed or not, there must be inherent scatter in the results of radiometric dating if the billions of years evolutionary paradigm is incorrect.

If radiometric dating, however inaccurate in detail, is correct in showing that lower beds of sedimentation must be millions of years older than higher beds of sedimentation, then the young Earth model would be wrong. Woodmorappe (1979) gave a voluminous study of the correlation or non-correlation of radiometric dating and the geologic column. He found that dates reported by evolutionists in the scientific literature often deviated by hundreds of millions of years or more from the supposed time frame of the geologic

period. We must realize that dates which are vastly different would not normally be reported in the literature, since the evolutionist would consider them inaccurate. This is evident from the cases which Woodmorappe documents where ages which agree with the geological column's time frame are accepted in spite of alteration of the rocks, while ages of other rocks are considered discrepant in spite of no obvious marks of alteration of the rocks. It thus becomes apparent that an objective, statistical and unbiased study of radiometric dating and its correlation or non-correlation with the geologic column is not possible if we can only rely on data published to date in the technical literature.

Woodmorappe's work thus justifies the view that radiometric dating does not prove the uniformitarian timetable, since the radiometric methods must be supplemented by many hypotheses involving reheating, leaching, cleavage, etc. in order to support the uniformitarian concepts (Woodmorappe 1983a, b, 1985a, b). Morton would possibly be able, using his variable decay rate hypotheses, to explain any trend, through the geologic column, in radiometric dates that might exist. However, Woodmorappe and Mehlert (1983, 1986) seem unconvinced of the existence of this "trend" but that if it exists it could be explained otherwise. Woodmorappe (1983b) mentioned rates of formation of magma with resulting degrees of entrapment of argon as a way of explaining potassium-argon biostratigraphic trends.

Carbon 14 Dating

This seems to have been a very popular subject in the Quarterly pages. Since the first Annual in 1964, no less than 23 papers have appeared along with numerous Panorama of Science items, letters, etc., all majoring on this subject.

The method of carbon 14 dating was discovered by W. F. Libby in the 1940s for which he received the Nobel Prize in chemistry in 1960. Carbon 14 is a radioactive isotope of carbon with a half life of 5730 years. It is produced in the upper atmosphere by bombardment of nitrogen 14 by neutrons from cosmic rays. It then slowly becomes distributed throughout the atmosphere, oceans, biological life and soil of the Earth. When an organism dies, it will under certain conditions stop exchanging carbon with the surroundings. If the activity of the surroundings at the time of death is known, it then becomes a simple problem in mathematics to calculate the age of the sample. However, as both evolutionists and creationists have increasingly found, the hypotheses necessary to give the concentration of C-14 at the time of death have become increasingly complex.

At first Libby assumed that the production rate of carbon 14 in the atmosphere was equal to the decay rate in the exchange reservoir as a whole. After a couple of decades under fire, this assumption had to be dropped in favor of "calibration" techniques using tree rings (dendrochronology) and historical/archaeological data. Libby knew from the first that the production rate of carbon 14 was not equal to the loss rate. But he assumed that the difference was due to experimental error and was believed. So much was he believed that all of ancient history was thrown into shambles and

some former "experts" in the study of ancient times were subject to ridicule or were conveniently ignored.

Creationists appear to have been aware of Libby's misguided assumptions from the early years forward. Moore (1964) cites an article of 1959 by F. L. Marsh while Hefferlin (1972) cites a 1953 article by Woods and a 1957 article by Gentry. Armstrong (1966) and Wood (1966) noticed the absence of carbon 14 in most samples of coal and concluded that the Genesis Flood must have initiated an increase in the C-14 concentrations in the atmosphere. Wood stated that a vapor canopy and/or the Earth's magnetic field may have shielded the atmosphere from cosmic rays. Armstrong attempted to give a calibration curve using the human lifespans given in Genesis 11. A re-evaluation of this problem and a new curve were given by Strickling in 1973. Wiant (1966) pointed out the compression of the history of early man that resulted from Libby's technique, while he and Harris (1966) pointed out some of the possible inaccuracies in the technique due to contamination by rootlets, limestone soil, industrial exhaust, airport exhausts, etc. Many if not all of these points were discussed by Whitcomb and Morris (1961) in their landmark book giving a comprehensive, Biblically based history of the Earth and the effects of the Genesis Flood.

Cook (1966) published a book which contained unorthodox views of Earth history, including critiques of radiometric dating techniques. Cook recognized that the Earth's atmosphere is not in a steady state, in that the production rate of C-14 is not equal to the loss rate, in spite of the fact that it would take only about 30,000 years to reach equilibrium. He discusses the effects of the industrial revolution (burning of fossil fuels) and nuclear weapons testing on the carbon exchange reservoir. He attempts to build a picture of Earth history by investigating glaciation, former ice caps and the theory of continental drift. The book is unorthodox in that Cook considers the Earth's age to be indeterminant, hence the viewpoint taken is not entirely in accord with Biblical statements. But nevertheless the "geological column" is considered to be of recent origin.

In 1968 and 1970 Cook published articles in the *Creation Research Society Quarterly* discussing the changes in estimates of production and loss rates of C-14 and Libby's development of the hypothesis that some carbon 14 is irretrievably deposited in ocean bottom sediments and that this is exactly the amount needed to account for non-equilibrium. Cook discussed the anomalous result that the percentage of dolomite versus calcium carbonate found in the geologic column increases toward the bottom of the column. He gave an interpretation in terms of a Flood model. He proceeded to analyze Libby's hypothesis, concluding that the sedimentation rate required to sustain Libby's conjecture would be 130 times that of conventional historical geology and that similar questions involving time scaling were apparently unanswerable.

Brown (1968) described the "art" of carbon 14 dating as it was practiced at the time and attempted to quantify the carbon-14 activity level prior to the Flood, effect of the changes in the Earth's magnetic field, the effect of a water vapor canopy prior to the Flood, the

effect of the conversion of carbon to carbonates during the Flood and other relevant factors.

Whitelaw (1968, 1969, 1970, 1975), rather than merely taking the defensive and explaining how the radiocarbon data could be explained in terms of a young Earth, took the offensive by interpretation of data published in the journal *Radiocarbon* in terms of a specific young Earth-diluvialist model. He assumed a higher production rate of carbon 14 in the upper atmosphere prior to the Flood, but that the initial carbon 14 concentration at creation was zero or very small. By grouping carbon 14 dates into 500 year intervals, he constructed graphs showing remarkable discontinuities at the expected time of the Genesis Flood. Thus a very dramatic confirmation of Biblical history was achieved.

White (1972) discussed variations of carbon 14 content in the atmosphere and also explained the large concentration of helium 3 in terms of a pre-Flood vapor canopy. Dillow (1981) discussed the same problem in his very interesting book on the vapor canopy.

While the possibility of a variation of decay "constants" has been considered at times, Gentry (1968), Dudley (1975), DeYoung (1976, 1978), no one had considered what this would do to interpretation of carbon 14 data, since the manner in which decay constants would have varied over time would have to be specified. Hefferlin (1972) attempted a mathematical treatment of how such a problem could be handled. Hanson (1976) also considered such a problem and also solved a hypothetical variable carbon 14 concentration model to show how uniformitarian prejudices are involved in conventional interpretations. Thirdly, Hanson also considered the fact that in ordinary treatments of "exponential decay" the probability of more than one decay in a small time interval is considered negligible. He then presented a solution of the Chapman-Kolmogorov equations to show what modifications result.

All these papers discussed up to now could be characterized as recognitions of the discontinuity caused by the Genesis Flood and hence the resulting compatibility of radiocarbon data with the Biblical history. The gross features of the creation alternative thus were outlined. The more recent works by creationists do not depart from these discoveries but they deal with so-called "calibrations" based on dendrochronology, Egyptian history, prehistoric digs, archaeological finds, etc. See Long (1973), Clementson (1974); Brown (1975, 1979), Sorensen (1976), Tyler (1977, 1978, 1979), Gladwin (1978), Lee (1982), Lammerts (1983), Vaninger (1985) and Johns (1986). In the case of dendrochronology, these authors have handled the circular reasoning necessary to cross match tree ring patterns from different tree specimens, the tossing aside of "complacent specimens," difficulties with laboratories refusing to make their actual data available, multiple rings possibly produced in a year and the admitted conflict with both radiocarbon results and Egyptian chronologies. The Egyptian chronologies conventionally used were constructed with an anti-Biblical, evolutionary bias. They depend on almost mystical interpretations of Egyptian history, such as the 1460 year "Sothic period," a cycle based on the rising of the star Sirius, which purportedly gives a

forced fit of archaeological finds in determining the dates of various Egyptian dynasties. Tyler (1978) gave a discussion and mathematical analysis which described the interface between radiocarbon and other data. He extended Cook's 1970 discussion of the geological absurdities involved in Libby's 1965 attempt to use ocean bottom sedimentation to explain non-equilibrium. Brown (1979) raised the question of how the radiocarbon concentration could rise to the present 70 percent of equilibrium in the short time span allotted to young Earth creationists. Tyler (1979) replied by discussing the time scales involved in exchanging carbon between the atmosphere, surface ocean, deep ocean, and other parts of the carbon exchange reservoir. Due to the negligible activity radiocarbon would have when its concentration is small, Tyler correctly stated that, if the atmosphere were isolated from the oceans, it would take only about 100 years for cosmic ray bombardment to build up the concentration from zero to its present value. With the oceans involved, the effect of the Genesis Flood must be considered. Hence, the Flood can again be used to demonstrate the short chronology involved in increasing the concentration from the very small pre-Flood levels demonstrated by most coal and oil to the present day values.

Decay of the Earth's Magnetic Field

Moving charges produce magnetic fields. All magnetic fields appear to be due either to changing electric fields, moving electric charges or electronic and nuclear magnetic moments. Compared to the other inner planets of the solar system, the Earth has a very large magnetic field. Since the crust and upper portions of the Earth contain very little permanent magnetism, and the inner portions of the Earth are above the Curie temperature of all known ferromagnetic materials, the magnetic field of the Earth must be due to electric currents in the interior and not to permanent magnetism.

In 1883 Sir Horace Lamb presented a theory of the Earth's magnetic field in which it would be due to electric currents circulating in rings around the Earth's magnetic axis and would decay with time due to resistive heating losses. In 1971 Thomas G. Barnes compiled real time data and estimates of properties of the Earth's core to give the numbers needed to apply Lamb's theory. If we interpret the data in terms of a half-life, the value is about 1400 years.

The old Earth, evolutionary description cannot be valid if the magnetic field decays according to the Lamb-Barnes theory. Only a few thousand years ago the magnetic field of the Earth would have been unreasonably large. This presents no problem if the Earth were created only a few thousand years ago, but evolutionists cannot accept this. That is why they insist on a dynamo theory for the Earth's magnetism, as opposed to the Barnes-Lamb theory. In the dynamo theory, fluid motions in the core are supposed to generate electric currents, hence also magnetic fields. In contrast to the Barnes-Lamb theory, evolutionists do not have an exact mechanism to generate a field of the shape and symmetry of the Earth's field. Akridge (1980) showed that the Faraday disk dynamo does not provide a model including the field reversals which the evolutionists need. Barnes (1971, 1972, 1973a, 1973b, 1975, 1981, 1982, 1984, 1986) has consistently main-

tained that remanent magnetism reversals in the Earth's crustal rocks can be explained by other physical and chemical factors than a reversal of the Earth's dipole moment. To quote Barnes (1982, p. 197):

The present status of evolutionary 'evidence' for the presumed reversals of the Earth's dipole magnet is as if geologists were to set up thermometers all over Mount St. Helens volcano region and from these temperatures (regional) claim to show worldwide oscillations/fluctuations in the global temperatures of the Earth.

Barnes is correct. A June 1987 *Physics Today* news item tells of the American Geophysical Union honoring George E. Backus in 1986.

In geomagnetic studies in the late 1960's Backus showed that the flow at the core-mantle boundary could not be uniquely determined for surface magnetic data, as had been thought, . . .

This seems to mean that, if there is not enough data available, more than one model will be able to explain the data. Weisburd (1987) in fact tells of some recent work by Bloxham and Gubbins (1987) in which a dynamo model of the Earth's core, plus the geomagnetic data, are used to map the magnetic field at the core-mantle boundary. C. V. Voorhies is quoted as saying that the model is: "... extremely speculative and by no means proven." The evolutionists are *trying* to explain the decrease in the Earth's dipole moment as due to intensifying core spots, which produce a magnetic field in a sense opposite to that of the main dipole. But it should be mentioned that it is a complicated, non-symmetric pattern of convective rolls that they are forced to accept and there is no real proof that these patterns are any more than speculation.

While the evolutionary theories of geomagnetism are too complicated to be predictive as regards the future, Barnes' model predicts a continued decrease in the Earth's main dipole. Humphreys (1983, 1984) on the other hand has found a hypothesis for the origin of geomagnetism which is Biblically based and also successfully predicted the order of magnitude of the magnetic field of the planet Uranus (Humphreys 1986). The January 20, 1986 Voyager 2 flyby of Uranus gave a value of the magnetic dipole moment in agreement with Humphreys's 1984 hypothesis.

Indirect Dating from Astronomy

Evidence from astronomy that gives a young age for the solar system, Milky Way galaxy or the universe indirectly implies a young age for the Earth.

For example, Slusher (1971), Armstrong (1971), Steveson (1974), Samec (1975) and Steidl (1987) have considered comets as indicators of the age of the solar system. Armstrong considered the problem of close encounters between comets and large planets, as an example in celestial mechanics. He concluded that, statistically speaking, the comets should speed up more often than they slow down as a result of these encounters and should be lost from the solar system. There is very little evidence for the existence of the hypothetical Oort cloud, hence if the solar system is as old as it is claimed to be, how could any long-period comets be left? A second reason for taking this viewpoint is that comets lose much of their mass each time they approach the sun.

Other indirect evidence involves discussing the intractability of the evolutionary theories of the origin of the solar system or of the big bang paradigm. Mulfinger (1967), Whitcomb (1967, 1976), Akridge (1980) and Slusher (1978) have discussed the origin of the solar system. DeYoung and Whitcomb (1978) concentrated on the moon, showing that thermal and geological activity, failure of radiometric dating, lack of significant depths of lunar dust, etc. all point to a young moon. St. Peter (1974), Akridge (1982, 1983), Schneider (1984), Bouw (1977, 1982), Slusher (1978c) and Gentry (1983, 1986) have pointed out flaws in the big bang theory of the origin of the universe.

Mulfinger (1970) gave a critique of theories of stellar evolution. Hinderliter (1980a, b), Hanson (1981), West (1981), and Steidl (1980) have discussed gravitational collapse or the shrinking sun hypothesis as a serious alternative to stellar nuclear processes as a source of the energy of stars. The reason that evolutionists cannot accept the gravitational collapse theory is that it would not provide enough energy to last the billions of years they need. Nevertheless observations show the sun is shrinking (Lubkin 1979). Hans Bethe, who received the 1967 Nobel Prize in physics for his studies of nuclear processes in stars, recently stated (question and answer session at the Crystal City, Virginia, American Physical Society meeting, April 1987) that he considers oscillations between electron, muon and tau neutrinos to be the solution to the solar neutrino problem. Clearly, if he is wrong, Steidl (1980) and others have already furnished creationist models to show why.

Miscellaneous

A few other dating procedures are mentioned. Fission track dating is a method whereby microscopic tracks in solids, produced by fission fragments, are counted to determine age of a rock. Macdougall (1976) pointed out that extraterrestrial samples such as moon rocks and meteorites give anomalously large ages by this method, attributed to tracks produced by cosmic rays. He says that attempts to surmount this difficulty have been made by choosing samples with a higher than average uranium content and taking samples located at least 10 cm below a surface. But even then it is not uncommon to find ages much greater than the supposed 4.6 billion year supposed age of the solar system. This is attributed to the initial presence of Pu-244 in the sample, an isotope with a half life of 82 million years and both alpha decay and spontaneous fission decay modes. The uranium and plutonium fission tracks are said to be physically indistinguishable. It is supposed that the Pu-244 would have decayed away and its fission tracks annealed away during the supposed millions of years it took the Earth to form, so that Pu-244 tracks would not be a factor in terrestrial materials. It seems to me that this assumption cannot be granted in a young Earth model. Tracks of other nuclides with shorter half lives (such as Cf-254, Pu-238, and Pu-236 with half lives of 60.5 days, 87.74 years and 2.85 years, respectively) would have to be considered. The nuclide responsible would have to produce the correct fission mass yield spectrum (Matthews and Kappeler 1984 or Kuroda 1982). Hence fission track ages are not conclusive evidence against a young Earth model.

Signs at Carlsbad Caverns or other caves sometimes indicate that the size of stalactite and stalagmite Formations can be used to date the formation. Both evolutionists and creationists who have seriously studied the problem have concluded that this is not necessarily true. Keithley (1971), Brauer (1972), Brady (1973) and a host of others listed by Williams (1987) have reported man made structures which have rapidly grown stalactites. In 1975 the author personally observed stalactites on the order of a foot long in an old bombed out World War II bunker alongside a country road west of Karlsruhe, Germany. I was told later that it was foolhardy to crawl around in such structures, due to the possibility of unexploded ordinance. Williams, Herdklotz and others have performed extensive experiments showing the drop in pressure and other conditions necessary for rapid formation of these structures (Williams et al. 1976, 1977, 1978, 1981).

Conclusion

This study shows that there are still educated people alive today who are willing to defend Biblical authority on the subject of the age of the Earth and that very reasonable defenses can be made.

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'LUCY' OUT OF CONTEXT: A REPLY

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Abstract

Anti-creationists do not always adhere to the standards they demand of creationists.

Introduction

In " 'Lucy' out of Context," published in *The Skeptical Inquirer*, Leon Albert (1985) voices his concern over the incidence of out of context quoting in creationist literature. He discusses the creationist claim that the australopithecines are not prehuman, particularly *Australopithecus afarensis*, the species to which 'Lucy' belongs. His report is an enthusiastic indictment and does raise some important issues, particularly the

tendency of creationists to apply to *A. afarensis* statements made about other australopithecine forms with little or no justification for the generalization. However, it also conveys the impression that virtually all creationists are guilty of blatant errors no self-respecting evolutionist would ever commit, which is highly misleading. Albert himself commits most of the errors he catalogs as part of the creationist repertoire. His own article is thus an excellent example of the fact that greater care needs to be taken in evaluation of these fossils—and the literature pertaining to them—by non-creationists as well.

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Albert "Tactics"

For example, near the beginning of his report Albert pejoratively describes creationist arguments as "tactics" (p. 364), connoting stratagems which have no logical merit and serve only to sway the reader to one's side. On the same page, Albert asserts that scientific creationists insist on interpretation of Biblical passages within the context, but do not follow their own admonition—it is "a rule more often broken than observed." Not only is this statement entirely irrelevant to the rest of the article, supporting evidence for it is conspicuously absent. In other words, Albert's attempt to bias the reader against creationists before presenting any substantive discussion is a gratuitous swipe constituting tactical behavior indistinguishable from that which he is at pains to condemn. (This particular tactic has a name—it is called "poisoning the well.") Shortly thereafter Albert ridicules Henry Morris as the "high guru" of creationism, which is simply an insult and contributes nothing of substance to his analysis.

Albert vs. Oxnard

Following this poor beginning, Albert proceeds to allege creationist misuse of a 1979 paper by Charles Oxnard entitled "Human Fossils: New Views of Old Bones." Albert's procedure for correcting the abuses is to misuse the paper himself. For instance, about Oxnard's opinion of the place of *afarensis*, he says (pp. 368-9):

Oxnard's article . . . refers to the 'new fossil finds' of Johanson and others and expressly identifies this material as humanlike. Moreover, Oxnard places this new fossil material on the ancestral line of humans in the evolutionary tree included in his article . . . and, although he himself identifies this new material as "*Homo*," he plainly states that it will probably be classified among the australopithecines. He even warns his readers to be alert to this likely change in names. Needless to say, Morris, Gish, and Bliss studiously avoid any reference to this warning when they cite Oxnard.

In contrast to creationist claims that Oxnard does not consider *afarensis* fossils to be humanlike, Albert says here that he "expressly" classifies them that way and situates them "on the ancestral line of humans." Let us see.

In the passage just quoted, Albert alludes to Oxnard's diagram of an evolutionary tree, but does not mention that the part of the figure associated with the supposed "expressly" humanlike material is actually described by Oxnard as "hedged in with many question marks" (1979b, p. 274). Is something hedged in with question marks "expressly" humanlike, or is it instead tentative and indefinite?

Albert would know had he consulted Oxnard's *Order of Man*, where the figure in question is reprinted (1983, p. 2). In the caption under the figure, Oxnard's previous judgment is restated and reinforced: "Question marks demonstrate just how problematical all this is." Oxnard also suggests for the australopithecine fossils the possibility that "no individual fossil so far found bears any strict linear relationship to humans," and refers to the "exciting uncertainty" indicated by the question marks (p. 1). These statements hardly con-

stitute an endorsement of the *afarensis* material as "expressly" humanlike and are certainly at variance with Albert's claims.

Perhaps Albert would maintain that Oxnard actually thought in "New Views" that *afarensis* was humanlike and simply changed his mind by 1983. This possibility can be checked: Oxnard discusses the fossils in two other papers published during the same year as "New Views." In one, Oxnard asks, "are they similar enough to man to . . . be capable of being ancestors of man?" He answers, "we cannot quite tell," adding that "we may prefer to be extremely circumspect" in evaluating them, due to the well-known tendency of fossil discoverers to exaggerate the significance of their finds: "there has never yet been hailed a new find that was not a human ancestor, and . . . that was not bipedal" (1979a, pp. 242-3). In the other paper, Oxnard says, "one hopes that greater caution will be used in the assessment of the new finds than was in the evaluation of the old; alas, it already seems that some of them may not be all they are represented to be" (1979c, p. 430). These papers, too, controvert Albert's portrayal of Oxnard's views.

Albert (p. 369) claims that in his diagram, Oxnard actually "places this new fossil material on the ancestral line of humans." Examination of the figure in question reveals that none of the *afarensis* material is directly connected to the human lineage, contrary to Albert's claim. The only direct connection is in Albert's own diagram! The diagram is labeled "After Oxnard": apparently Albert is overwhelmed by his opinion of the *afarensis* fossils to the point of reading his own beliefs into Oxnard's work.

That tendency can also be seen from the inclusion in Albert's diagram of *Homo habilis* as an early representative of *Homo*, which, in a figure captioned "After Oxnard," is ludicrous. *H. habilis* is entirely absent from Oxnard's figure, and Oxnard has repeatedly stated elsewhere that he considers *habilis* a misnamed australopithecine (1975a, p. 389; 1975b, pp. 3, 80, 121-2; 1983, pp. 1, 309, 331).

Albert writes that some creationists "are guilty of reading opinions into Oxnard's article that not only are not there but are actually in direct contradiction to what is there" (p. 369). He describes these acts as "scholarly felonies," commenting that "in order to achieve this, they have been dishonest both with themselves and with their readers."

Albert seems to convey the impression to the reader that he is the paragon of careful scholarship. Allying a definite opinion on Oxnard's part regarding the status of *afarensis* as prehuman ("expressly humanlike," "on the human lineage," etc.) reads into his article an opinion not there. Placing *Homo habilis* explicitly on the main human lineage in a figure captioned "After Oxnard" brings in a species name Oxnard does not accept, and directly contradicts his published statements. *These practices are precisely those for which Albert criticizes creationists.* His behavior is indistinguishable from that which he condemningly attributes to creationists. One must therefore conclude that if creationists commit "scholarly felonies" and are "dishonest both with themselves and with their readers," (p. 369), they are hardly alone. Albert says creationists

“creatively reinterpret” (p. 368) Oxnard’s writing; his own ability in that regard is dazzling.

If all this were not enough, Oxnard’s more recent writings even more clearly fail to reflect the position Albert attributes to him. Albert makes much of Oxnard’s “expressly” humanlike classification of *afarensis* in 1979, but in *Order of Man*, Oxnard says (1983, pp. 331-2):

The claim . . . that these new australopithecines are ancestral to both humans and later australopithecines may turn out to be correct. But the Afar fossils are new and have not yet been studied by independent laboratories to allow it to be corroborated. It is just as possible that the claim will turn out to be wrong . . . it is entirely possible that we may eventually decide that this species, *Australopithecus afarensis*, is as lief upon a lineage leading only to the later australopithecine[s] as upon other alternatives.

Of course this refutes Albert’s portrayal of Oxnard’s views, and Albert mentions not a word of it.

In the same source, Oxnard documents support for his earlier suspicions that *afarensis* is not prehuman. His reasons (pp. i-iii) form, essentially, a catalog of observations pertaining to recent studies of *afarensis* fossils by several investigators. Here Oxnard lumps *afarensis* with the other australopithecines in his criticisms of that group as not primarily humanlike. He does not deny that there are some humanlike features, nevertheless he lists a number of affinities with other australopithecines or with apes: features of the pelvis, spine, elbow region, shoulder, foot, etc. While recognizing the emphasis many writers place on the potential for bipedality they see in *afarensis*, Oxnard presents many points strongly implicating tree-dwelling behaviors. He concludes, after surveying a number of studies, that “though the standard idea is that some of the australopithecines are implicated in a lineage of human-like forms, the new possibility suggested in this book, a radiation separate from either humans or African apes, has received . . . powerful corroboration” (p. iii).

Recent Work

If Oxnard ever considered the *afarensis* fossils humanlike (which is doubtful), it is clear he does so no more. It is also clear that Albert utterly neglects to inform the reader of this fact. His way of dealing with it is not to mention it. Albert focuses on comments published in 1979, falsely elevating them to an endorsement of prehuman status for ‘Lucy,’ and nowhere mentions Oxnard’s more recent statements.

Albert’s use of older references to build his case when more current ones are available is a practice identical to that which he criticizes, though he is so scandalized and indignant when he thinks this is done by creationists. This use of Oxnard’s older remarks to argue a point Oxnard does not support is yet another of the “scholarly felonies” of which Albert accuses others but engages in himself. If his article constitutes out of context use of another’s work in any way different from that which he so strongly condemns, I fail to discern the distinction. This seems to me a bitter irony indeed.

Conclusion

It appears that Albert’s enthusiasm for creationist-bashing often gains the upper hand over his better judgment. Statements (p. 371) such as “mendacity . . . seems to be a prerequisite to membership in the ranks of ‘scientific’ creationism” are not notable for an excess of sobriety or restraint. Nor are phrases such as “scholarly felonies” and “flat-out lying,” (p. 368). This predilection for inflammatory rhetoric is doubly unfortunate in view of the presence in his own analysis of the same errors he denounces.

One is very much less inclined to take Albert’s views seriously when the principles he professes to value—accurate interpretation and representation of other authors’ views, use of current rather than outdated sources, and so forth—are so manifestly betrayed. The thought that Albert is pretty mendacious himself may cross many creationist minds, and the temptation may be great to reject his analysis entirely. I hope this is not the result. In general he should have assessed the strength of his arguments with greater deliberation before embarking on such a hasty course of condemnation. It is unfortunate that he epitomizes so perfectly the zeal-induced blindness of which he accuses others.

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Formation of the Thomas G. Barnes Institute of Physics

A new organization has been formed to honor Dr. Thomas G. Barnes, continue his outstanding work and publicize his theories. *Physics of the Future* and *Space Medium*, written by Barnes, have revealed unlimited areas for further research.

The purpose of the Institute shall be to promote educational work, research and study in the field of physics with the goal of promoting and advancing the theories of Thomas G. Barnes, formerly on the Board of Directors of CRS. The Institute will emphasize the classical approach to physics and demonstrate the inadequacies of relativity and quantum theories.

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HISTORICAL PERSPECTIVES

SHIVA TEMPLE: ISLAND IN THE SKY?

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Abstract

This paper is a review of the history of the 1937 American Museum of Natural History expedition to Shiva Temple, a butte in the Grand Canyon. The purpose of that study was to search for evolutionary development of animals isolated on this "sky island," as it was called. Preparations for the work and the actual expedition itself were noted by global publicity regarding the expected, positive, evolutionary implications. When it was finally determined that no significant differences were observed in Shiva's population of small mammals, the isolation of Shiva and its status as a "sky island" were called into question. A sequel to this paper will examine preliminary research data consistent with significant and recent biological isolation of Shiva and the implications this has for the age of the Canyon itself.

Key Words: Grand Canyon, Shiva Temple, geographical isolation, biogeography, speciation, Anthony.

Background

As one stands on the Grand Canyon's North Rim across from Shiva Temple, the view is breathtaking. The panoramic visual sweep of the canyon is stunning. The emptiness is overwhelming as the lowering sun casts continually changing shadows across the red, tan, and gray strata which make up the walls, buttes, temples and precipices of the mile-deep canyon. On the opposite canyon wall, one can barely make out the thread-like Kaibab and Bright Angel trails. A tiny splotch of green marks the oasis at Indian Gardens. The only sound impinging upon one's ear is the turbulent wind capering along the precipitous North Rim, the faint cry of an eagle and perhaps the distant boom of thunder echoing across the mightiest canyon on earth, signaling the late afternoon development of an incipient thundershower. It is difficult to imagine that this lonely outlook was the jumping-off point for a world-famous expedition a half century ago in the fall of 1937.

The Shiva Temple Expedition

Barely a mile and a half away, across a vacuous chasm from Shiva Expedition Point on the North Rim of the Grand Canyon, stands Shiva Temple, an isolated sentinel outpost, separated from the North Rim by 1300 feet cliffs and capped by nearly 300 acres of vegetation (See Figures 1, 2, and 3). So named by an early employee of the Geological Survey enamored with Eastern mysticism, Shiva Temple was about to become the focal point for a major scientific expedition which was capturing the imagination of millions who fed on the exaggerated reports of the mass media. The isolation of Shiva Temple from the North Rim had become a point of fascination for Dr. Harold Anthony, Mammalogist from the American Museum of Natural History in New York City where he had been employed for 26 years. As a firm believer of evolutionism, he was committed to the importance of geographical isolation in phylogenetic development.

Evolutionists often regard geographical isolation as critically important in speciation which is viewed as the first step in macroevolution. If a barrier, such as a mountain, a stream or an ocean divides a single population, it may restrict gene flow between the two new groups. Thus, mutation and natural selection might proceed in entirely different directions in the two new populations. Given sufficient time, significant genetic differences might develop in the two groups. If the isolation barrier is removed, the two new populations could again intermingle but would be sufficiently different that they would not interbreed and produce viable offspring. Since this inability to interbreed is one way of defining species, speciation would have occurred and the first step in macroevolution would have been accomplished. In much the same way that an island, cut off from the mainland by a rising ocean, would provide isolation, Shiva Temple as an "island in the sky," was suspected of providing isolation for its small mammal populations.

Anthony hoped to scale Shiva Temple, examine the mammals he found, and compare them with those inhabiting the North Rim. He fully expected to find significant differences in the two populations, thus providing substantial confirmation for the macroevolutionary model. Anthony was not a novice at scientific expeditions. Since his first employment with the American Museum in 1911, he had participated in 20 expeditions in North, Central and South America as well as Africa and the West Indies. As a specialist in mammals he had contributed considerably to the knowledge of both living and extinct fossil forms and his research papers had graced the pages of many prestigious scientific journals. He was clearly one of the world's foremost experts on mammals.

It was thus with high expectations that he approached Shiva Temple. Nor was he alone in his optimism. Krutch (1958, p. 199) quotes another member of the expedition as saying:

There is no reason why small animals isolated aeons ago should have become extinct . . . If we are able to compare this flora and fauna with that of the Canyon's main rim, we would have a time clock telling us approximately the number of years

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Figure 1. Sketch of Shiva Temple and Shiva Expedition Point area. The view is almost directly to the west from a point high over the colonnade.

it has taken to bring about structural change. It will be rolling back the curtain of time to glimpse life as it was in prehistoric days.

What evolutionary biologist would not sense a shiver of excitement at the very prospect?

A Note on Research Sources

While newspaper reports of scientific endeavors should not be considered as primary resources for scientific data, they are often the only source available for *historical research*. Because this paper involves a review of the history of the expedition and an analysis of the media response to it, the following sections quote extensively from the news media.

Insofar as I have been able to determine, the newspaper quotes and the references in the bibliography of this paper represent the bulk of the important material written about the Anthony expedition. Research for this paper has included extensive searches of the University of California, Los Angeles Biomedical Research Library and the general Research Library, the extensive historical holdings of the Huntington Library, the Grand Canyon National Park Research Library, and the library at the American Museum of Natural History. Since Anthony reported using young Mormon packers from Kanab, Utah, I spent several days in both Kanab and Fredonia, Utah, looking at records from historical societies and newspapers and interviewing "old timers," several of whom worked in the Canyon at the time of the Anthony expedition. Interestingly, no documents relating to the expedition could be found and no individual was encountered who even remembered the expedition. The extensive *Bibliography of the Grand Canyon and the Lower Colorado River, 1540-1980* has been consulted and only two entries by Anthony are noted. The first relates to his paper referenced in the bibliography of this paper and the second to a short, apparently non-technical paper in a magazine I have been unable to locate.

No other entries in that bibliography appear to relate to Anthony's work.

Evolutionary Philosophy and the Expedition

It is clear that a great deal of evolutionary enthusiasm surrounded the plans for the Shiva Temple Expedition. Butchart (1976) indicates "The museum men . . . made their plans and announcements with an unscientific amount of fanfare." (p. 27) *The New York Times Magazine* for September 19, 1937, declared:

If the theory that moved the expedition is confirmed by findings, the explorers should come down from Shiva Temple with living proof not only of evolution but with animate, breathing confirmation of the rate of evolution. The premise is that complete isolation on Shiva's island in the sky has preserved animal life (if it exists) as it was ages back, with allowance only for inbreeding . . . If the mission is successful, and living creatures representing some intermediate stage in evolution are brought down, biologists will hail the news with great joy. It is not often that man can reach back into an ancient yesterday and find animate wild things of a bygone era which have been protected from contamination by the creatures of our own world. (pp. 14-5).

The *New York Times* for Monday, September 20, 1937 (p. 14), stated that Anthony was studying "... the evolutionary effects of isolation on small animals" and quoted him as saying, "The success of the expedition is assured." On September 21 the same paper indicated that "A message brought down by packers and relayed by radio reported today that Dr. Anthony had trapped rabbits, squirrels, chipmunks and mice, but not 'the specimens I want'." (p. 29)

By Wednesday, September 22, Anthony (p. 29) excitedly reported that the animals on Shiva appeared "extremely pale" compared to the North Rim species. On September 24, the *Los Angeles Times* (p. 8)



Figure 2. Sketch of Shiva Temple showing general vegetational patterns. View is to the northeast. Background structures such as North Rim and wall are not included.

indicated that Anthony was "highly pleased" with the results of the Expedition and the *New York Times* (p. 23) indicated "... eight day's work atop Shiva Temple, the wooded plateau towering above the Grand Canyon's arid depths, tonight has yielded close to 100 animals to scientists searching for the evolutionary results of isolation."

On September 26, the *Los Angeles Times* (p. 11) again reported:

... Dr. Anthony has collected a number of interesting animal specimens, including rats, mice, chipmunks, rabbits, squirrels and similar small mammals, all of which he said appeared 'pale' in color ... Some idea as to the value of these specimens may be determined when he returns to the mainland with his collection tomorrow, Wood said. 'The really important biological questions,' Dr. Anthony said, 'may take months to work out ... It will require much time and scientific study, involving comparisons with mainland species of the same animals to determine their value,' he said.

The *London Times* (p. 11) for September 30 reported:

The object of the expedition was to study animal life on the wooded plateau in order to discover whether isolation produced any marked changes in appearance and habits of creatures in the hope of gaining useful knowledge of the effects of inbreeding and evolution in general. The animals found on the Temple were chipmunks, three or four species of mice which were extremely numerous, cottontail rabbits, rock squirrels which resemble the common grey squirrel, and pack rats, of which one species may be peculiar to Shiva. Dr.

Anthony expressed the belief that the colour of all these animals was lighter than their fellows on the north and south rims of the canyon ... but this remains to be proved by careful comparison. While no positive results can be yet announced, Dr. Anthony believes that it will be possible as the result of the expedition to reach an approximately accurate date for the separation of Shiva from the main land, and hopes that at least one distinct species of animal may be discovered to exist there.

In addition, throughout the expedition reports, runs a thread of optimism regarding significant physiological changes in Shiva's small mammal residents. The expedition quickly confirmed their suspicion of lack of water on Shiva. This naturally led to the question of how small mammals obtained adequate water; and true to their evolutionary expectations, members of the expedition suggested that the animals had *developed* ways of dealing with the problem. The September 17 *New York Times* (p. 1) reports:

How deer or any other animal could live on the plateau will be a subject of study of the expedition. Mr. Tillotson said it seemed apparent that there was 'absolutely no water on Shiva' and that animals living there probably had developed the ability to exist on the moisture from plants and rainfall.

Thus, expectations for confirmation of evolutionary theory and of finding living examples were indeed high.

A Touch of Intrigue

The original idea for scientific studies on Shiva Temple had apparently been suggested by park officials. Park Superintendent Tillotson had put his support firmly behind the expedition and was in fact

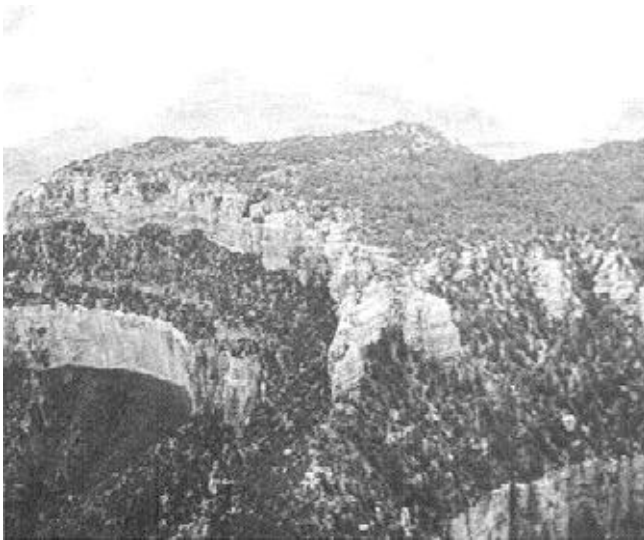


Figure 3. Aerial photograph of Shiva Temple showing the eastern two-thirds of the "sky island." The view is to the southwest from directly over the saddle area. The inner gorge of the Colorado River is seen along the top of the photograph.

directly involved in parts of it. It was clear that the climb to the top of Shiva should involve an experienced climber, but who should this be? Emery Kolb who operated a photographic studio on the South Rim volunteered. He had the appropriate credentials. Thirty-five years of climbing and hiking experience (much of it in the Grand Canyon) and previous exploration of the base of Shiva Temple from the river to the North Rim, placed him and his brother as perhaps the most knowledgeable individuals of the Canyon at that time. Anthony, however, chose not to use Kolb as climbing leader or even as a participant. Apparently Anthony avoided Kolb because "... he did not want to give Kolb any more recognition than he already had" (Butchart, 1976, p. 28). Instead he chose Walter Wood of the American Geographical Society, certainly a more prestigious individual than a simple photographer and much more in keeping with the elite scientific society of the American Museum.

However, while Anthony was laying plans for his publicity and preparing details of the expeditions, Kolb was not idle. He quietly trekked to the base of Shiva Temple and proceeded to climb it at least twice, once with his brother and once with his daughter. As evidence of conquest of the summit he left behind an empty box of Eastman Kodak Panchromatic film—a box which Anthony subsequently found but never publicly acknowledged, apparently since it would deprive him of the honor of a first ascent. Anthony (1937, p. 709) hedges on this point: "We had every reason to believe that no one had made a collection of the animals that might live on the Temple. We had no knowledge that a white man had even climbed it." Here Anthony is writing several months after the expedition about his knowledge of events before the climb. While the precise nature of the comment may be true, the entire article clearly leaves the impression that his was the first modern ascent of Shiva. Kolb was likely hesitant to publicly claim priority for the ascent of Shiva since he needed to stay in the good graces of

the park superintendent if he wanted to keep his photographic studio concession on the South Rim.

Park officials apparently were anxious to help Anthony secure priority on the ascent. The Shiva Temple file at the Research Library at the Grand Canyon National Park includes official reports of another individual who attempted to scale Shiva from the river on the southeast side but was apprehended by park officials before he could begin his climb.

The ascent of Shiva was not the only goal of the expedition. Anthony wanted to scale Wotan's Throne a dozen or so miles to the east, near Cape Royal. This butte was also isolated and similar to Shiva in being flat topped and possessing vegetation similar to the North Rim. Once the expedition had reached the top of Shiva, Walter Wood who actually led the climb, descended Shiva and prepared for the next ascent. Wood indicated to Anthony that Wotan's Throne was considerably more difficult than Shiva and strongly discouraged him from trying it. Consequently, Anthony never attempted that climb, but controversy surrounds Wood's claim to have scaled it.

In his report to the *American Alpine Journal*, Wood (1938, p. 141) reported using a signal fire to indicate reaching the top. Later, however, Wood denied this (Buchart, 1976, p. 30), saying he "would not have endangered the forest on Wotan by lighting a fire." In addition, no one could be found who had, in fact, seen the fire. Furthermore, the climbing team appears to disagree on the difficulty of the climb. Wood (1938, p. 141) states, "The climbing was harder than on Shiva, but nowhere really difficult." Elsewhere, however, Andrews, another member of the party states (1937, p. 723), "I had climbed in Wales and Switzerland, Wood was a veteran of the greatest mountains in Alaska and the Himalayas, but never did we have a more dangerous climb than getting down the base of Wotan's Throne." In view of these irregularities it is not possible at this juncture to determine whether or not the prime motivating force for the expeditions was the quest for publicity, prestige, and confirmation of evolutionary presuppositions or if it was genuine search for objective, scientific data.

Value of the Expedition

Of what scientific value was this expedition? Anthony's single sentence retraction of previously-stated, marked differences in Shiva Temple and North Rim animals appears as a footnote at the end of his report (1937) and is easily overlooked or mistaken as a caption for a picture in the adjacent column. It reads as follows: "As this article goes to press this comparison has been made and reveals no noticeable differences between the animals of Shiva and those of the Rim."

Creationists familiar with current evolutionary bias in the media will not be surprised when they compare the extensive world-wide press coverage of Anthony's evolutionary optimism to the single sentence admission published after the expedition.

A definitive species list of animals collected apparently was never published by Anthony. Thus, while the actual collection of the specimens and their accessibility to future workers is of importance, the only paper by Anthony describing the study is popular in nature, glamorized in content and limited in scientific

value. In addition, this publication is not even mentioned in the detailed technical work of Cockrum, *Recent Mammals of Arizona* (1961). Nor is the expedition listed in a paper on the history of Grand Canyon research (Wertheimer and Overturf, 1975. At best it would seem that the expedition was of primary interest to the popular media because of an evolutionary bias which later proved to be invalid and was only scantily corrected. Rarely has a scientific expedition gained so much popular attention accompanied by so little substantive data.

Anthony's Conclusions

Anthony appears to attempt to give himself maneuvering room if his observations proved invalid and confirmation of evolution on Shiva was not forthcoming. He suggests in the 1937 paper (p. 776) mentioned previously that:

... the expedition has been successful for it has surveyed the mammal fauna and secured an adequate sample of the life to afford a basis for research ... We did not know in the beginning what these specimens would disclose, if mammals proved to be on Shiva we knew they might be identical with those on the North Rim. If this were so, we would still have done something constructive because, until the specimens were taken, no one could say whether they were different or not. It was hoped that some species of mammals on Shiva had been completely isolated and would show significant differences from their mainland relatives ... The present mammal denizens of Shiva are all active, climbing types and, as far as physical barriers are concerned are capable of crossing from the rim to Shiva as conditions exist today. When the Shiva specimens are compared with the series of similar species from the Rim (something that will be done very shortly in cooperation with the U. S. Biological Survey which has material from both rims), then it will be possible to discover whether there are measurable differences or if these creatures disregard the hostile environment of the saddle and travel back and forth.

After comparing and contrasting North and South Rim isolation to the isolation of Shiva Temple, he continues (p. 776):

We do not yet have a Grand Canyon between Shiva and the North Rim, only a vertical interval of 1300 feet as contrasted with, roughly 5000 feet. If the forces of evolution have begun to produce visible effects, then one of our hopes will have been realized ... We may have been several thousand years too early to find tangible evidence of evolutionary changes; these will most certainly appear sooner or later, with a set up such as that on Shiva, and I hope that they have already begun to appear.

The general conclusion by evolutionists is that the exploration of Shiva Temple was either several thousand years too early to find evolutionary changes or that Shiva temple was really not that well isolated and that animals freely communicated between Shiva and the North Rim. The suggestion has been made that the

animals found by Anthony were mainly climbers, at home on rocky terrain and that geographical isolation did not in fact occur to any significant extent.

Krutch suggests (1958, p. 200), "In other words, the 'isolation' of Shiva was a myth. Animals had found it no more difficult to climb than the scientists had. And except for this fact nothing new was discovered." Corle (1981, pp. 52-3) agrees stating:

... As far as the fifty-thousand year inaccessibility of Shiva was concerned, that myth was destroyed forever. Animals of all kinds seemed to have no trouble in making yearly ascents and descents. There was no difference whatever between the species on the isolated Shiva and those of the Kaibab Plateau.

Thus, Shiva's status as an isolated "sky island" was called into question to explain the embarrassing lack of support for evolutionary theory.

I agree that there has been a "myth" associated with the Shiva Temple research but suggest there is reasonable evidence that the myth is in the evolutionary presuppositions rather than in the lack of isolation. I believe there is an alternative hypothesis which must be considered. Is it possible that Shiva is climatologically and biologically isolated from the North Rim, at least for some of its residents, and that lack of detectable differences when compared to North Rim counterparts results from a much more recent isolation of Shiva Temple than the time allotted for even micro-evolutionary development? Could Shiva Temple really be an "Island in the Sky," after all? This possibility is not only in conformity with the creationist model but appears to be in agreement with preliminary field research data. Thus, the very recent isolation of Shiva would be consistent with a comparatively recent origin of the main canyon itself (See Meyer, 1985, for a review of theories of Canyon formation and evidence for its recent origin). This possibility and its implications will be examined in detail in the sequel to this paper which will contain a review of recently collected, preliminary field data on the Shiva Temple area and integrate them with existing geographical, geological, and biological information.

Acknowledgement

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MINISYMPOSIUM ON OROGENY—PART III

MOUNTAINS, METEORITES AND PLATE TECTONICS

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Abstract

The concept of plate tectonics with its corollary, continental drift, have been espoused by various creationists who have adapted them to fit the short time-span of young-earth catastrophism—Northrup (1968, 1970, 1977, 1979, 1980), Austin (Nevins) (1978), Tippetts (1979), Elliott (1977), and Hansen (1983). Dwelling on the evidence that the continents at first were united, with the sea floor later spreading, these workers and I have envisioned an abrupt continental drifting and separation occurring much more rapidly than our uniformitarian colleagues would allow. My conclusion is that the physical evidences for rapid plate movement are found practically universally.

Introduction

The scenario of plate tectonics has also been applied to the creationist view of plant origins and distribution—Howe (1979) and Northrup (1979). Northrup (1977, 1979) and Hansen (1983) also evaluate human racial divisions in terms of rapid continental movement.

While I shall discuss the role of plate tectonics after the Flood in forming mountains, I believe there was a very important period of orogeny during the third day of creation (Genesis 1:9-11) and am presently preparing a paper to deal with those earlier events.

Did Continental Rifting Occur During the Flood or Afterwards?

In turning to this creation literature on tectonics, the reader must realize that some creation theorists — e.g. Nevins (1978) and Barker (1977)—have postulated that the rifting of continents took place during the Flood. I believe, however, that it occurred sometime *after* the Flood, as I indicated earlier:

Identification of continental division with the Flood ignores the obvious evidence in Africa, Israel, Lebanon and Turkey that the African Rift and its northern extension were formed long after the emergence of that area from the sea. Whether Job be properly identified with Jobab (Genesis 10:29) or not, as I have suggested, the book of Job nevertheless contains a remarkable amount of references to rifting, diastrophism, massive tidal activity and similar phenomena. I insist that this requires man to be present in Palestine during the later stages of continental rifting. And we must not ignore the fact that the Jordan Rift rends Paleozoic and Mesozoic structures. It separated long after

they were deposited by the Noahic Flood and its gradual retreat. The Paleozoic deposits in Israel indicate that the sea transgressed and retreated repeatedly for late Paleozoic strata reoccur between terrestrial rocks. The same is true for Mesozoic deposits, but here the transgressions of the sea are less frequent and are interbedded by wind and surface erosion deposits in the Nubian sandstones. Both deposit series must relate to Genesis 7:21-8:3. Northrup (1977), pp. 2-6.

I must add, the Mesozoic gives evidence of relating to the long period of the retreat of the Flood which, I conclude, lasted for several centuries. Another paper on the unlikelihood of orogeny occurring during the Flood is being prepared.

If the continental separation transpired at the same time as the Flood event, we would expect the ocean floor now to contain Paleozoic (Flood) deposits. Since there are very few Paleozoic sediments in ocean basins, the rift must have occurred well after the Flood. Since what uniformitarian geologists call "Paleozoic" are the Flood deposits, I use the terms "Mesozoic" and "Cenozoic" to refer to relatively short postFlood periods of sedimentation, lasting only hundreds of years and involving such events as tidal waves, wind storms, mountain formation and glacial action—Northrup (1977). "Precambrian" beds thus relate to preFlood events.

Possibly the Resulting Subterranean Heat Helped Make Mountains

There is a tremendous amount of subterranean heat that has been released through the crust in earth's great volcanic upheavals. When one examines the extrusives which blanket millions of square miles of the continental surfaces, erected enormous mountain ridges and built vast plateaus and island platforms, one must ask where it originated. Mesozoic and Cenozoic entrenchments, uplifts, overthrusts, extrusions and explosions are a powerful testimony to the fact that something generated enormous heat at about the middle of the

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Jurassic that continued into the recent period of the Cenozoic. If the Creator rapidly rifted the continents, much heat would have been generated. During the postFlood years this surplus of heat may have been His instrument used in the erection of mountain ridges, plateaus and island platforms.

Possibly PostFlood Volcanism Caused the Ice Age

The effect of the vast heat produced by continental movement a few centuries after the Flood played a part in the catastrophic weather patterns that troubled earth for many generations. I believe that it also triggered an "ice age" perhaps for a generation that is referred to constantly in the book of Job. My discussion of this and the implications of some of the evidences largely have been ignored or missed by creationists. I conclude that it happened as follows: The vast upwellings of molten rock locally raised temperatures, whether beneath the sea or on the surfaces of the continents. This was accompanied by the extrusion of many trillions of gallons of super heated steam into the atmosphere. It also was accompanied by vast explosions of particulates into the atmosphere. The explosions of Karakatoa, the valley of 10,000 smokes, St. Helens, Lassen and the millions of other vents which have littered the crust of the earth all contributed their atmospheric trash to the growing density of the layer of atmospheric moisture. This atmospheric condition continually built from the beginning of the Cenozoic until its precipitation reached a peak. Temperatures had plunged steadily after the close of the Cretaceous period. By the beginning of the Pleistocene period this condition had become so severe that the albedo of the earth was totally changed. Solar heat, so necessary to the maintenance of surface temperatures, now was reduced so dramatically that earth's greatest snowstorms began. More temperate areas of the world suffered the world's greatest rainfalls. Great canyons like the Black Canyon of the Gunnison, the Green River Canyon, the Snake River Gorge, the Columbia River Gorge and Grand Canyon were carved through uplifting and stabilized structures by the rapid movement of ice melt, rainfall and abrupt precipitation basin drainage.

Is it merely coincidental that Earth's great volcanoes have been ground, chewed, gouged and polished by moving ice after their formation? Or is there a cause and effect relationship? Is it merely coincidental that the Jordan/African Rift, the product of mild plate separation, has been harshly eroded along its edges by intense precipitation, its long grabens often filled hundreds of feet by that rainfall to form great post-Flood lakes? Or does this evidence give testimony to a Biblical cause and effect relationship? Is it merely coincidental that the leading edges of the great continental plates have suffered by far the greatest distortion to be found along their edges? Or is this one of the multitude of evidences that something, some powerful unidentified power source almost beyond human imagination, was used by the Lord in "... setting the bounds of the nations" (Acts 17)?

Interested readers will find that I have dealt extensively with this important tie between volcanism and ice in the postFlood world in an earlier essay—Northrup (1977). Hansen (1983) has subsequently also argued

that many mountains were formed by rapid rifting and that even the deep freezing of mammoths (like the one at Beresovka) must tie in with tectonics:

The condition of the animal (the mammoth) itself along with the circumstances surrounding its death indicate a very unusual situation transpired there, possibly violent and extensive tectonic activity. p. 207.

Do Plate Tectonics Die for Lack of a Suitable Mechanism?

Creationist workers C. L. Burdick (1980) and R. Daly (1984) have each asserted that no matter how tempting the evidence appears from fossils or geography for fitting the continents together, all plate tectonics views falter for lack of a mechanism sufficient to cause such rifting and movement. What on Earth or what in the universe, for that matter, could have possibly generated the titanic forces needed to yield such massive shifts? What could have driven South America westward so forcefully as to produce the Humboldt Trench, the great rift valley that skirts and follows the sinuous Cordilleran ridge of its leading edge? What could have generated the shock wave needed to drive Africa far to the east and also hundreds of miles northward?

This problem of a mechanism is the crucial question facing anyone who postulated major plate movement, whether as the *danse largo* movement of uniformitarians or as the vivace transition necessary for the scenario to fit Biblical history. There is no force on Earth capable of producing such extensive kinetic energy.

Astral Catastrophism Was the Main Force for Moving Continents.

If indeed plate tectonics is the correct model to account for mountain building, we must look to the universe to find the force involved. Perhaps as creationists we have been guilty of ignoring the astute observations of Alan O. Kelly. He first coauthored with Dachille (1953), a well-known astro-geologist, who has taught for years in Pennsylvania. Since then, Kelly has written several essays which support and expand his original conclusion that the earth has been subjected to as intense and severe damage by astral impacts as the lunar surface obviously has—(1963, a, b, c, 1966, 1985). In these he proposed that the greater circle of Hudson Bay is an ancient impact site. I suspect that it may have been related to a brief surge of continental movement which widened and deepened the ocean bottoms to receive the runoff of the continents. On the other hand, that particular comet may have related instead to the violent pre-Adamic uplift of the original great single continent in the third day of creation—an event which led to the creation of some of the so-called Precambrian strata.

Kelly also suspected that the Gulf of Mexico was a giant impact site, most likely formed at the crucial and violent transition between the Mesozoic and Cenozoic "eras"—which I would put in postFlood years.

Kelly alludes to another very interesting possible impact site on the southeast coast of the United States which in my view may have triggered the mid-Atlantic rift. He points to the arcuate orientation of the Appalachians and the Endless Mountains of Pennsylvania as

evidence. Kelly shows that these follow the curve of a compass swung around the Bermuda Islands, speculating that this center might be the corollary of similar mountains in the center of moon maria impact sites.

I have also wondered about the remarkable, fine granites which I have seen in central Georgia, Maine, and in Pennsylvania, and am considering the possibility that these are reworked crustal material which has been intruded as sills and domes under the impact crater rim. This crater impact also would explain the postFlood hardening of the eastern beds of lignites into anthracite while those farther west slowly grade downward through soft coals to lignites. If the East Coast is a crater rim, the fact has been largely obscured by massive tsunamis as the continental blocks moved apart. Such a possible impact site might have imparted the energy at the right time to begin the major rifting process. Unfred (1984) has likewise envisioned that asteroidal impacts have shifted the earth's axis of rotation which he believes led to rifting, compression and mountain building.

As I affirm these proposed links between astral impacts and continental rifting, it is with some hesitation and question. One wonders, for example, how life itself could have survived during such catastrophic events. One is reminded of recent discussion by scientists concerning the danger of nuclear war plunging the earth into a long winter or ice age.

It is remarkable that uniformitarians become very catastrophic in their thinking when they consider how continents were separated and mountains uplifted: yet they object to the Creator using catastrophes to "set the bounds of the nations," Acts 17. But there is a problem with our creationist approach. In examining, correlating and digesting the mass of worldwide evidence for catastrophism, we squabble over our pet theories, holding the pronouncements of our favorite Christian theorists as inviolable products of inspiration. We have a tendency to become remarkably uniformitarian and more dogmatic than those uniformitarian researchers whose conclusions we so vigorously oppose. Therefore, a symposium like this in which several workers patiently share and compare their very different creationist views of orogeny should have considerable research value.

Summary

There are many books and papers in which the authors have attempted to show how the various mountain ranges and plateaus of the North American Southwest were caused by continental rifting. The reader may consult Nations and Stump (1981) and Chronic (1983) as examples. The catastrophist advocate of plate tectonics like myself would simply ratify these same processes at a much-collapsed time scale, and would assume that the mountain ridges grew for the most part after the Flood and as a result of this rapid continental movement which was quite possibly triggered and motivated by astral impacts.

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Questions, Comments, and Replies:

Question from Morton to Northrup:

I have thoroughly enjoyed Northrup's articles. He appears to know his geological facts and the problems they present to the monocatastrophists. He and I may never agree as to the mechanism of continental separation but I respect his position and views because he has considered the evidence. The following questions I shall ask are the same ones I pose to every believer in continental drift.

Rapid rifting as proposed by Northrup would produce massive amounts of heat. Thus if plate tectonics were simply accelerated to fit within a creationist time frame, severe problems would arise. For example, if a match is rubbed very slowly along one's trousers, nothing happens. But if the head of the same match is rubbed rapidly against the pants, it will light! In each case the same amount of energy is generated. In the slow motion instance the energy is dissipated and does not build up to cause ignition of the sulfur. In the rapid case, the temperature in the match head rises to the kindling point before the heat energy is dispersed. A similar situation would have occurred if continental drift had been accelerated. The frictional heat would have been generated so rapidly that the earth would have literally melted and/or ignited if plates moved as rapidly as creationist continental drift believers assume—(Morton, G. R. 1981. Creationism and continental drift. *CRSQ* 18:42-5.)

Northrup's reply: There was a great quantity of heat generated I believe. As indicated earlier, this heat

helped both directly and indirectly to form mountains because coastal ranges were formed in the process of subduction and volcanoes poured out the vast beds of lava which now occur as structural parts of plateaus and mountains.

Howe's comment: If the Creator did use rapid rifting of continents after the Flood, it is possible that the expected oversupply of heat was either supernaturally prevented from forming or else quickly dispersed during the rifting process. While this is possible, it does not submit to experimental analysis and it admittedly involves miracles not directly mentioned in the Bible.

Question from Morton to Northrup: If the present distribution of continents arose by rapid rifting, why is Antarctica surrounded by a ridge which encloses twice its area? This arrangement would seem to require a convectional sink in the center of Antarctica in terms of plate tectonics, a zone of subduction in the middle! Everywhere else that drift postulates a downward convectional stream, earthquakes occur in great numbers. Yet on Antarctica no known earthquakes have ever been recorded in spite of numerous observations there.

Northrup's reply: This is truly a problem for plate tectonics theorists which deserves further consideration. This does not mean that any other views to explain these data are devoid of problems, however. One might ask "Why is there not a girdle of suboceanic mountains around each of the continental blocks if they were all caused by radius expansion as you believe?" Why is this supposed evidence for radius expansion limited to Antarctica?

Question from Morton to Northrup: If Africa arose by plate tectonics, why is it surrounded by a ridge system which is a bloated caricature of that continent? The mid Atlantic ridge is supposedly an upwelling area, while the 90° east ridge on the other side of Africa is an upwelling zone as is also the east African rift system. Thus it would appear that we have a set of convection cells with three areas of upwelling and no zone of subduction in between, as plate tectonics would seemingly demand. That would seem to be physically impossible.

Northrup's reply: Perhaps this is so! It would require more detailed study of the matter on the part of all of us in hope of finding a solution.

Question from Morton to Northrup: According to paleomagnetism all of the northern continents are more northerly now than in the past. This means that the Arctic Ocean must be shrinking in size. Local geology, however, requires that the Arctic Ocean be expanding because there is a midoceanic ridge down the middle of the Arctic Ocean. Thus drift requires that the Arctic Ocean be getting bigger and smaller at once. How can this be answered in terms of plate tectonics? There is an explanation according to the expansion model in that the Arctic Ocean gets physically larger while expansion is occurring. Since mathematically, the distance between two latitude lines on a larger earth is greater than on a smaller one, the paleomagnetic evidence is merely an artifact of expansion as the latitude lines have moved more than the continent.

Northrup's reply: I am pleased that you have pointed out the problem, one deserving much more thought. I

have no answer at the present. Perhaps this will become the basis of a future study on my part.

Comment from Waisgerber to Northrup: Northrup concludes that the many deposits of geological history cannot possibly be accounted for in a single monocaustrophic model. Northrup is correct in this conclusion, in my opinion. In Los Angeles County, for example, there are so many objections to the Flood-making-all-geology-model that a book could easily be written discussing the evidence. Northrup's articles should be required reading for those who believe that The One Flood did all geologic work. If his articles do nothing else they will explain to those who hold to a single creationist explanation that their view can be easily eliminated by scientific evidence.

Northrup is also correct (1979) in quoting George Howe, that scientists must go into the field to examine the evidence. The greatest barrier to creation scientific studies is presupposition based on a strident interpretation of Scripture. One alternative to Northrup's view of rapid continental rifting, however, is an idea that geologists have long held; that a few thousand years ago, the oceans of the world were probably about 300 feet lower in elevation than they are today. This would suggest that within the world of thousands of years ago, there were lands which connected one with another. Then came a melting of ice caps which caused the oceans to rise and isolate lands one from another. The lands were divided by water, in this view, without the need for continental drift. Data about the Mediterranean Sea indicate that the ocean level was considerably lower long ago than it is today.

Reply by Northrup: There are very few areas where legitimate land bridges would develop as earth's surface water became entrapped above sea level in Pleistocene ice. Those bridges that then existed do not provide adequate means for the immigration of life from Ararat to the present continental blocks—see Northrup (1977).

Land bridges, as a fragment of the past, were long ago discarded as a means of explaining most floral and faunal migration and interrelationship between opposing continents. They have been put to rest (and should be left there) by the very instructive results of the ocean floor borings done by the Glomar Challenger.

Comment from Waisgerber to Northrup: If there is one area in which Northrup can be challenged it is his apparent belief that words such as Paleozoic, Mesozoic, and Cenozoic are actually intervals of geologic time. Stratigraphers of the middle 20th century have virtually abandoned the time of these "eras" (Paleozoic, etc.) as being truth. They even question periods of time such as Triassic, Jurassic, and Cretaceous. So it is unwise for creationist geologists to embrace and adapt these ideas when they are being abandoned even by secular thinkers.

Reply by Northrup: I am well aware that there are many unwarranted assumptions in the geological column. However, I have found sufficient concord between its summary of the sequence of the structures that record earth's history and my own field studies on four continents to continue using the terminology. Without it we have no point of reference as we discuss evidence with the uniformitarian. Without it we begin

to loose contact with the very real physical evidence left for us by earth's great geological catastrophes.

Comments by Waisgerber to Northrup: Plate tectonics is but one current theory which supposedly explains earthquakes, the development of some land forms and the existence of some rock formations. In 25 years I predict that this model will fail, just as have all previous models for the development of the earth's crust. Creationists should use plate tectonics only in a very tentative way.

Concerning the evidence for one original continent, I believe that stratigraphic and paleontologic data merely suggest that all continents were connected at one time (perhaps only by way of land bridges). The distribution of sedimentary formations and the distribution of fossil life within existing continents suggest that these connected continents were under water for the most part.

On the other hand, I do not believe that plate tectonics should be totally abandoned as a possible model just because a suitable mechanism is not presently apparent. It would be acceptable to sustain it on the basis of other evidence alone, with or without a mechanism. I believe as Burdick has cautioned, that creationists should react only very slowly in accepting any theory put forth to explain our globe. They should continue to evaluate the evidence for and against plate tectonics.

Reply by Northrup: This is precisely my point. My catastrophe series harmonization model is nothing more than a model, an attempt to explain the physical data which we find (or which we as creationists should be finding and observing) in the physical geological record. As a theologian and Old Testament scholar who honors the text of the Bible as the Word of God, I insist that the physical data which I or others have found in the earth's crust must eventually be found to be in perfect agreement. One source of information comes from the handiwork of the Creator and from His activities since Creation. The other information source is the very Word of the Creator. As a theologian I wrestle with the union of God and man in the God-Man, Christ Jesus. I test my understanding of that relationship by the Biblical evidence, revising my conclusion as I discover that it does not accurately account for all of the revelation on the subject. As a geologist I attempt to understand earth's great orogenesis in the light of the physical evidence found in the very real physical, geological column as it exists in the field. But, at the same time, I evaluate my tentative conclusions in the light of my ever growing knowledge of the final authority, the Word of the Creator. Often I find I must revise my conclusions to harmonize with the facts.

THE MECHANISMS FOR MOUNTAIN BUILDING FROM A CREATIONIST PERSPECTIVE ARE NOT YET UNDERSTOOD

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Abstract

For this symposium the writer and others were asked to prepare papers concerning orogenesis—the process of mountain making. Then each writer was to read other papers and question the papers' authors in accordance with the questioner's scientific background. Since the writer is a geologist, questions to authors are principally geological in nature.

Preface

No model for orogenesis has yet been proposed which satisfies every part of the scientific community. That is because each scientist views the world from a differing scientific frame of reference. To a geologist, any model proposed concerning development of mountains should explain why mountain making occurred where mountains exist currently. Also the model should explain current differing geomorphic configurations of mountain ranges within any extensive part of a continent. Further, the orogenic model should explain why sedimentary strata and fossiliferous horizons vary from region to region, from country to country and from continent to continent. Also, where possible, the orogenic model should explain which strata are pre-orogenic and which are post-orogenic, and why. The model must explain the existence (or absence) of fault systems.

It is the writer's opinion that the ruling elite of 19th century western Europe were led astray principally by

scientifically deficient, often anti-Biblical forces. A late 19th century result was intellectual acceptance of the myth of evolution based on what was believed to be the fact of geologic time. A mythical corollary was intellectual acceptance of geologic time based on the presumed fact of evolution. Thus any creationist model should include, where applicable, some explanation as to how the elite of the 19th century strayed into a scientific cul de sac to reside there to this day.

Because the writer does not propose an orogenic model, this should not be taken as a reluctance to propose. There is no question that mountain building relates directly to volcanic activity. The mechanism which allowed for such volcanic activity has not been determined, in the writer's opinion, plate tectonics to the contrary notwithstanding.

Because no scientist is omniscient, it is mandatory that scientists from one discipline read the proposals of those from other disciplines. Fresh ideas thrown into the caldron of scientific scrutiny will either spice the theoretical stew or cause the stew to be unpalatable. Criticism of a model is as important as is the model proposed.

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For example, the writer takes issue with 1) assignation of a Paleozoic age to the Flood by Northrup, 2) the earth expansion model of Morton, and 3) the Mars flyby beliefs of Patten. However, there may be parts of each proposal which require closer analysis and better understanding. Thus, the theoretical whole may be unacceptable, yet some parts of that whole may help explain tectonism, stratigraphy and paleontology for future creationist models.

Canopy/Flood Model

A catastrophic Flood did occur in the opinion of the writer. However there is a currently popular creationist explanation which is not acceptable to the writer. It is the so-called Canopy/Flood model where the planet's atmosphere was covered with a water canopy or an ice canopy prior to the Flood. It is the writer's opinion that Biblical evidence for the canopy part of the model is not at all compelling. Also the Flood part of the model is concluded to be an attempt to explain stratigraphy and sedimentation solely from the viewpoint of hydraulic engineering. Stratigraphic distribution of rocks and fossils is much too complex to be explained by "the Flood did it all" model.

Scripture merely separates waters from waters. The waters above can be (and for centuries were) interpreted more readily as atmospheric moisture, including ordinary clouds. A study of ancient, Biblically related literature such as the works of Josephus suggests very strongly that ancients believed rains fell shortly after Earth was created. Thus 1) there was no 2000 year dry spell prior to the Flood, as some canopy theorists assert and 2) there was neither an ice canopy nor a water canopy.

However, there was a destructive universal catastrophe—The Flood. It is current, common understanding among scientists of varied persuasions that 10,000 years ago (more or less) ocean levels were 200 feet to 300 feet lower in elevation than are ocean levels today. A 300 feet rise in the ocean level should be a flood by any definition.

Asteroidal Impacts

The evidence that asteroids or other heavenly bodies impacted the Earth, as presented by Unfred (1984) and Northrup (1979) in this symposium is acceptable. We should consider asteroids, comets and meteorites as probable initiators of surface consequences on earth, after impact. However, there is nothing in either paper to convince the writer that asteroidal impacts in fact relate directly to the formation of mountains, as the mountains are presently distributed.

The writer must object to the incorporation of believable asteroidal impact and literature with a hardly believable Canopy/Flood model. The two should be considered separately.

The Earth Divided In The Days of Peleg?

Hansen (1982) believes that he must account for the separation of continents within a short term Biblical time frame. Thus Peleg's division seemingly offers Hansen the opportunity to separate continents during the life span of Peleg. Yet throughout history, Peleg's division was believed by devout Jews and Christians to be the time when Japhetites, Shemites and Hamites were dispersed; not continents divided.

The mechanism for continental separation could have begun at the time of the origin of the Earth, even before dry land appeared. Then again, it could be that the continents never separated.

Are Plate Tectonics a Valid Theory?

Burdick (1980) criticizes creationist and secular versions of plate tectonics in language that a geologist can understand. Burdick also offers references from professional geological journals. Burdick rightly pleads for creationists to react slowly before accepting any explanation such as plate tectonics.

It is the writer's opinion that plate tectonics is merely among the latest of evolutionary scientific playthings put forth in an effort to better comprehend Earth and its geologic structures. Plate tectonics will be discarded in time, when the theory is tested across all continents and the theory is found wanting.

Problems With Isostatic Equilibrium and Viscosity

Morton (1981) believes that earth is presently in isostatic equilibrium. However, data exist which indicate contrary opinions. For example, many parts of earth offer evidence that localized uplift and/or subsidence continues, as for example within Los Angeles. According to one prominent UCLA geologist (now deceased) the Baldwin Hills in Los Angeles are rising significantly. If uplift continues, then within a few thousand years, the Baldwin Hills will be among the highest mountains in the world.

In situ conditions observed by the writer of metamorphic rocks in this part of California offer evidence that uplift is not caused by movement via a viscous medium. Rocks encountered (1) in deep gold mines and (2) in water tunnels through mountains, reveal that the deeper one penetrates Earth's crust, the greater is the observed fracturing of the underlying rock. For example, massive granitic rocks such as those of the Tejon Lookout Granite Formation, in the Tehachapi Mountains of Los Angeles County and Kern County, California, crop out boldly on the surface. However, diamond drilling to depths exceeding 1500 feet, through such rock, reveals that granitic rock and associated metamorphic rocks have been crushed into a putty like fault gouge. Individual fault gouge zones may be in excess of 20 feet in thickness.

The writer finds it difficult to believe Morton's proposal that crustal uplift via a viscous medium would have ruptured the rock in the manner described above. Uplift via a viscous medium should produce massive, relatively unbroken bedrock at depth. Fractured rock would be expected near the surface, where flexing of rock would be presumed to be greater.

Should Creationists Believe in Geologic Time?

Northrup's paper (1979) suggests a belief that evolutionary geologic time units such as Paleozoic Era, Mesozoic Era and Cenozoic Era are useable units for creationists. It should be understood that standard time units such as eras, periods, epochs and ages are just as theoretical as is the theory of evolution. Hence creationists who propose models using evolutionary geologic time units, must do so with great discretion.

Originally, the word era (as in Paleozoic Era, Mesozoic Era and Cenozoic Era) was assigned to sediment-

ary rock with similar paleontologic assemblages. Assignment of the dimension of time was a later adaptation. Pressure by evolutionists on 19th century geologists resulted in the emplacement of strata from one era above strata of another era to suggest ages long geologic time. Yet in fact, in North America and in all other countries, strata assigned to each era lie more in horizontal relationship, one era with another.

How eral time units were developed incorrectly can be seen in the states of Arizona, New Mexico, Colorado and Utah—the Four Corners area and the general region. For example within Grand Canyon and vicinity there are supposed Paleozoic formations lying one on another, above pre-Paleozoic Era (or in this instance, Pre-Cambrian Period) rocks. Commencing at the base of these Paleozoic formations one can observe rocks which are (1) deeper water marine formations, overlain by (2) near-shore marine and non-marine formations, followed by (3) on-shore, wind blown deposits and finally by (4) an overlying marine formation. Within Grand Canyon, windblown deposits are assigned to the Coconino Formation. The Coconino Formation is part of the Permian System of rocks in Grand Canyon.

Then consider stratigraphy elsewhere as within the Four Corners area, such as Painted Desert and Zion Canyon. Strata exposed within these areas are assigned to the supposedly younger Mesozoic Era. Yet one can observe similar lithological, stratal succession as described within Grand Canyon's Paleozoic succession. Mesozoic Era strata include what could be called (1) basal, marine formations which are succeeded by (2) near-shore marine and non-marine deposits, followed by (3) on-shore, windblown deposits and then followed by (4) overlying marine formations. Mesozoic Era windblown deposits are known as the Navajo Sandstone. The Navajo Formation is part of the Jurassic System of rocks.

The Paleozoic Era, Coconino Sandstone and the Mesozoic Era, Navajo Sandstone appear to be 1) lithologically similar and 2) placed similarly within respective geological stratal successions. Yet the writer knows of no mountain where the two formations appear together in outcrops, where the Navajo Sandstones can be seen to rest above the Coconino Sandstone. Navajo Sandstone can be seen in Zion Canyon and in such other places as "Rainbow Bridge" in Utah.

If evolutionary scientists can produce an observable columnar relationship (Coconino Sandstone below and Navajo Sandstone above) this would establish firmly that Navajo sandstones are younger than Coconino sandstones. Until such a relationship is seen, it is mandatory for the well trained, objective stratigrapher to provide alternative relationships. One such relationship would be that Navajo Sandstone and Coconino Sandstone are one and the same.

Additional strata exist above the highest of Mesozoic Era marine formations. These are coal beds assigned to the Cretaceous Period of the Mesozoic Era. Yet Pennsylvanian Period (Paleozoic Age) coal strata, so widely distributed in the middle and eastern parts of the United States, have not been observed in the Rocky Mountains, particularly that part of Grand Canyon which exhibits Paleozoic Strata. Why are Pennsylvanian

Period formations so lacking in coal in the Rocky Mountains? It could be all bituminous and anthracitic coal horizons are of similar age. Then again they may not be exactly equivalent. Research is needed here to determine age relationships.

Paleozoic Fossil Distribution

Using the end member concept for understanding alternative beliefs, Paleozoic marine fossil distribution should be explained either chronologically or ecologically. Unfortunately, it is the chronological end member which has influenced 20th century scientists that there is such an interval of time as Paleozoic Era. In the opinion of the writer the real answer lies somewhere between the two end members, but probably closer to the ecological end member.

Ecologically speaking so-called Paleozoic marine fossils can be considered principally cold water and/or deep water elements, many of which still exist today. Paleozoic fossils are widely distributed simply because oceans in times past were as extensive in distribution as they are today. Hence cold water forms living at ocean depths were (and are) more widely distributed than were (and are) tropical sea, shallow water forms.

When the names Cambrian, Ordovician, Silurian, etc. are thus applied to rock deposits, one can equate them with ecological assemblages occurring essentially at one and the same time. However, in any one area, the higher placed formations should be considered as being younger. Consequently there is a need for geologic time to allow for localized deposition, whatever that time interval is. Also, in times past, earth had many such ecological zones that were fossilized, though not necessarily simultaneously. Research is needed here.

Other Evidences Against "Geologic Time"

It is well known among stratigraphers in North America that formations assigned to every geological period rest directly on Precambrian bedrock. Any objective stratigrapher must then use such knowledge to test the reliability of geologic time and evolution.

The end member concept for the development of theories is applicable here. One end member would be that these basal strata actually are of varied ages. Thus it is pure chance which allowed for formations within every geological period to rest directly on Precambrian rocks. Acceptance of this end member belief means that intervals of lost time must exist. Such hiatuses would vary from a few million years to over two billion years. Such lapses of depositional time are hardly believable. Such hiatuses would require the existence of structural unconformities the world over.

A second end member belief would be that all basal formations are in fact of equivalent age. If one believes this second end member, then geologic time as taught in many colleges and universities about the world must be wrong. Million year to billion year hiatuses would not exist. There would be no need for proposing the existence of unconformities the world over.

If one believes in evolution, however, then one must accept with blind faith, the first end member described: that there are billions of years of geologic time. However, in the writer's opinion, true historical geological time must lie more closely to the second end

member: thus there is no such thing as geologic time as taught currently.

There is reason to believe that subsurface strata of supposed varied ages grade laterally one into another, across all continents. Examples of stratal interfingering can be seen in evolutionary inspired textbooks on geology. Interfingering explains why petroleum geologists have such enormous difficulties in correlating one petroleum basin with another.

Research is needed concerning the stratigraphy of each state in the United States and of each province in Canada using petroleum drill data. The writer believes that future research will determine that strata of one age grade with frequency into strata of another age. We have found some evidence of this even in the Grand Canyon (Waisgerber, Howe and Williams, 1987).

Research is needed to determine the depth of sedimentary formations within each state. Then the formations should be correlated across states to show that depth of sedimentary strata is not related to geologic time. Researchers will determine that there are Paleozoic, Mesozoic and Cenozoic formations exceeding 20,000 feet in thickness in selected basins. These deep basins could have been formed over one interval of time, rather than successively.

The state of Nebraska would be an excellent state to commence study in the subsurface. So would be states such as Iowa, Illinois, Indiana, Ohio and Michigan.

Oil And Gas Deposits Demand Recency

There is strong evidence for a young Earth via a study of oil and gas deposits. These liquid and gaseous elements are trapped in sedimentary strata. A research program to determine the permeabilities of these same strata should reveal that these strata cannot trap oil (or gas) for millions of years. Even the tightest of strata will allow water to migrate about an inch a year. Gas would migrate considerably more rapidly. Therefore the belief that we have gas trapped in strata ranging in age from about 10 million years to five hundred million years is a belief in the supernatural. It is not science.

Conclusion

The writer does not support any specific creation model to explain geology and geologic time. There are far too many areas of science which have not been incorporated into any model: areas which are not known to, nor understood by the writer. Hence the writer's immediate objective is to suggest areas requiring research in order to come closer to an understanding of the history of earth. There is no doubt that future research will result in a history of earth which will not include evolution as the key element.

References:

Note: CRSQ—*Creation Research Society Quarterly*.

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Questions, Comments, and Replies

Question from Morton to Waisgerber

It is difficult to understand how Mesozoic coal and lignite can be rafted into place at the same time as Paleozoic coal considering that they exhibit a vertical relationship to each other. The same can be said of the rocks named Cambrian, Ordovician, Silurian, etc. If these materials are deposited at identically the same time and represent different ecological assemblages, then why are they found on top of each other rather than side by side in a horizontal relationship? One must explain why the Lehigh coal beds of the Ouachita in southern Oklahoma are covered by strata of Mesozoic affinities which also contain coal and lignite. The Ouachitas can be followed seismically to the south where they are buried by several thousand feet of sediment which also contains coal and lignite. It would seem difficult to have these coals be deposited simultaneously.

Reply by Waisgerber

The rafting of Mesozoic coal into place at the same time as Paleozoic coal is but one end member of a field of study concerning the stratigraphy of North America. At the other end of this field of study would be the slow, ages long accumulation of sediments and coal as represented by evolutionary thinking. Thus there exists any number of interpolations between those end members.

In the first place no mention was made by me of lignite. I refer to massive accumulations of what could be economically excavatable bituminous and anthracitic coals such as exist in Pennsylvania and in the Rocky Mountains.

Secondly, I challenge Morton's statement that the Paleozoic coals and the Mesozoic coals show a vertical relationship, one with another. Where in Pennsylvania is there Mesozoic coal resting on Paleozoic coal? Where in the northern Rockies of the United States is Mesozoic or Cenozoic coal underlain observably by Paleozoic coal?

Thirdly, I never said that Cambrian, Ordovician, Silurian, etc. deposits were deposited at one and the same time. The principle of superposition readily explains that overlying higher formations are younger than are underlying formations, presuming no tectonic complications. There must be an interval of time in order for sedimentary materials to accumulate, no matter what the energy source.

Fourthly, a question was asked as to why the formations are found to be on top of each other rather than side by side in a horizontal relationship. The answer to that question is to be found in a study of the history of stratigraphy. It is enough to say that correlation of strata across the United States is virtually impossible because, at depth, sedimentary formations of various ages in fact grade into strata of other ages. Such lateral relationships are known by the stratigraphic fraternity, especially within eastern states.

Even the venerable United States Geological Survey has not yet been able to correlate formations across the United States because (1) the formations beneath may not exist on the surface (2) subsurface formations undergo facies change laterally and vertically and (3) because fossil evidence defining geologic time in the

east is not at all the same as is fossil evidence in the west.

Fifthly, Morton does not offer evidence of direct vertical relationships between the Lehigh coal beds of the Ouchita and the alleged Mesozoic strata. How was this vertical relationship observed? Is there one mountain where presumed higher lying Mesozoic coals lie directly on Paleozoic coals? Are there drill records which reveal vast subsurface Paleozoic reserves under southern Oklahoma? Or is the evidence more a horizontal one where exposed Paleozoic coals are to be found in one county in southern Oklahoma, while the presumed younger coals are found in another county in southern Oklahoma?

Finally, the evidence that the Ouachitas can be followed seismically to the south where they are buried by thousands of feet of sediment which also contain coal and lignite is invalid. If Morton had said that lithologic data could be followed southerly under thousands of feet of sediment then that statement might be meaningful. To prove his contention, Morton should research drill records in Oklahoma and Texas to prove beyond doubt that Paleozoic coals with extensive distribution in fact lie under Mesozoic and Cenozoic strata.

I cannot recall ever reading professional papers which mentioned discoveries of vast Paleozoic coal reserves deeply under Texas and Oklahoma. To be sure there are reserves at or near the surface in both states. I challenge Morton to abandon the notion that Paleozoic Era, Mesozoic Era and Cenozoic Era are real intervals of time. Deposits from each so-called era could have as easily been deposited, concurrently over an interval of time. The coal forming interval is suggested to be among the last of the intervals merely because coal strata are found at or near the surface, rarely at depth. Whether one believes in a young Earth or an old Earth, the evidence suggests that coal is among the youngest of depositional features.

Comment from Northrup to Waisgerber Regarding Peleg

When it comes to the issue of Peleg, I would like to see my lecture "Continental Drift and The Fossil Record" (1979) republished for students of Genesis 10. In it I examined the root P-L-G as found in Genesis 10:25, Job 38:25, and elsewhere. Through a broad spectrum consideration of this root in Hebrew, Aramaic, Coptic, Ethiopic, Arabic, Syrian, Sanscrit, and Greek, I have been forced to conclude that this is built upon the pre-Babel phoneme, P - L, which remarkably conveys division in several languages.

Furthermore, I conclude that the combination P-L-G suggests division by means of water in many occurrences. Indeed, in classical Greek I have located 18 developments of the same root, ALL of which refer to the sea. It is NOT the root chosen by Moses to describe the division of families and peoples in the two instances in Chapter 10 where he discussed that kind of division (vss. 5, 32).

Also, the linguistic and family division can be demonstrated to have taken place approximately three generations before "the earth was utterly divided by water (Lit.) for which Peleg was named.

This is the only place in the Bible which can possibly describe the abrupt division of the continents if indeed later Mesozoic time coincides with the closing verses of Genesis 10:25-32 and 11:16-24. If one doubts this meaning of the Peleg root, to what apparently catastrophic and abrupt event does the Lord refer in His words to Job: "Who has utterly split asunder a place for the going of waters, or a way for the lightening of thunder?" (Job 38:25 Lit.)

Reply by Waisgerber

Let me state initially that I am not a student of Genesis 10. I have read Genesis 10 and 11, and I have read commentaries. Nothing in the commentaries indicates what Northrup alleges. I must presume then than Northrup concluded that geologic time was factual. Consequently Northrup proceeded to search the Scriptures for confirmation of geologic time. According to his reply he found it in Genesis and in Job; particularly Job 38:25.

My reading of Job 38:25 offers other alternatives. For example, Genesis 2:10 discusses a river flowing out of Eden. God evidently split asunder a place for the going of waters in Eden. Then God split asunder paths for other rivers.

Since I do not accept a 2000 year dry spell before the Flood as the only alternative history before the Flood, it is easy for me to accept the existence of thunderbolts (indicative of rain) as per Job 38:25. This then suggests (1) that it could have rained before the Flood and (2) that God catastrophically created the rivers of Eden and other rivers.

Comment from Northrup to Waisgerber Concerning the Canopy

As obvious in my recently published comments (Northrup, B. E. 1986. Creation contradictions? *Bible-Science Newsletter* 24(6):1-2, 5) I agree with Waisgerber on the point that Genesis 2:5 indicates only that it did not rain between the third and sixth days of creation. But I must add when it comes to the separation of "waters from waters" the Hebrew text is far more explicit than the King James Version. The former actually reads like this, "and God proceeded to make the expanse (where birds fly - v. 20), and caused the division of the waters which were down underneath the expanse from the waters which were up over the top of the expanse, and it came to be so" Genesis 1:7. Thus it appears that we should take the matter of water above the expanse (a canopy, if you please) far more seriously than either Waisgerber or Morton do and I am presently preparing a paper on this subject.

Reply by Waisgerber

The Hebrew text may be more explicit. However, the belief that this means a canopy creates a problem for me. Does canopy indicate a climate so saturated with water than there existed a perpetual fog?

If so, did ancient birds fly in the fog? If they did then those ancient birds differ from modern birds. Every time I have been to the beach during a foggy day, I have noted that modern birds walk.

Further, Genesis 1:14 comments that lights were placed in the expanse of heaven for signs, and for seasons, and for days and years. Would not a watery canopy have prevented the viewing of constellations

which the ancients used for signs, seasons, for days and years?

Further, presuming the existence of an ice canopy: ice is a mineral. Ice crystallizes in the hexagonal system. All hexagonal minerals are optically, doubly refractive. Hexagonal minerals permit the passage of light uniformly only parallel to what is known as the "a" axis. Any passage of light through any other axis results in double refraction of the light, providing that the light ray impinges on the ice crystal face at an angle, less than 90°.

Even though ice is a weakly doubly refractive mineral, the presence of ice in an ice canopy of some thickness could cause individual stars to be seen as double stars by earthlings. The moon would tend to be blurred to those who viewed it from earth's surface, except when the moon was directly overhead. Would not cuneiform tablets have commented on such aberrations? I cannot take the canopy theory (water or ice) too seriously.

Comment from Northrup to Waisgerber on Meteorites

I agree that asteroidal impacts probably are unrelated to the Flood and that one should not expect to find extensive indication of orogeny in the Flood period itself. However, we must not ignore the clear statement of Psalm 104 (in the Hebrew) that, after the founding of the Earth, the Creator covered it with the deep as with a garment. The waters stood above the mountains" (v. 6) of the newly created earth. I do not consider any mountain on the face of Earth to represent, in its present state, one of these original mountains.

Furthermore, we must stop the very unBiblical habit of ignoring the neocontinental orogeny which brought a submarine landmass surface leaping out of the sea during the darkness of the first half of the third solar day experienced by the earth. Indeed, we must consider the possibility that scientists who are examining signs of initial continental fracturing on a limited basis in upper Paleozoic layers may be examining evidences pointing to the means by which the Creator removed the sea from some land surfaces within a year after the Flood had begun.

Above all, we should not ignore the evidence suggesting the possibility that the Creator used massive impacts of energy to set the bounds of the nations habitations—Acts 17:26. Kelly (1953) (1963) [References are in my paper in this minisymposium] has set forth massive evidence to support a giant collision south of Texas in the Gulf of Mexico. I agree and feel that the following items are a few of the byproducts: The mountains of Mexico and Central America, the great coral beds of the Gulf of Mexico and Caribbean, the vast evaporite beds including salt along the Gulf Coast, the oil fields of its perimeter, the Arbuckle Mountains of Oklahoma, possibly the elevation of the Ozarks, the superficial deposition and reshaping of Texas, Louisiana, Oklahoma, Kansas, much of Missouri, Nebraska, South Dakota, possibly North Dakota, Minnesota, Wyoming, some of Montana, New Mexico, and Colorado. If so, meteoritic impacts have been a highly significant factor and force in shaping post-Flood history and its continents.

Reply by Waisgerber

As stated previously, the use of Scripture is subject to interpretation. When one has decided to accept a scientific course of action, one should not search Scripture for confirming evidence. That is what theistic evolutionists have done. Instead, the Bible should be read to determine how science fits into it.

When I read Psalm 104, it states that original Earth was covered by the deep such that the waters stood above mountains. Such a condition exists currently under the Pacific Ocean. Therefore I have no problem in accepting tentatively that the bottom of the Pacific Ocean has not changed materially from the creation. However, in the continental areas, mountains did rise and the valleys sank as a subsequent action, as per verse 8.

Northrup continues to use Paleozoic Era as a viable interval of time. Stratigraphers, particularly those in the petroleum industry have long concluded that eral terms are unimportant as regards their usage in the exploration for oil.

Comment from Northrup to Waisgerber Concerning Coal

As far as I known, the Mesozoic and Cenozoic coal basins lie in the western parts of the United States. The energy source which gathered debris once again centuries after the Flood is found in the tsunami which changed the westward moving continental block. These swept through lower mountain passes (while the mountains were yet being built by the forces of continental movement). Alan Kelly (1963 reference in my paper, this symposium) has discussed the anomaly of the gigantic alluvial swell surrounding sharp peaks, the anomaly of sediments deposited in reverse order of sorting and especially great beds on mountain passes in the Western United States such as Goldfield Summit (elevation 6052 feet).

Kelly also covers the physical evidence of erratic boulders as support for driven sea waves encroaching and depositing on the rising continent. I find no difficulty with the Mesozoic and Cenozoic coal beds. Using Genesis 1:2 - 11:30 a catastrophist would see these as the product of the division by water (Peleg) which separated the migrating sons of Noah three generations after the confusion of tongues had driven mankind apart. Those Mesozoic/Cenozoic coal beds east of the Colorado Rockies were similarly deposited by tsunami, but these came across the shallow plain of Texas, Oklahoma, Kansas, and Eastern Colorado from the area of the Gulf of Mexico. They are all distinct and different from the Cretaceous Paleozoic coal beds formed during the Noahic deluge.

I believe that creationists should recognize the Pennsylvanian, Permian, and Cretaceous as all representing stages of the rather long retreat of the Flood. In some areas these will be found in classic sequence where the waters have been deep enough in the early Pennsylvanian for the grounding of the Flood debris by retreating waters. There the repeated submergence and exposure of Genesis 8:3 left wind-borne sands along briefly exposed shorelines and in the water, only to be covered by continued massive precipitation of the suspended calcium (as in the Kaibab limestone of the Permian).

There also have been deposited Triassic muds rich in oxides stained red by the warm wind obeying the Creator's command to dry up the surface of the Earth (as one can observe just east of the Grand Canyon on the Kaibab limestone in the Kaparowitz Basin). Warm tan and buff sandstones, aeolian as well as aeolian/water sorted, still remain. The Cretaceous beds overlie these in classic manner in many areas to the north and east.

However, not all areas of the globe fared identically in the retreating Flood waters. There are multitudinous locations where erosion swept away soft deposit muds before induration, mingling in their places remnants of the former deposit with the ensuing deposit.

Indeed, postFlood catastrophism also played a significant part in this scenario. I find evidences of large tidal waves marching across the shallow profile in the Great Plains to die in Nebraska in the close of Cretaceous times (perhaps as few as 500 years after the Flood). While totally rejecting evolution and vast geological "ages," I see the normally successive formation and sequence series as evidence of the passage of Biblical time and as the result of Biblical events. Thus I hold that there are many points of identity between the geologic column and the Bible record and have written extensively on that subject.

How many precise points of contact or concordance between the physical geological column and the Biblical events would it require for us to feel assurance that we had a working model of harmonization between the two? Would 100 in the right order be adequate? If so, what would be the odds favoring such agreement having occurred by chance?

Reply by Waisgerber

An obvious reaction to Northrup's comments is that there is no evidence on continuing, flesh-destroying Floods in the Bible, of sufficient magnitude to create Mesozoic and Cenozoic coal beds. If the Bible is to be used as a confirmation for one event then it must be continued in usage for other events.

If such postFlood waves continued to destroy vegetation so as to create coal beds, then flesh must have been destroyed also. Therefore, what Scripture offers reasons for why God continued to destroy flesh by the millions after the Shemites, the Hamites and the Japhetites separated? Were these races of men as evil as were those before the Flood?

My own conclusion as regards interpretation of Genesis 9:15 is that God would not use a flood ever again to destroy so many living things. Therefore there need not have been tsunamis-floods.

Why would tsunamis-derived, Mesozoic and Cenozoic coal beds be so much greater in volume than Flood-derived Paleozoic beds?

Why do we need the Flood to deposit Paleozoic coals? There are other alternatives.

There is no way that tsunamis type floods could either remove older deposits or emplace new deposits. When one studies the depth of strata across the United States, Northrup's arguments fail. The formations simply do not fall into place in accordance with tsunamis-type floods. I know of no place where older muds could have been washed away in the manner which Northrup describes. Where are these muds

currently? One cannot lose muds. Muds removed from one locale must be redeposited elsewhere.

Where are the fossils from these muds? One cannot lose fossils. They would need be redeposited also, many in a more damaged condition, naturally.

Questions from Nash to Waisgerber

Can you elaborate on your statement that the Canopy/Flood model is a "one dimensional attempt to explain things from the standpoint of hydraulic engineering? Also reference is made to evidence of an ice age prior to the Flood (Waisgerber to Patten Comments). To what are you referring?

Reply by Waisgerber

One dimensional describes the belief of some creationists that all observable sedimentary strata relate directly or indirectly to turbulent waters of the Flood. Such a belief is simply not so.

Sedimentary strata differ widely in constituent make-up. An accumulation of related strata constitute a rock formation. A formation can be shown to be a response to a particular paleo-environment. Consequently any one formation (with its fossils) will differ noticeably from other formations. Each formation requires a paleo-environment of its own.

Paleo-environments can be described using physical, chemical and biological terms. These terms define the environment during which a sediment and fossils accumulate. A complex of conditions determines the properties of sediments deposited within the environment. The complex of conditions determines the nature of the imbedded fossils, as well.

A study of paleo-environments requires understanding the four basic elements. The elements describe an environment. The elements are 1) the materials of the environment, 2) the boundary conditions, 3) the energy of the system, of which flood waters play a part, and 4) the biological complex. Each formation must be viewed with respect to those four elements. Other factors which associate with each element apply also.

The Flood can in no way create formations which differ so in those four elements. The Flood does not explain the source of sediments; nor the distance and direction that sediments were transported; nor why the sediments were deposited where they exist currently; nor why the mineral content and fossil content within formations can differ so.

The Flood does not explain why alleged turbulent energy of waves heaped sediments on continents, which are for the most part above sea level. If the Flood was so vigorous, would not the turbulence have directed sediments to the bottoms of oceans, which are below sea level?

Evolutionary geology insists that there have been ice ages in times past. Within certain parts of continents there are areas underlain almost exclusively by Precambrian rocks. These areas are known as Precambrian shields. Within Precambrian shields one does not generally see sedimentary formations which yield fossils, particularly those which would indicate warm climatic conditions. One does not find dinosaurs or palm trees or other hot weather organisms in shield areas.

However other evidence exists within Precambrian shields which has been interpreted to be indicative of

prior ice ages. Such evidence for paleo-ice ages is most likely not accepted by Canopy/Flood sponsors. However, Precambrian lithology and fossil content do not relate to Alaskan geology. Consequently the creationist must explain these differences if he is to develop a compelling creationist model. Fossil palm trees in Alaska are not proof of warm weather conditions for all of Earth, in times past. If that conclusion were so, then those who believe in prior ice ages could argue that all of Earth must have been completely frozen at one time or another, because of ice age geologic conditions within Precambrian shields. Fossil palm trees in Alaska do reveal past warm weather conditions for Alaska, but certainly not for eastern Canada. The Precambrian, Canadian Shield, of eastern Canada is the shield closest to the United States. Other Precambrian shields exist 1) in northern Europe and parts of northern Siberia, 2) in middle Africa and southern Africa, 3) in India, 4) in the Amazon Basin of South America and 5) in parts of Antarctica. All seemingly reveal evidence of glacial action during Precambrian times.

Also Precambrian shields for the southern hemisphere suggest another ice age, during Permian times.

Though dates given by evolutionists for such ice ages are suspect, fossil differences and lithologic differences must be considered by the creationist scientist.

Creationists must opt for other models along with Canopy/Flood. For example, Earth could have been created such that the poles would always be colder than the equatorial parts, wherever those poles were.

Earth could have been created in a mature state with varied ocean environments and varied continental environments. Animals and plants could have been created to live in those restricted environments.

Formations of sediments could have been deposited one on another before the Flood. In many instances the sediments filled basins of limited dimensions. Organisms living in respective environments were often buried by localized turbulences.

A catastrophe (the Flood) could have changed the architecture on earth. The catastrophe could have destroyed many environments. The catastrophe could have destroyed organisms in significant numbers.

The interval of time since earth's creation could be anything from a few thousand years to millions of years, as we define time.

Minutes of the 1987 Creation Research Society Board of Directors Meeting

On Thursday, 23 April, a meeting of the Executive Committee was held at the Varsity House Motel, Ann Arbor, Michigan from 2000 to 2200 hours to prepare agendas for the committees. On Friday, 24 April, between the hours of 0800 and 1600, the Research, Quarterly, Publishing and Financial Committees held meetings of approximately two hours. An appointed secretary recorded the discussions in preparation for the Saturday plenary sessions.

The official annual meeting of the board was opened at 1900 hours by President Frair in Room 102 of the Science Building at Concordia College, Ann Arbor, Michigan. Present: D. Boylan, D. DeYoung, W. Frair, D. Gish, G. Howe, D. Kaufmann, J. Klotz, R. Korthals, J. Meyer, W. Rusch, N. Smith, E. Williams, G. Wolf from, Absent: G. Mulfinger, P. Zimmerman. Also present were 19 visitors. The President welcomed everybody to this the beginning of the 24th year of the Creation Research Society (CRS). This was followed with a silent prayer.

The President introduced Dr. Ted Aufdemberge, Professor of Science, Concordia College. Dr. Aufdemberge welcomed the CRS members to the College and told of the training of the students.

The minutes of the 1986 Board of Directors meeting were read. The following have been elected for a three year term on the Board: W. Frair, G. Howe, J. Meyer and G. Mulfinger.

The Treasurer's report from Klotz was given as follows. The General Fund is very dependent on the number of subscriptions to the CRSQ. The cost of the CRSQ is almost as much as the \$15 membership. Last year the General Fund increased only \$200 because of the purchase of a computer system for the Membership

Secretary. The Laboratory Fund has increased by about \$5000 this year due to the Fund Raising Campaign in December. The Book Fund increased by several thousand dollars. We have established a Quarterly Endowment Fund to enable us to publish a quality Quarterly. The total assets of the Society are just over \$250,000.

The Membership Secretary's report from Wolf from was given as follows. From 1980 to 1985 the Society lost about 1000 members, but in 1986 we have had an increase of 54 members for a total of 1783 members. USA membership breakdown is: Voting 36%, Sustaining 42%, Subscriber 18% and Student 4%. Foreign membership breakdown is: Voting 27%, Sustaining 47%, Subscriber 20% and Student 6%. We have had an increase in every category except Student.

The Publication Committee report by Williams was given as follows. We have published several books with *Thermodynamics and the Development of Order* now being our best seller (981) followed by *Why Not Creation* (798). We have ordered a second printing of *Thermodynamics and the Development of Order*.

The Quarterly Committee report by Williams was given as follows. The peer review system is very successful and has improved the quality of the Quarterly. A report on the percentage of pages of the Quarterly for various subject areas was given with Physics (16%), Biology (12%), Geology (11%) and Book Reviews (12%) being the most prevalent areas of publication.

The President expressed the gratitude of the CRS to Mr. David Golisch and others who were visiting from the Southeastern Michigan Creation Science Association (SMCSA). Mr. Golisch spoke briefly expressing his appreciation of the work of the CRS. The meeting was

recessed at 2005 hours for refreshments provided by SMCSA.

The meeting was reconvened at 2035 hours with presentations of the research reports. Meyer reported that the Grassland Experiment Station at Weatherford, Oklahoma, will be fenced shortly. He also reported that the Grand Canyon Research Laboratory, a 2.5 acre plot 18 miles north of Prescott, Arizona, has a completed sewer system.

Meyer gave a report on Computer Simulation of Evolutionary Mechanisms with State Transition Diagrams.

Williams gave a slide presentation of a research project at Big Bend National Park in southwest Texas. He showed folding in rock strata from horizontal to vertical.

Howe gave a presentation on the Principles of Creation Science as follows, 1. Design is evidence of intelligence, 2. Evidence of rapidity rather than gradual change, 3. Separate types of life at one time, 4. Law of recency and 5. Evidence of catastrophism and not uniformitarianism. He told how individuals can submit a research proposal to the Research Committee for possible funding. He reported that the presence of pollen in Precambrian Hakati shale has been reconfirmed by recent CRS studies.

The meeting was adjourned at 2235 hours. On Saturday, 25 April, the closed meeting was called to order at 0835 hours. Present: D. Boylan, D. DeYoung, W. Frair, D. Gish, G. Howe, D. Kaufmann, J. Klotz, R. Korthals, J. Meyer, W. Rusch, N. Smith, E. Williams, G. Wolfrom. Absent, G. Mulfinger, P. Zimmerman.

The minutes of the 1986 meeting were adopted and the membership and treasurer's reports were received.

It was recommended that we do not add a new membership category called contributing membership.

It was moved and passed that we bond the financial officers.

It was recommended that the Treasurer acquire an annual audit which would be reviewed and approved by the Board.

Research Committee Chairman Meyer reported that a complete literature search can be done by Howe for board members doing research and that a keyword index is being developed. The land at the Grassland Experiment Station will be deeded to the Society for research purposes, and a contract will soon be signed.

Howe was given permission to purchase cabinets for our insect collections. Meyer was given permission to pursue discussions with the architect and builder about the possibility of erecting a building at the Grand Canyon Experiment Station. The Research Committee was authorized to borrow \$15,000 from the Laboratory Fund with the understanding that the unused portion of their budget can be used for the building.

It was recommended that the Constitution Committee consider adding to the Constitution or Bylaws a limit of spending necessary for Board approval.

It was recommended that back issues of the Quarterly be sold to all people at the same price.

It was approved for N. Smith to prepare an anthology on *Scriptures on Creation* for future publication.

It was recommended that we do not accept advertising in the *CRSQ*.

It was recommended in two years the editorship of the Quarterly be divided into two functions: 1. processing manuscripts and 2. organizing the Quarterly.

It was moved and passed that the six manuscripts dealing with "Orogeny" not be charged page charges when published in the Quarterly.

It was moved and passed that the Membership Secretary be authorized to sell Certificates of Membership to those members who request it and to give Certificates to Fellows.

It was moved and passed that our Friday evening meeting include a brief information meeting with an expanded program for presentation of invited research papers and papers from the Research Committee. Norbert Smith agreed to coordinate this session.

W. Rusch consented to chairing the Publications Committee until G. Mulfinger can resume it.

It was recommended that a second printing of *The Argument* with revisions be made.

It was moved and passed that the Publications Committee proceed with publishing the *Trilogy on Darwin's Last Hours*.

It was moved and passed that the Publications Committee try to acquire the plates from Concordia Publishing House for: *Darwin, Evolution and Creation; Creation, Evolution and God's Word; and Rock Strata and the Bible Record*, for possible future publication by the Society and/or assign copyright to CRS.

It was approved for N. Smith to gather articles from the Quarterly with a specific theme for a future publication.

It was moved and passed that the CRS President appoint a resident agent in Canada to handle donations to the Society.

It was approved to allow the Treasurer to open up an account in a federal bank for the purpose of transferring foreign money.

It was recommended that the Vice President: 1. direct a campaign to raise funds for the Laboratory Fund, and 2. direct a campaign to seek renewals and donations from expired memberships.

It was recommended that CRS secretaries be paid \$6/hour.

It was moved and passed that we elect a person to a new position of Financial Secretary to handle all income that goes into the General Fund.

It was decided not to add a position of Corresponding Secretary at this time.

It was moved and passed that the Treasurer can borrow up to \$5000 from other funds to meet immediate financial needs.

It was moved and passed that we keep the Board size at 15 for the next election.

It was moved and passed that the following be nominated for the next Board Election: E. Chaffin, J. Klotz, D. Rodabaugh, W. Rusch, N. Smith and G. Wolfrom.

The following were elected as Officers for the coming year:

President: W. Frair
Vice President: G. Howe
Secretary: D. Kaufmann
Treasurer: J. Meyer

Financial Secretary: J. Klotz
 Membership Secretary: G. Wolfrom
 Quarterly Editor: E. Williams

It was moved and passed that our 1988 meeting be held at Ann Arbor, Michigan, on 14-16, April, 1988.

It was moved and passed that dues for membership

be raised \$1 in each category except Life Membership.

D. Boylan was appointed Chairman of the Constitution Committee.

The meeting was adjourned at 1520 hours.

David A. Kaufmann, Secretary

THE METAPHYSICS OF MODERN SCIENCE

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Abstract

Chance as a mechanism of evolution is detrimental to true science and the concept of a rational universe. Also observation, falsification, and repetition are not meaningful in a universe ruled by chance. Creationism offers the best philosophy of science. No neutral definition of science can be maintained.

Atheistic Materialism

God is refused by materialists because He is metaphysical, invisible and personal. The three tests of modern science, observation, falsification and repetition are likewise metaphysical, invisible and personal. These judgments are made in the inner world of the person and rest on his knowledge, truthfulness and consistency which cannot be proven without reference to metaphysics of the human soul.

The mind of the modern atheistic evolutionist filters out any existence of a supernatural mind and world. (Denton, 1986, p. 66)

The thesis Darwin had developed implied an end to the traditional and deeply held teleological and anthropocentric view of nature. Instead of being the pinnacle and end of creation, humanity was to be viewed ultimately as a cosmic accident.

The atheistic evolutionist affirms the autonomous nature of his own thoughts as his final trust. (Denton, 1986, p. 66)

Despite the attempt by liberal theology to disguise the point, the fact is that no biblically derived religion can really be compromised with the fundamental assertions of Darwinian theory.

His mind is opposed to submission to God. The bedrock of modern science is trust in the purity and accuracy of the trained autonomous reason. Modern science works with the observable and measurable. Some scientists allow that God may exist. He is, however, not important in scientific enterprises and cannot be used as an explanation for any aspect of nature.

"Neutral" Science

Most macro-evolutionists are materialists and operate by the following "guidelines: (Kofahl, 1986, p. 113.)

- a. That there is no divine teleology in the natural world.
- b. That no divine intervention has ever occurred in the natural world.

c. That every observable datum has its total explanation in terms of materialistic cause and effect.

d. That God does not exist and only the material world is real, or at least that the scientist should function accordingly in his scientific thought and research.

e. That the scientist should adopt the view that his personal faith has no relevance in his scientific endeavor.

Robert Kofahl submits an answer to this dilemma by proposing a so-called "neutral" definition of science: (Kofahl, 1986, p. 112)

Science is human experience systematically extended (by intent, methodology, and instrumentation) for the purpose of learning more about the natural world and for the critical empirical testing and possible falsification of all ideas about the natural world.

This "neutral" statement is far from neutral. Science is to be "systematically" extended. Can a chance-based origin render a reasonable product through some rational system? Chance and system are antithetical. The word "purpose" is anathema to dedicated atheistic evolutionists. Materialists only speak of "functions." The word choice is *not* neutral. What is the place of deductive mathematics in "critical empirical testing"? The creationist cannot accept a "natural" rather than a "created" universe. To do so is to give away the battle without a fight. Only one position is correct. There is no neutral place to hide.

Personal or Impersonal

Kofahl states that "nobody, including Christians should seek to insert his personal belief system into that definition of science." (Kofahl, 1986, p. 113)

He just did! His statement is his personal belief. I believe that it is impossible to avoid personal belief at the foundation of any system. Every theory comes on two legs with a personal face. There is no impersonal science—only a person or persons attempting to promote an impersonal or personal view of the world.

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A person's mind may have impersonal aspects such as mathematics. This does not make the ultimate in life impersonal. The personal God is an excellent (to speak mildly) mathematician. This does not cause Him to be totally impersonal.

It is my personal belief that Jesus Christ is the personal Creator of the universe, designed for persons. The earth is filled with persons. Since the world was created by a person and is tended by persons, any true knowledge of creation is possible only in fellowship with Jesus Christ, the personal Creator. Persons who promote an impersonal view of the earth and man are allowed this freedom. However, their claim to total truth outside of knowledge of Christ and submission to Him as Lord and Savior will not succeed.

A world of tremendous diversity, power, challenge and beauty has been created. The world is flawed due to man's sin, but still it is so personal that we can know the Maker is not impersonal nor indifferent to qualities such as the beauty of a rose, but is the most wonderful and complex Person we will ever know.

The materialist skirts around the need for a mediator between man and God, existing in Jesus Christ, the eternal One, the Redeemer and personal Creator. 'Science'—a body of individuals who "know" the "truth" (at least what is false!) and corporately refuse personal concepts in exchange for recognition as *part* of the 20th Century god—the atheistic evolutionary scientists. Corporately, they will perceive god/nature divinity without reference or reverence for any other group. They take all merit and glory for themselves.

The truth is that all human beings are living memory patterns with a past through which they may receive new insight regarding the *meaning* of that past. As long as *any* man lives, there is interaction between the static past memories and the dynamic, approaching future. This dialogue is always individual, personal. In it men meet God and worship or refuse Him and worship Satan and self. This is life's final choice.

This personal truth meets corporate knowledge of God's rational world and in all cases affirms or denies the results of our experiments—performed by individuals and interpreted by individuals. A hypothesis is falsified by the established body of truth, not by a mere statement from a television commentator, but rather, objectively. Slowly we are learning how creation works and how we can control her. We find truth by the foil of falsehood and the logic of God. Truth itself is a rational term . . . the chance-based world of evolution has no ground for testing truth.

Science is not done by something called "science," but by persons with names who follow a belief pattern of inductive reasoning to diverse ends. That belief pattern has changed from Newton's day:

As Molnar points out, the function of reason was no longer to determine that thing and thought reliably fit together but rather to 'transform the world in the process of comprehending it.' The goal is to develop absolute intellect which will correspond to absolute being . . . for the scientist. (Ancil, 1985, p. 116)

It has been claimed that nobody, including Christians, (and God Himself one supposes!) should seek to insert his personal belief system into the definition of science. Science is being defined as an impersonal

pursuit, supposedly accomplished by persons who are im-persons—the only true persons. This is scarcely a neutral position as stated earlier.

Rational Universe

The epistemology of materialism based in chance and that of creation by God, the rational Creator, are in opposition. There can be no neutral definition of science. At the very first step—that of defining the subject matter—we have "nature" or "creation." The world is either "chance-driven" or rationally ordered. There is either "functioning" or "purposing."

At the foundation of science is a hidden need for God as the guarantee of a reasonable universe. Without the ground of an intelligent Creator, the keystones of modern science—observation, falsification, and repetition—have no meaning. Of what use are our experiments if no reliable, rational structure exists outside our minds. Our present chance-driven minds have no anchor. The world becomes a Sartrean absurdity from which there is indeed "No Exit."

According to materialists, the external world does not present a true rational aspect. The best we can do is test for the possibility that the proposal is false. To the materialist, man's observations are the highest possible intelligence on planet Earth. There is no other mind—no other test or check.

In a certain sense one could call the contingent "irrational." It is individual (once-only, unique, irreplaceable). The contingent is changeable in succession. It is happenstantial. It is a here-now-happening, this-once-only . . . irrecurrable, new every time, and as such unpredictable, unforeseeable. (Stoker, 1973, p. 155)

Statistical nature and contingency, rejecting fixed truth, is the "establishment" of non-truth with, curiously no concern for the individual, the unique, the rare because a rational ground of meaning has been removed. No longer is there one eternal structure in God's mind upheld by Him as a measure both of truth and behavior. "Thinkable ideas may well involve no real, rationally occurring, object and/or event." (Ancil, 1985, p. 116) The division between fantasy and reality is breaking down, since the real has been "ungrounded."

Nature is considered to be rational—reflecting the rationality in the person's mind—not the rational in nature itself but as the evolutionist manipulates nature and *makes* it rational. Let us not make haste to deify the evolutionary establishment, remembering that Bertrand Russell stated at the beginning of this century:

. . . only on the firm foundation of unyielding despair, can the soul's habitation henceforth be safely built . . . Such in outline, but even more purposeless, more void of meaning, is the world which science presents for our belief. (Russell, 1927, p. 4)

Despair at the top now means despair at the bottom as we near the end of a century and a half of evolutionary scientific dominance and control.

In order to ground oneself in the truth, it has been assumed that, though we do not understand completely, there is, prior to any experiment, a body of truth resting in concepts which clear a given field of objects. The world has existed for ages and rests in the

supra-rationality of a rational God. Man has been “thinking God’s thoughts after Him” for three centuries. This method has assumed the rationality of the creation and that the immutable God guarantees the maintenance of order in the universe.

Moreover, the seemingly intractable difficulty of explaining how a living system could have gradually arisen as a result of known chemical and physical processes raises the obvious possibility *that factors as yet undefined by science* may have played some role. (italics mine) Such a concession is, of course, the thin end of a very dangerous wedge . . . the whole framework of Darwinian evolution is threatened. (Denton, 1986, p. 27)

Chance

Macroevolutionists often come close to recognizing order at the base of reality rather than the chance-based meaninglessness. Then, recognizing the implications, they shy away. The dilemma they have is neatly expressed by Denton, 1986, p. 270.

The problem of the origin of life is not unique—it only represents the most dramatic example of the universal principle that complex systems cannot be approached gradually through functional intermediates because of the necessity of perfect co-adaptation of their components as a pre-condition of function.

Any explanation of “things” may do—with “chance” as the metaphysical foundation. If the explanation “makes sense” to the mind proposing it, that is enough. It need not be the one true explanation. It is for this reason that Bible scientists add four important beliefs to those enshrined in observation, falsification and repetition: (Ferst, 1983, p. 118)

- a. Observation and experimentation are limited devices . . . [it is impossible to conduct controlled experiments regarding the past.]
- b. The supernatural is figured as an explanatory principle . . . [final purposes may be teleological.]
- c. Science is, among other things, a moral enterprise
- d. The Bible is the absolute authority on truth.

Materialistic scientists reject the Creator as the intelligent source of the complex patterns of the world—patterns such as DNA and the enzyme for making DNA *both* produced by DNA! The Creator is replaced by chance as the “non-guide” to the “non-purposeful” existence of everything. The assertion that “the combination of one sperm with a certain egg . . . happened . . . by chance.” (Howe, 1971, p. 11) forfeits all meaning at the very foundation of existence. It is simply a refusal to acknowledge God’s wisdom, technical knowledge and absolute power. Because we cannot follow the complex action of fertilization we “cop-out” and use the cover word “chance,” rather than giving glory to God for our existence.

“Chance” is an irrational “pattern” of meaningless flux to us, but not to God!. “Nothing” ever is, everything merely *becomes* on the path to true being and knowledge. (Ancil, 1985, p. 115) “Ever learning but never able to acknowledge the truth.” (I Timothy 3:7) The drive to achieve knowledge fusion with the flux of

nature seeks to absorb all chance into the scientist’s “fluxing” knowledge. The goal is for man to become deity over nature.

We always build truth and knowledge hierarchies. They are really without ground in the twittering world of chance. Chance has no hierarchy! But the created world does. Some solutions to problems are eloquent, complete and correct, conforming to God’s rational world, for example, Ohm’s Law—simplicity in the heart of complex electronics, illustrating that chance is a foundation for nothing. Thus creationism actually becomes a far better basis for real science than evolutionism.

“Chance” is used for reference to the origin of all things (thus avoiding giving glory to God), while the present struggle is to find a man-made explanation for all phenomena. This explanation is to be projected by the autonomous mind of man with the highest evolutionary wizardry. The last gasp of Enlightenment man is a world under total humanist control, using autonomous “freedom” to grasp domination of the planet.

Assuming the experiment can be repeated is impossible in a chance-driven universe. “Nature” may not “operate” or “function” in the same way the next time. Perhaps we will breed the “hopeful monster” to give the transitional forms so sadly lacking in the real world. Perhaps a test animal will behave in an entirely new way “for no reason.” Perhaps a new disease such as AIDS will occur “for no reason.”

It is not possible to repeat anything in the “real” world, perhaps an 80 percent repetition rate in the controlled laboratory environment. With a chance foundation, how do we know we are repeating “enough” of the experiment to justify passing the repetition test? If matter gives rise to consciousness, as per Teilhard de Chardin, truly anything goes from experiment to experiment. Is the repetition of a similar flux sequence of events, without any inner permanent structure undergoing the processes of existence, possible? Only if God is the same yesterday, today, and tomorrow can modern science have any meaningful foundation. The “Now” generation, worshipping contingency, is the only “foundation” offered in our chancy world.

The laboratory is purposively isolated from the hurly-burly world. On a chance basis, why is the experiment isolated? Traditional reasons were based in rational considerations. The new irrational “rational” science with evolutionary chance as the “non-guide” cannot claim that an isolated experiment is the true one. The experiment is “true” only if it occurs in the hurly-burly world in which no two moments are the same. No longer do we have grounded configurations isolated to test the truth. There is no ground for a falsification test in a chance-driven world. How can “chance” be false? This is a case in point of how macroevolutionism can lead to faulty experimental science.

Concepts representing reality are the source of mental health and cultural stability.

Evolutionists suggest that the laws of nature are not descriptions of objective reality but subjective statements prescribed for or imposed on the world. (Ancil, 1985, p. 117)

We “make” the laws of nature and believe in chance! These concepts are “in-here” rather than “out-there.” Chance, however, is not an entity, but a too-complex process for reason to understand. The word “chance” or Jesus Christ, the Creator and Sustainer, may be applied to these situations depending upon the faith of the person. It was a change in this position which led Charles Darwin to his revolutionary challenge to the Christian faith.

The loss in Christian faith and in essences was no mere coincidence. Darwin eventually came to believe then, that only individual differences were real, not species or genera. The organism began to be seen in terms of its “relation” to its environment alone; it was no longer thought to have an inner structure, nature, or essence which identified it with its “universal” or type . . . When the existence of things is denied, in favor of “facts” or “relation” the universe becomes unintelligible, an intellectual rubbish heap. For it is essences that secure to a world of change, the coherence and permanence needed for its scientific investigation and philosophical interpretation . . . We may ask with Plato’s Cratylus that if all things are mutable how is anything knowable? The position of the subjectivist/nominalism/evolutionist, then, is one which undermines our ability to know; . . . it is a position of auto-knowledge in that it focuses solely on flux as the only “reality” and in its quest for the abolition of distinctions which are necessary for knowledge. (Ancil, 1985, pp. 117-8)

Invisibility and metaphysical character pervade the entire walk of our finite existence. Whether or not our existence is a walk into intelligent fellowship with the Invisible One, Jesus Christ, the Creator, or into random chaos is a mental attitude each man must choose.

Evolutionism vs. Creationism

The shift from evolutionary science to creationism is grounded in a shift of perception as follows:

1. From belief in man’s perfecting the world to recognition that the world is corrupting and decay-

ing with most of man’s efforts used to sustain and care for the entities of the earth as they undergo entropic processes.

2. From chance to reason as the source of the profuse life and microevolution to recognition that life’s complexity precludes chance origin of life—no matter how many millions of years are available . . . a high view of the world’s complexity.
3. From a pattern in which all creatures evolved from a simple (really a complex) cell to recognition that all creatures were created at the same time by the most subtle and awesome mind conceivable.

No experiment can establish which pattern or paradigm is true. The decision rests on the probability of each model’s explanation of the world’s phenomena. The decision is critical and life-changing. Rather than being a bumbling evolving ape-derived man, we are the fallen image of the almighty God. We are creatures with eternal life with the Lord of Glory to be our destination.

Questions dealing with the nature or definition of science, for example, clearly are not matters of scientific data and cannot be answered “scientifically” . . . One of the major issues underlying the question of origins is the problem of epistemology, the theory of knowing. (Ancil, 1985, pg. 114)

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PANORAMA OF SCIENCE

Horsetails (*Equisetum* sp.): Design or Evolution?

On a recent research trip, one of the authors collected a sample of a horsetail plant from Red Rock Canyon State Park near Weatherford, Oklahoma and the C.R.S. Grassland Experiment Station. Two magnified views of the stem of this plant are shown in Figures 1 and 2. Plants of this group are called “horsetail” because clusters of branchlets borne at regular whorls along their stems give them a full and tail-like appearance. Their genus name is *Equisetum* which means horse and bristle or spike—by extension, “horsetail.”

These plants store silica (SiO₂) in the inner walls of their outer “epidermal” cells—see Figure 3. *Equisetum* plants are thus one of the few botanical genera that

have cell walls impregnated with glass (Corner, 1964). They store certain other minerals and have received some attention as plants that can be chemically tested to locate veins of such minerals beneath their roots—Stern (1985, p. 375).

The presence of SiO₂ in the walls of cells in the deeply ribbed stem produces a scratchy texture. Hence handfuls of these stems were used by native Americans and pioneers to scrub pots and other objects because of the gritty character of the horsetails. They were often called “scouring rushes” because of this characteristic and like the true rushes, horsetails are often found growing in moist habitats worldwide. Creationists may see the providence of a Designer in providing such plants for the use of man.

Horsetails present some serious problems to macroevolutionists. Although some modern species of *Equisetum*

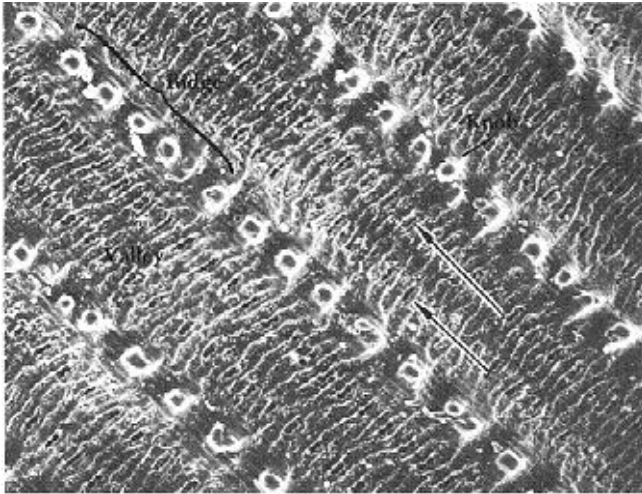


Figure 1. Scanning electron micrograph of horsetail stem. Note “ridges and valleys” along the stem. Arrows indicate regularly-spaced holes (magnification 40X).

tum are 4.6 meters tall in the California redwood forests, Stern (1985), and the tropical *Equisetum giganteum* can exceed five meters in height, Bold (1967), “they usually grow less than 12 decimeters (4 feet) tall . . .” Stern (1985). Thus although the living members of this division (Sphenophyta) are comparatively short, they resemble fossil calamites, which were of tree-like dimensions. One is left to speculate as to the origin of these very large and ancient calamites.

In addition to the calamites, there were some other fossil Sphenophyta or horsetail types that had a more complex and intricate spore-bearing organ than modern horsetails. One of the authors summarized this problem some years ago and in the following quotation the word “Arthrophyta” is a synonym for the Sphenophyta or division of horsetails and calamites.

In the study of Arthrophyta another puzzle presents itself. The modern arthrophytes are short plants with longitudinally ridged stems having whorls of branches at various regular intervals. A

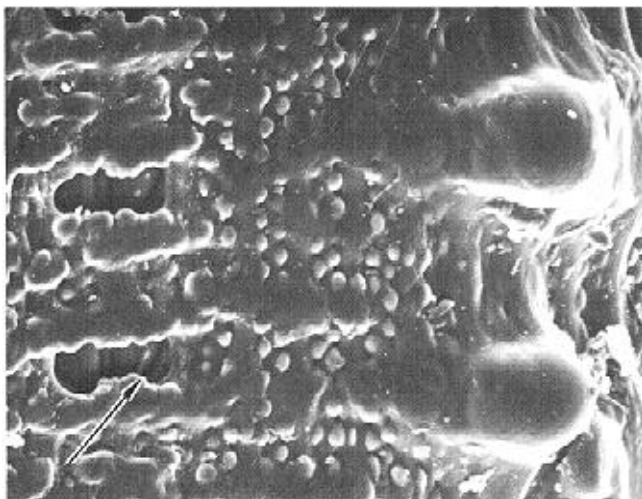


Figure 2. Scanning electron micrograph of horsetail stem. “Knobs” on the ridges can be seen in greater detail. Arrow indicates depression evidently containing a guard cell pair (magnification 300X).

modern example is the “horsetail” or “scouring rush.” Fossil spore-bearing structures of the arthrophyte *Cheirostrobos pettycurensis* have been found. These are complex twelve-membered whorls of two-parted sporangial-bearing appendages. Delevoryas (1962) calculates a total of 144 sporangia (spore sacs) at only one such node! A spore is a microscopic one-celled reproductive unit. The point is that this extremely complicated and advanced spore-bearing organ appears in the fossil record in the Lower Carboniferous strata—which means according to stratigraphic theory that it existed before most of the simpler arthrophyte spore-bearing structures. The going evolutionary idea is therefore that sporangiate organs evolved from complex to simple. But even if the advanced and simpler types did evolve from complex forms such as *Cheirostrobos pettycurensis*, where did the early intricate forms come from? Howe (1970).

Add to these problems the fact that the whole horsetail group appears or shows up in the fossil record abruptly without any evolutionary “tree” and serious difficulties emerge for evolutionists—see Howe (1965) and (1964).

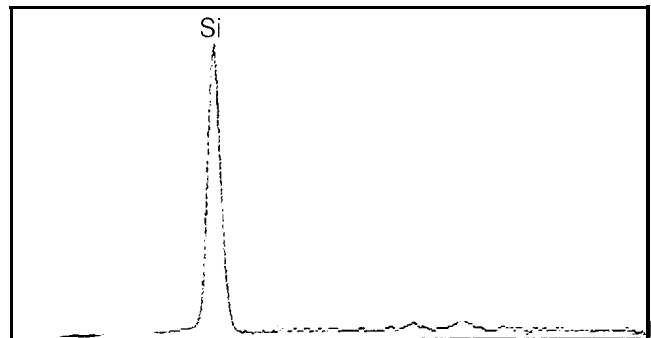


Figure 3. An energy dispersive analysis scan of horsetail stem showing a silicon peak indicative of the presence of the abrasive SiO_2 compound.

One wonders also how the biochemical mechanisms for absorbing and storing silica in epidermal walls could have ever developed gradually over long periods of time. This characteristic is unique to the horsetails and to the unicellular algae called diatoms. Although evolutionists include many similarities in their “relationships” they do assert that similarity implies kinship. If so, horsetails and diatoms would make a very strange branch of an ancestral tree as they are very different except for this feature of each having silica in their cell walls. This strange situation is somewhat like the comparison of fungi and insects—both of which have chitin in their external surface layers.

Casuarina or “beefwood” is a woody, flower-bearing tree that is widely separated from horsetails in taxonomy—being in an entirely different botanical division, Anthophyta, the division of flowering plants. Yet the detailed appearance of young *Casuarina* stems bears an amazing resemblance to the ridged and jointed stems of the horsetail—Howe (1965), pp. 18-9. This similarity is so striking that the species name given the *Casuarina* is *equisetifolia* meaning, “leaves like Equisetum.” Such similitude in appearance and struc-



Figure 4. Stem clusters of *Equisetum talmateia* Ehrh. var *braunii* (Milde) and *Casuarina stricta* (Dry). Note how the whorled clusters of branches on each of these stems (*Equisetum* at left, *Casuarina* at right) are so similar on a macroscopic level that two plants might be mistaken for each other. *Casuarina*, however, is a flowering seed plant, division Anthophyta, whereas *Equisetum* is in an entirely different division—Sphenophyta—containing plants which produce neither flowers nor seeds.

ture between two distinctly different plants fits well with the idea that a similar design pattern (ridged and jointed stems) was used in plants that otherwise have very few similarities. These data are difficult to accommodate to macroevolutionism. See Figures 4 and 5 for photographs of *Equisetum* and *Casuarina* stems.

The scanning electron micrographs (Figures 1 and 2) illustrate the ridged nature of the *Equisetum* stem. Each ridge can be seen to be composed of "knobs." In between the ridges are two rows of regularly spaced holes (Figure 1). Under higher magnification (Figure 2) it would appear that a guard cell pair (which can form a stomate pore allowing for aeration of internal stem tissues) is present in each hole. Such an interpretation of the Figures would be in keeping with Foster and Gifford (1959) who write:

Stomata often occur in two vertical rows in the regions between the ribs. The stomatal apparatus, which may be in a depression, consists of two guard cells and overarching subsidiary cells. (p. 197)

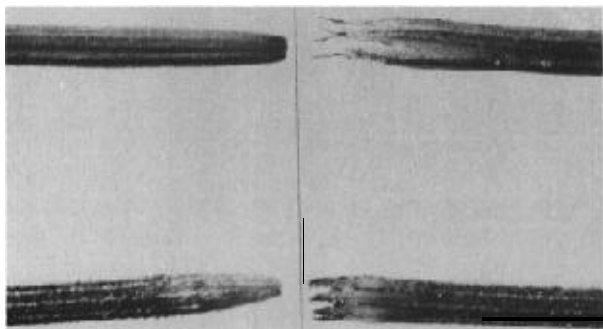


Figure 5. Closeup view of branchlets of *Equisetum talmateia* Ehrh. var *braunii* (Milde) at top and *Casuarina stricta* (Dry) at bottom. Both of these stems have a ridged outer surface and zones of weakness where one stem segment can pop apart from the next when lightly pulled. Such striking similarity between widely distinct plant forms fits with the concept of a common design. Width of each branchlet is approximately two millimeters.

Stomatal aeration is important because most of the photosynthesis of the plant occurs in the green stems and not in the miniature "leaves." Macroscopically and microscopically the beauty and design seen in horse-tails require an explanation.

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Contributed by George F. Howe,
 Emmett L. Williams and Richard R. White

Protoavis

After the completion of my paper (Brown, 1987), an amazing fossil find occurred that has an important bearing on the Gene Theme Model. The fossil has been named 'Protoavis', meaning 'first bird,' by its finder, Sankar Chatterjee (Anon., 1986).

In the Gene Theme Model (Brown, 1987), God carries a number of features over from one creation to another, using either similar genes or different genes to produce pairs of organisms that are similar in some ways to each other but also strikingly different as in the cases of lobed-finned fish vs. *Ichthyosega*, mammal-like reptiles vs. early mammals and various reptiles vs. *Archaeopteryx* (Brown, 1987).

The fossil, found in western Texas, is that of a crow-sized creature which possessed a well-developed wishbone, a breastbone with a keel (which anchors the flight muscles in birds and has so far never been detected in *Archaeopteryx* fossils). The Texas find also has hollow bones and long forelimbs. The ears are well developed. In both *Protoavis* and modern birds there is a hole in the temple area which also incorporates the eye socket; this is why birds have large eyes in relation to their body size. *Protoavis* had fewer teeth than *Archaeopteryx* lacking the back teeth which the latter possessed. Feather impressions have not been found but some of the bones do show small nodes to which feathers would have been attached. Chatterjee states that *Protoavis* was more advanced than *Archaeopteryx*. It possessed strong legs, a bony tail similar to that of *Archaeopteryx* and a pelvis designed for running. It seemingly had a dual capacity of flight and swift movement along the ground. The age of this fossil is placed at 225 million years and also predating all reptilian candidates for evolution into *Archaeopteryx*. This creature, then was in existence at the beginning of Triassic "times," with the possibility of a history going further back in "time."

In all of these cases, genetic and morphological differences set the different kinds apart. Also, their fossil age, when given in evolutionary terms, is continually being reduced between supposedly related groups, leaving too short a time-span for evolutionary development from one group to another to have occurred. This points to the Gene Theme Model as the explanation for their sharing some similar features.

Note: Evolution could not have occurred anyway because the Law of Symmetric Variation will prevent this happening. This Law is the basis for organisms remaining within their respective Genesis kinds.

This fossil find is of great help as support for the Gene Theme Model because, like other Gene Theme fossils, it shares features with other kinds. The limbs and hip-bone are reptile-like in appearance, while the rest of the fossil is avian in nature. These avian features are more advanced than those of *Archaeopteryx* and the position of it on the evolutionary time-scale is long before *Archaeopteryx* and its supposed reptilian predecessors.

Thus, this is the strongest tangible evidence for the Gene Theme Model to date and I cannot help but feel that similar discoveries may very well come to light.

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Contributed by Colin Brown

Beggar Tick Seeds Sprout After 350 Years in Salt Water

In a recent UPI release (1987) it was reported that seeds soaked for 350 years in salt water muck have successfully germinated. The seeds were recovered recently off Key West, Florida, from the sunken Spanish treasure ship, Atocha, which was known to have gone down in 1622. The ship contained seeds of grape, olive, apricot, and beggar tick (*Bidens alba*), the last of which germinated to yield two-inch beggar tick seedlings at the time of the report.

This discovery is important to origins students in at least two ways. Seeds can routinely sprout after long periods of dormancy in salt water (Howe, 1968). Sprouting seeds could have been a major factor in restoration of vegetation on emerging land masses after the Flood.

Secondarily this discovery might help us compare current plants of these species with individuals from hundreds or even thousand of years back in time. Such comparison might allow us to determine how much (if any) "microevolution" had occurred during the many generations which have intervened since the seeds were buried in brackish muck. Hopefully more of such data will be gathered and opportunities will arise as other ships are salvaged and as seeds are discovered in ancient strata.

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Contributed by George F. Howe

The Watchmaker Surfaces Again

The argument from design is an impressive and important one for creationist polemics. For centuries men have observed the wonders of nature and have concluded that there must be a Supreme Intelligence in order to have brought them all into being. Whenever reference is made to this perception allusions to the writings of William Paley (1743-1805) are usually made in particular his illustration in which he invokes a watchmaker in order to account for a watch's complicated mechanism.

Doctrinaire evolutionists have to devise reasons and explanations for the uncounted number of complicated and exquisite forms of life which we see in nature, with such theories, of necessity, being devoid of any input of intelligence or planning. They ask, however, if such an Intelligence does exist, as creationists insist, how is it that instances of poor and inefficient design appear in organs of animals of greater complexity and organization than in some of low estate, as this would be inconsistent with infinite wisdom and programming? As an illustration, on several occasions in the evolutionary literature of the past few years, the opinion has appeared that the retina of the eye in invertebrates has a superior and more sensible design than that of the vertebrates. With the latter being higher in the evolutionary scale than the former, they want to know why Paley's watchmaker has made such a faux pas as this! (Thwaites 1983 p. 19; Thwaites 1984 p. 210; Diamond 1985 p. 91; Dawkins 1986 p. 93.)

Such a superficial and unfounded idea is altogether due to a lack of appreciation of the anatomy and physiology of the vertebrate and invertebrate retinas as pointed out by Hamilton. (p. 59-64.)

The latest instance appears in Richard Dawkins' recent book, *The Blind Watchmaker*, (p. 93), where he states, in contradiction to the situation in invertebrates, that light reaching the photosensitive retinal rods and cones in the vertebrate eye is partially restricted in its passage, having to penetrate through "a forest of connecting wires," meaning the intraocular fibres of the optic nerve. He notes that these fibres are "insulated," which is quite true in their extraocular course but fails to specifically mention that this is not the case in the eyeball itself, hence any restriction is practically non-existent. Myelin, which is the opaque whitish material mentioned by Dawkins as insulation, coats the axones of nerve cells in the body generally.

In the vertebrate retina the photoreceptor cells (rods and cones) convert light energy to nerve impulses which are transmitted to connecting unmyelinated bipolar neurones. These, in turn, communicate with ganglion cells, the axones of which, in their intraocular course are unmyelinated. But, as they pass out of the eye at the optic disc and constitute the optic nerve, do become myelinated in their further course to the brain.

At the macular area, which is composed of cone cells only, being the point in the retina at which light from an object being directly observed comes to a focus, the various unmyelinated nerve processes are spread apart thus eliminating any possible obstruction at this most significant retinal location. These two main important factors, i.e., the lack of myelin coating of the intraocular nerves and their spreading apart at the macular area

entirely neutralize any possible disadvantage of an inverted retina. Although Dawkins does not mention it, branches of the small retinal blood vessels are also lacking in this same place.

Dawkins writes that the state of affairs which he describes as being present in the vertebrate eye would offend any tidy-minded engineer. It probably would if his description was in accordance with the facts, but such is not the case. Any tidy-minded engineer, if aware of all the surpassing advantages of visual acuity and astonishing efficiency of the vertebrate eye, would be quite happy with the anatomical and physiological framework of its inverted retina and quite in agreement with the structural principles involved.

It is to be hoped that before propagating this unfortunate and ill-founded idea further, evolutionists will take the time to thoroughly acquaint themselves

with the detailed anatomy and physiology of the vertebrate retina and subsequently eliminate this particular item from their list of supposed examples of poor and deficient design.

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Contributed by H. S. Hamilton

THE EFFECT OF NON-UNIFORM DENSITY ON SOLAR CONTRACTION ENERGY

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Abstract

The potential energy of a spherical body with non-uniform density is developed. Data for solar shrinkage is analyzed using the derived relationships for a hypothetical radial density variation. The effect of non-uniform density on the energy generated by solar contraction is presented.

Introduction

There has always been a significant interest in the mechanism by which the sun produces energy. Since the publication of the solar diameter measurements of Eddy and Boornazian (1979), this interest has increased and has been the subject of much debate within the evolution/creation controversy. During a recent debate with the author, an evolutionist challenged that the potential energy of the sun could not be computed, that the relationship for potential energy given by Akridge (1980) was incorrect, that the non-uniform density of the sun made such small variations in solar diameter trivial and furthermore, that the data were either wrong or only indicative of a temporary fluctuation. It is this challenge that the present paper attempts to address—with the exception of the last point, as the author is in no position to make any judgment as to the correctness of the data.

Potential Energy of A Spherical Body

The potential energy of a spherical body with respect to itself is equal to the negative of the work required to pick it apart bit-by-bit and remove each to infinity. This energy may be expressed in differential form by Equation 1.

$$dE = -\int_r^\infty dF \, dz \quad (1)$$

The differential force may be expressed by Equation 2.

$$dF = -g\left(\frac{r}{z}\right)^2 dm \quad (2)$$

Combining Equations 1 and 2 yields Equation 3.

$$dE = gr^2 dm \int_r^\infty \frac{dz}{z^2} \quad (3)$$

Equation 3 can be readily integrated to yield Equation 4.

$$dE = gr dm \quad (4)$$

The differential mass can be expressed as

$$dm = 4\pi\rho r^2 dr \quad (5)$$

The local gravity is given by the following:

$$g = \frac{Gm}{r^2} \quad (6)$$

Equations 5 and 6 can be combined to yield Equation 7.

$$g = \frac{4\pi G}{r^2} \int_0^r \rho r^2 dr \quad (7)$$

Substituting Equations 5 and 7 into Equation 4 and integrating yields

$$E = -16\pi^2 G \int_0^R [\int_0^r \rho r^2 dr] \rho r dr \quad (8)$$

The Case Of Uniform Density

If the density were uniform, some $\bar{\rho}$, then Equation 8 could be readily integrated.

$$\bar{E} = -16\pi^2 G \bar{\rho}^2 \int_0^R [\int_0^r r^2 dr] r dr \quad (9)$$

$$\bar{E} = - \frac{16\pi^2 G \bar{\rho}^2 R^5}{15} \quad (10)$$

Substituting the definition of average density

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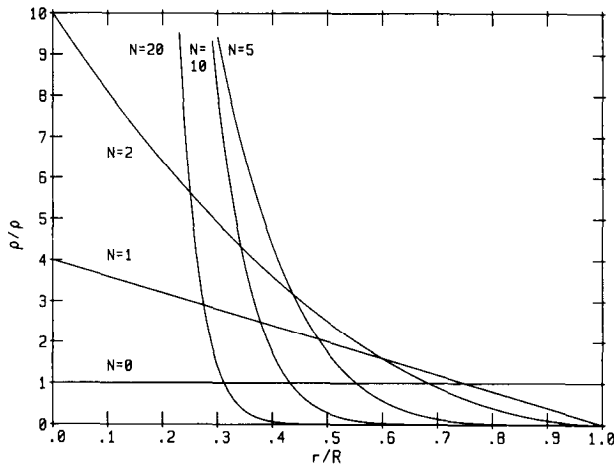


Figure 1. Radial Variation in Density for Various Values of n .

$$\bar{\rho} = \frac{3M}{4\pi R^3} \quad (11)$$

yields the following relationship for potential energy.

$$\bar{E} = -\frac{3M^2G}{5R} \quad (12)$$

Equation 12 differs from that of Akridge (1980) only by a factor of 0.6.

Non-Uniform Density

The density of the sun is no doubt a function of the radius. The exact relationship is, of course, unknown. However, it is a safe assumption that the density is less at the outside than at the center. One possible simple functional relationship for the density would be the following.

$$\rho = \rho_c \left(1 - \frac{r}{R}\right)^n \quad (13)$$

If $n = 0$, then the density is constant; and if $n = 1$ the density varies linearly with the radius. Because the total mass of the sun is known (Borowitz and Beiser, 1971; Weast, 1973), the density at the center, ρ_c , is a function of n .

$$\frac{4\pi\bar{\rho}R^3}{3} = 4\pi\rho_c \int_0^R \left(1 - \frac{r}{R}\right)^n r^2 dr \quad (14)$$

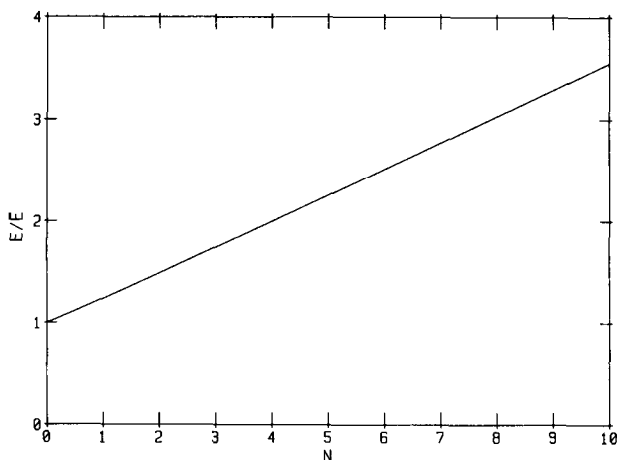


Figure 2. Relative Potential Energy as a Function of n .

Integrating the above expression twice by parts and re-arranging yields:

$$\rho_c = \bar{\rho} \frac{(n+1)(n+2)(n+3)}{6} \quad (15)$$

Equation 13 is illustrated for several values of n in Figure 1.

Substituting Equation 13 into 8 and dividing by Equation 10 yields the ratio of the potential energy associated with non-uniform density to that of uniform density.

$$E/\bar{E} = 15 \left[\frac{(n+1)(n+2)(n+3)}{6} \right] \int_0^R \left(1 - \frac{r}{R}\right)^n \left(\frac{r}{R}\right)^2 \frac{dr}{R} \quad (16)$$

Integrating the above expression by parts and re-arranging yields:

$$E/\bar{E} = \frac{5(5n^5 + 53n^4 + 217n^3 + 427n^2 + 402n + 144)}{24(4n^4 + 28n^3 + 71n^2 + 77n + 30)} \quad (17)$$

Equation 17 yields a value greater than one for any positive, real value of n . In other words, the potential energy is greater (negative) for non-uniform density than it is for uniform density. In fact, $E/\bar{E}$, increases with n as illustrated in Figure 2. Thus, the challenge that non-uniform density makes changes in the solar diameter irrelevant is false.

The Rate Of Energy Generation Due To Contraction

In order to determine the rate of energy generated as a result of solar contraction, it is necessary to take the derivative of Equation 8 with respect to time. In order to do this, it is assumed that the density can be represented by Equation 13, the mass remains essentially constant, and that n remains constant. The resulting relationship is (accounting for the sign reversal for energy released/energy stored)

$$\frac{dE}{dt} = -\left(\frac{3M^2G}{5R^2}\right) \frac{5(5n^5 + 53n^4 + 217n^3 + 427n^2 + 402n + 144)}{24(4n^4 + 28n^3 + 71n^2 + 77n + 30)} \frac{dR}{dt} \quad (18)$$

which is illustrated in Figure 3. Also shown in Figure 3 is the data of Eddy and Boornazian (1979) and the actual power output (Weast, 1973). It can be seen from Figure 3 that the contraction rate as determined by Eddy and Boornazian is about two orders of magnitude greater than the rate necessary to account for the energy produced by the sun.

Given the density function, Equation 13, in order for a contraction to yield no energy release, n would have to simultaneously decrease. This means that the ratio of the density at the center to the average density would have to decrease also (see Equation 15). However, if the sun is contracting it is unlikely that the relative density at the center would be decreasing at a sufficient rate to account for two orders of magnitude in energy.

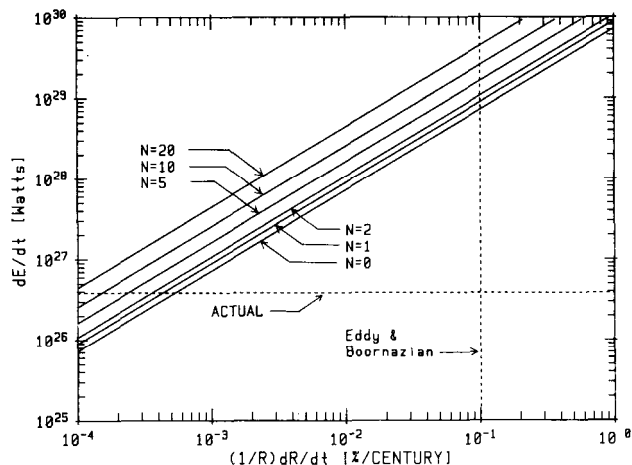


Figure 3. Comparison of Actual and Theoretical Solar Power Output.

Conclusions

It has been demonstrated that the potential energy of the sun can be computed given the functional relationship for the density. Also, the relationship of Akridge is correct within a factor of approximately two. Most importantly, it has been demonstrated that small variations in solar radius—even one-hundredth that of Eddy and Boornazian—are significant even in the case of non-uniform density. This does not prove that fusion does not occur within the sun; but it has

been demonstrated that the solar contraction is more than sufficient to account for the energy generated by the sun.

Nomenclature

E	potential energy
$\bar{E}$	potential energy associated with uniform density
F	force
g	local gravitational acceleration
G	gravitational constant
m	mass of body between the center and r
M	total mass of body
n	exponent in density function
r	local radial distance from center of body
R	outside radius of body
t	time
z	arbitrary radial distance from center (outside body)
ρ	local density
$\bar{\rho}$	average density
ρ_c	density at center of body

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BOOK REVIEWS

The Genesis Connection by John Wiester, 1983. Thomas Nelson Publishers, Nashville, TN. 254 pages, index, glossary. \$14.95.

Reviewed by George F. Howe*

Having been recently converted to Christianity, John Wiester began a search for truth in the inter-relationships of science and the Bible. He studied current paleontological textbooks and interviewed Preston Cloud. After further discussions with Fred Bush about the meaning of the Genesis texts, Wiester formulated and presented his own origins views in this book, *The Genesis Connection* — hereafter referred to as TGC.

In TGC the young-earth creation catastrophist view of origins has been studiously ignored. One looks in vain to find any mention of key creationist names like Lammerts, Morris, or Gish. Organizations like Creation Research Society are likewise unmentioned. These omissions in a book about origins by a Bible-believer are serious flaws.

In TGC author Wiester expresses belief in deity and asserts that: "We owe our existence either to the creative acts of God or to random chance." p. 13. The author is committed to evangelical Christianity. His inscription on the fly leaf of the reviewer's copy reads: "May God continue to smile on you in Christ, II Tim. 2:15." He manifests a deep regard for the Bible which

he evidently believes to be inerrant because he is concerned to show that each element in his origins model fits with what he believes to be the correct interpretation of scripture and "science."

While this is all commendable, "science" to John Wiester includes the authenticity of such non-scientific constructs as the "Big Bang," supposed transitional fossil series and vast theoretical "ages" of geology which he has canonized as follows: "I have chosen to use the time frame accepted by modern science throughout this presentation" p. 14. Wiester espouses much macroevolution because he assumes that the critical origins issue is not creation versus evolution but that: "The real question, the truly vital issue, is Creator versus no-creator" p. 13—also see p. 154. He thus obliterates any real distinction between rapid creation by miracles and some undefined type of God-directed evolution to which he apparently attributes most of the fossil record of animals.

Just how much creation the author relegates to macroevolution is obvious on page 156:

"In my judgment, Scripture does not therefore preclude the transformation by God of a fish into an amphibian. The fact that the *eusthenopteron* lobe-finned fish appears to have been preadapted to life on land indicates a long-term cohesive plan . . . It is uncertain whether God created amphibians from fish, reptiles from amphibians, or mammals from reptiles. But He may have chosen this route to accomplish His miracle . . ."

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How can Biblical authenticity be maintained on the one hand while the Creator is seen to work by means of macroevolution on the other? Wiester answers by asserting that God worked by rapid creation miracles only when the word *bara* was used for “create” in Genesis—namely (1) when God created the heavens and the earth (Genesis 1:1), an event which Wiester sees as a sanctified Big Bang; (2) the creation of sea monsters and animal life in the water (Genesis 1:21); and (3) in the case of man’s creation (Genesis 1:27). Here Wiester seems oblivious to the judgment of many conservative Hebrew scholars that the words *bara* and *asah* are so similar in meaning that they both refer to a distinct creation and that *asah* does not allow for wholesale evolutionary involvement. No mention is made of this normal exegetical conclusion.

Yet Wiester’s bizarre exegesis of these two words *bara* and *asah* is faithfully reflected throughout TGC where he marshals and defends rapid creation at only those three points in earth’s history—the origin of matter, sea creatures, and man! Thus he wisely speaks of mystery and suddenness in regard to the “Cambrian Explosion” but neglects anti-evolutionary evidence at dozens of other points in the “fossil record.”

His chapters 10 and 11 are excellent treatises on the changing and futile attempts of specialists to demonstrate an evolutionary history for man. He poses the possibility that even *Homo habilis* and *H. erectus* were simply extinct non-men, outside of *H. sapiens* ancestry (p. 173).

He deals with various missing-link candidates demonstrating that each was ultimately abandoned by the anthropologists. The section on man’s origin is laced with helpful anti-evolutionary quotations from such unlikely people as A. J. E. Cave, Richard Leakey, Donald Johanson, and others. Writing about a real Adam and a real Eve, Wiester wonders if they were the ancestors of Neanderthal, Cro-Magnon, or both.

But because of his lamentable exegesis of *asah*, allowing widespread macroevolution, Wiester neglects strong evidence against evolution at most other points in the geologic record—a monumental deficiency in a book of this type. Thus he would allow the origin of amphibia from fish and reptiles from amphibia, ignoring all scientific data to the contrary. Such laxity in exegesis is inexcusable and damages his origins model, causing him to ignore evidence against evolution except at the three places where *bara* is used in Genesis 1.

Wiesters thesis that it makes no real difference whether one believes in creation or evolution as long as a Creator’s role is preserved is faulty. It does make a difference both scientifically and theologically if God worked quickly rather than by gradualistic processes. Wiester should call a spade a spade by owning up to the fact that he is really a “theistic evolutionist” who believes in rapid bursts of creation at two or three points in earth’s expanded history. If theistic evolution is worth believing, it is worth calling by its own name. But if it is Biblically and scientifically inferior, it is again worth dealing with by name. Attempts to abolish existing vocabulary are at best confusing.

Although TGC was originally intended as a primer for young readers on the relation of science and faith, it is not recommendable for that position because of exegetical and scientific flaws already discussed and

because the author completely neglects the creation-catastrophism alternative.

But TGC may be of definite limited value to some readers. Serious creationists can benefit from Wiester’s treatment of the Cambrian Explosion and the origin of man. Certain creationists have the intellectually shabby practice of claiming that all evolutionists believe the same thing and that all theistic evolutionists are non-Christians. By reading TGC they will learn that some theistic evolutionist do believe in a modicum of rapid creation here or there in the history of life. Wiester is a prime example. Maybe certain atheistic evolutionists need to learn that not all those who inquire after Christianity need to get their origins views straightened out as prerequisite to receiving Christian faith. Then some editors of creationist books for young people could do well to read and emulate the craftsmanship evidenced by Wiester and Thomas Nelson in producing a volume that has outstanding pictorial and explanatory appeal.

Since TGC was produced by a well-recognized religious publishing house, and can be easily read by people of various educational levels, it may receive widespread circulation. Catastrophists and other creationists may be forced to study this book if only to know how to help those young people whose only approach to origins has been TGC. Perhaps every segment of origins opinion deserves its own, readable, entry-level textbook. TGC is just that volume for theistic uniformitarian evolutionists who believe in rapid creation at three specific points in origins.

History, Harmony and the Hebrew Kings, by E. W. Faulstich. 1986. Chronology Books, Spencer, IA. 304 pages \$19.95.

Reviewed by Warren H. Johns*

During the past quarter century the one chronology most widely used in commentaries and Old Testament history books for the period of the kings has been the one developed in Edwin R. Thiele’s *The Mysterious Numbers of the Hebrew Kings* (University of Chicago Press, 1951; Eerdmans Publishing Co., 1965., Zondervan, 1983). Thiele died shortly before an alternative to his chronology was published, i.e., E. W. Faulstich’s *History, Harmony and the Hebrew Kings* (HHHK). The approach to Biblical chronology is novel—Faulstich uses ancient jubilee and sabbatical cycles to reconstruct the events of Jewish history from the exodus in 1461 B.C. to the destruction of the second temple in A.D. 70. He also utilizes the new moon data for the past few thousand years to establish the day of the week on which key Biblical events occurred. The lunar events, including ancient eclipses, together with the sabbatical/jubilee cycles have been recorded on a computer database, and the resultant chronology is referred to as the “computer calendar.” HHHK certainly is a pioneer study for computer-assisted applications in solving some of the difficult problems faced in Biblical chronology.

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HHHK has to go beyond the confines of Scripture in order to develop its chronology. Whereas Thiele has relied heavily upon astronomy and Assyrol/Babylonian history, HHHK has leaned most heavily upon astronomy and Jewish tradition. The three most important anchor points, according to HHHK, are the date of the exodus and more specifically the conquest in 1421 B.C., the destruction of the first temple in 588 B.C., and the destruction of the second temple in A.D. 70. Since all scholars can unanimously agree on the validity of the third date, that is the logical place to begin. HHHK proposes that the terminal point for the sabbatical cycles was A.D. 70, at which time the Jews lost their temple and the right to their land in fulfillment of Leviticus 26:33-35.

This study will use the undisputed date of 70 A.D. as its starting point in calculating the Sabbath and Jubilee cycles. The Talmud identifies the year 70 A.D. in which the destruction of Jerusalem occurred as a Sabbath year. (p. 178)

HHHK goes one step beyond the Talmud and suggests that A.D. 70 was also a jubilee year.

Based upon a Talmudic tradition, the first temple was destroyed on the ninth of Ab one year after a sabbatical year and exactly at the time when the family of Jehoiarib, one of the 24 priestly families, was serving (pp. 37-41). HHHK asserts that this could be true only of 588 B.C. and not of any other date during that time period.* However, the Talmudic statement is problematic for several reasons: a) It has the destruction of the first and second temples both occurring on the ninth of Ab, and there is only one chance in 365 of that happening; b) it contradicts Scripture, which states that the first destruction took place either on the seventh of Ab (II Kings 25:8) or the 10th of Ab (Jer. 52:12); c) it specifically designates the ninth of Ab as a Sunday, whereas HHHK using ancient lunar cycles assigns the ninth of Ab to a Monday in 588 B.C.; and d) another Talmudic tradition places the first destruction on a sabbatical year, rather than a post-sabbatical year. It is interesting that HHHK (p. 219) quotes this second rabbinic tradition without realizing that it directly contradicts the first tradition that is used for establishing the date of 588 B.C. for the destruction of the temple and the end of the Hebrew kingship.**

The dates for the exodus and the conquest likewise are established by means of Talmudic tradition. According to HHHK (p. 187), the Talmud states: "Seventeen jubilee (cycles) did Israel count from the time

*The date of 588 B.C. for the fall of Jerusalem is one or two years too early. HHHK has overlooked a definitive study that can be used to settle the dates for Nebuchadnezzar's reign—Neugebauer and Weidner's *Ein astronomischer Beobachtungstext aus dem 37. Jahre Nebuchadnezzars 11. (-567/66)*. This is a translation of a Babylonian tablet with numerous astronomical observances that can be true only of the year 568/567 B.C., and not any other year within a hundred years of that date. That year was Nebuchadnezzar's 37th year. Jerusalem fell either in the 18th year (Jeremiah 52:29) or in the 19th year of Nebuchadnezzar (II Kings 25:8; Jeremiah 52:12), which would be either the year 587 or 586 B.C. according to the astronomical tablet, not the year 588 B.C. as determined by the "computer calendar."

**The Talmud (*Arakin* 11b-12b) places the destruction of both the first and second temples on a sabbatical year, but elsewhere the Talmud (*Taanith* 29a) states that both destructions happened on the year before the sabbatical year. Thus some ancient Jewish chronologies date the year of the second destruction to 69 A.D. and others to 70 A.D., some 13 or 14 years before the jubilee year.

they entered the Land (of Israel) until they left it.' " Seventeen jubilees or 833 years (17 x 49) occupies precisely the period from 1421 B.C. to 588 B.C. The exodus then would be 40 years earlier or in 1461 B.C. All dates relative to the Hebrew monarchy are adjusted according to these anchor dates. For example, Solomon died in 945 B.C., which is exactly 14 years prior to Thiele's date of 931 B.C.

The 14-year difference is critical, for it suggests two sabbatical cycles. I believe a crucial mistake was made by HHHK when it designated A.D. 70 as a jubilee year. The recently-discovered Murabbaat Papyrus 24 mentions the occurrence of a "year of jubilee" at the beginning of the Bar-Kochba revolt ca. 132 A.D. (see *Discoveries in the Judaean Desert*, II, pt. 1, pp. 124-5). The previous jubilee year would have been 83 A.D. or about two sabbatical cycles after the fall of Jerusalem to the Romans.** This error of two sabbatical cycles is reflected, therefore, in HHHK's dates for the reign of Solomon. Surprising as it may seem, all of the sabbatical and jubilee celebrations used as the basis of the HHHK chronology can be incorporated just as easily into Thiele's chronology. It is regrettable that Professor Thiele is no longer with us to respond to this latest challenge to his chronology.

Cosmos and Transcendence: Breaking Through the Barrier of Scientific Belief by Wolfgang Smith. 1985. Sherwood Sugden and Company. La Salle, IL. 168 pages. \$8.95.

Reviewed by Emmett L. Williams*

The author's purpose in writing this treatise is to show the difference between scientific knowledge and scientific belief. Smith relies totally on Douglas Dewar's *The Transformist Illusion* in the chapter (IV) pointing out defects of the evolutionary hypothesis. Therefore more recent evidence favoring the creation model of science is not mentioned and the author apparently is unaware of modern creationist scientific efforts.

It would help if the reader is well-grounded in physics to understand the chapters on the physical universe for Smith, a mathematician, develops concepts based on geometry, special relativity and quantum mechanics. The author points out many shortcomings of modern materialistic thought, i.e., reality does not conform to scientific models, the premise of positivism that the object of sense perception lies within the confines of the human mind and the positivistic philosophy where truth is replaced by the notion of utility. He notes that most modern scientists do not properly understand any philosophy of science. The author's conclusion is that "In the name of physics, civilization has succumbed to a fantasy."

Smith unfolds his Christian philosophy of science in chapter III explaining that God is the ultimate cause and nature is "but a glass" reflecting the face of God. However he claims: "Startling as it may seem, eternity is to be found—not in some distant and everlasting future—but in the ever-present 'now': like the Kingdom of God, it lies 'within'." (p. 64)

In the antievolution chapter he is not aware of the fossil finds (particularly pollen grains of modern plants)

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in Precambrian strata either by evolutionary or creationist scientists. However he does mention that a "burst of life" is found in the fossil record in Cambrian strata which would be expected from the creationists viewpoint. He indicates that the evolutionary hypothesis has no predictive value, yet he is open to theistic evolution since he states that "... there is nothing in Scripture which clearly rules out the transformist hypothesis." (p. 88) This error is typical of many modern Christian and politically conservative philosophers who, wishing to take an "intellectual" stance, plant their feet squarely in midair between creationism and evolutionism. Yet the author acknowledges that the fossil record fits the creationist viewpoint rather than macroevolutionary ideas. One wonders if a call of "choose you this day whom you will serve" would not be a good challenge to such men.

The chapters on Freud and Jung are worth the price of the book. Smith states that the Freudian doctrine is an inversion of Christian truth. The dangers of and the occult processes associated with psychoanalysis are discussed. Jung is connected with Gnostic error. The anti-Christian basis of both men's ideas is outlined.

The author touches on the philosophy of progress and notes what creationists have often proclaimed that materialism, the doctrine of progress and its scientific child, macroevolution have produced a spiritual wasteland. Modern man has "become sophisticated, skeptical and profane." The book is concluded with the following statement:

The terrible fact is that a Promethean science, a science that would make man the measure and master of all things ("*ye shall be as gods*"), becomes in the end a curse ("*cursed is the ground for thy sake, and in sorrow shalt thou eat of it*"). (p. 158)

This book has both strong and weak points. It is a mixed philosophical bag, not a treatise to use in studying creationist science. Yet if you know someone who is "hung up" on psychoanalysis, this book might decrease his enthusiasm for the practice.

QED: The Strange Theory of Light and Matter by Richard P. Feynman, 1985. Princeton University Press, Princeton, NJ 158 pages. \$18.50.

Reviewed by Clifford L. Lillo*

In 1983 and 1984, Professor Feynman gave a series of lectures on quantum electrodynamics to the general public at UCLA, and this book is a copy of the manuscripts that he used. According to the Preface, the book, "... is a straightforward, honest explanation of a rather difficult subject . . ." (p. ix) The book is of concern to the creationist, not because of any attempts by the author to tie in quantum electrodynamics (QED) to evolution, but rather because of his deification of nature.

After describing how photons of light, in encountering a pane of glass, are reflected and refracted, Feynman shows a method for determining the probabilities for transmission of light. He concludes the discussion by stating: "You see how clever Nature is

with Her rules to make sure that we always come out with 100% of the photons accounted for!" (p. 72)

A few pages later, Feynman discusses "the wild and wonderful world of quantum physics" in which "probabilities are calculated as the *square of the length of an arrow*." (p. 78) Instead of adding probabilities, he adds arrows and instead of multiplying probabilities, he multiplies arrows. He says that such calculations match the results obtained by experiment. He then says:

I'm rather delighted that we must resort to such peculiar rules and strange reasoning in order to understand Nature, and I enjoy telling people about it. There are no "wheels and gears" beneath this analysis of Nature; if you want to understand Her, this is what you have to take. (p. 78)

There are several other passages in the book in which references are made to "Nature" (always with a capital N) as though nature were a living being. Of course, if he had chosen to substitute "God" for the word "Nature" the passages would be quite acceptable to creationists (assuming he also changed the "Her" to "Him"). But, in that case, some of his audience at UCLA may have walked out on him, indignant that he would bring religion into a public university. And, his book probably would not have been accepted by the Princeton University Press because of its "religious" nature.

There is a lesson here for creationists. What if we were to say that "Nature" created the universe, placed the various "kinds" of animals on the earth fully formed, and was responsible for a world-wide Flood? Would evolutionists see through the deception and cry foul? Yes. But, is that really much different from what Professor Feynman has said in his lectures and his book?

Aside from his deification of nature, the author has presented a very difficult subject in a manner that the educated layman can understand. Readers are told almost from the start that he will be describing as accurately as he can the strange *theory* "of light and matter—or more specifically, the interaction of light and electrons." (p. 4) He says:

. . . a new theory, the quantum theory of the interaction of light and matter, which is called by the horrible name "quantum electrodynamics," was finally developed by a number of physicists in 1929.

But the theory was troubled. If you calculated something roughly, it would give a reasonable answer. But if you tried to compute it more accurately . . . you couldn't really compute anything beyond a certain accuracy. (p. 6)

He then states that the problem was solved by Julian Schwinger, Sin-Itiro Tomonaga, and himself in about 1948. He further claims:

The theory of quantum electrodynamics has now lasted for more than fifty years . . . At the present time I can proudly say that there is *no significant difference* between experiment and theory! (p. 7)

Here, then, is another interesting fact for creationists and evolutionists. Although actual experiments seem to confirm the theory, the author has made no attempt to upgrade the concept from "theory" to "fact." That is the way that "science" operates.

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Progress in Space-Time Physics, 1987 James Paul Wesley, Editor 1987, Benjamin Wesley. Blumberg, West Germany, 289 pages, \$32.00.

Reviewed by Thomas G. Barnes*

This book is a collection of 38 original research papers by some of the world's foremost space-time physicists. It provides an update on space-time research since that reported in the Proceedings of the International Conference on Space-Time Absoluteness, Genoa, Italy in 1982.

Of particular interest to this reviewer is the ingenious experiment by E. W. Silvertooth in which he measured, in a closed laboratory, the absolute velocity of the solar system through space. A description of Silvertooth's brilliant experiment appears in print here for the first time in the paper "Silvertooth's Standing-Wave Measurement of Absolute Velocity of the Solar System" by J.P. Wesley.

Also appearing here in print for the first time is an independent verification of Silvertooth's measurement. It is described in the paper by Stefan Marinov entitled "A Simplified Repetition of Silvertooth's Measurement of the Absolute Velocity of the Solar System." A novelty in Marinov's revision of the experiment is that it employs no moving parts.

J. P. Wesley provides a clear description of another of Marinov's measurements of absolute velocity of the solar system in the article "Marinov's Toothed-Wheels Measurement of Absolute Velocity of Solar System."

The success of these experiments in measuring the velocity of the solar system through space is attributed to the fact that they involve one-way measurements of light propagation. Whereas the two-way measurements, such as the Michelson-Morley experiment, all failed to detect this velocity of the solar system through space.

These measurements are reported to be in "agreement with the results from the 2.7 K cosmic background anisotropy and Marinov's coupled mirrors experiment." (p. 11.) This is a devastating blow to Einstein's special theory of relativity and provides strong support for a medium in space. A theoretical article, by the reviewer, proposes a medium in space.

The scope of these papers is too broad to detail here, but mention should be made of an article by Harold Aspden, "Steady State Induction—A Feature of the General Law of Electrodynamics," that makes a strong

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case for revision of a conventional law in electrodynamics. An article by Peter Graneau and one by J.P. Wesley give support. These articles are not for amateurs, but should be a must for scientists working on space-related problems such as those in the Strategic Defense Initiative research.

As stated on the back cover:

This book provides an excellent source of new ideas concerning some of the most fundamental outstanding questions in physics today. The authors show an amazing vigor and audacity. They may not be right; but at least they recognize the problems and present new creative ideas to try to solve them . . . the thoughts presented here are a fresh departure from the stultifying dogmas of the past.

In the Preface, the editor has some harsh words for, and documentation of, censorship that exists in the dominant journal system:

The corrupt journal system of communication with its anonymous censors generally permits only sterile "establishment" ideas to be heard . . . Ideas are freely expressed here whether right or wrong, acceptable or unacceptable . . . Only such a free exchange of ideas can lead to the necessary progress in physics that all of us researchers in space-time physics so strongly desire.

The editor can not resist a humorous jab at Einstein's special theory of relativity.

An editor must mention the poor dying thing called "special relativity." It came into this world a sick deformed creature . . . survives only by virtue of an artificial lung, . . . artificial feeding . . . assisted by a host of dedicated believers. The absurdities of "special relativity" have now been piled upon the poor dying thing by the hundreds (if not thousands) of volumes.

One might ask what relevance this book has to creation science. The answer is that evolutionary cosmology has been kept afloat by this same type of censorship in the journal systems and Einstein's relativity is a touchstone of that cosmology.

All articles except one are in English. One is in German. In addition to an author index the book gives a list of some (55) individuals currently interested in space-time physics. These are professional scientists who do not subscribe to Einstein's special theory of relativity.

QUOTE

Formal schooling was commenced by churches. Ultimate questions cannot be answered except by religious doctrines—unless we are prepared to embrace the dialectical materialism of the Marxists. The Bible has been the most influential book in half the world, for hundreds of years. How nasty that some little wretches should wish to study it, and should be supported by their parents!

Kirk, Russell 1984. Religion in the civil social order. *Modern Age* 28:309.

SUPPORT THE RESEARCH EFFORTS OF THE SOCIETY

LETTERS TO THE EDITOR

Creationist Referencing Practices and The Young Earth Hypothesis

I have been showing the Origins film series featuring A. E. Wilder-Smith in the "Evening School of the Bible" at our church. I make a few introductory comments, show the film, and then answer questions from the floor. Our church is in a high tech area between the University of Tennessee, Oak Ridge National Laboratory, and the Tennessee Valley Authority. I have attracted quite a diverse crowd including professors, chemists, physicists, biologists and engineers. Most are Christians; but many are dyed-in-the-wool evolutionists. Needless to say the discussion has been LIVELY!

One of the films is on the evidences for a young earth. This drew especially heavy "fire" from the hecklers. As a result, I prepared a written response including references and calculations.

While preparing this response I had some "difficulty" and have some suggestions to make of a general nature. First, I was reminded again that Christians, and especially creationists, must do a better, more thorough job than evolutionists because this reflects on the honor of Christ, and because, if we do not, it may turn someone away from the cross. There is a certain "offense of the cross" and "offense of the Word" that cannot be avoided; but we need to make sure that it is His offensiveness to the lost that turns them away and not ours. This is a big struggle for me, especially while being heckled.

My second observation is the rather poor documentation or referencing that sometimes is present in creationists' work. This might not be poor when compared to non-technical work, but when compared to the standard required by the CRSQ or the *Journal of Fluid Mechanics*, it is. This makes it very difficult to find cited material. When challenged to come up with a reference by an evolutionist, you had better find it before the next meeting! I was able to "chase down" references for all of the points made in the film and workbook (there were no references in the workbook, per se.); but I am not sure anyone that has not spent years searching through libraries could have found them.

One of the biggest problems is the practice of referencing one work that references another, etc. You have to follow a long trail of articles and books (and creationist works are not easily found in the typical university library) until finally you get to the one that has a reference to the article from which the data came. A good example being the "solar shrinkage" measurements of Eddy and Boornazian. Since this appeared in a "news" section, it never showed up in any author or subject index! Furthermore, the oldest reference that I was able to find had the wrong issue number—a non-existent one at that. An understandable but annoying typo.

Estimates of lunar dust is another good example of my third point. A problem developed over conflicting calculations with no indication where these came from except something like, "Dr. Slusher found that three inches of dust could have accumulated on the moon in

a mere 8000 years!" There is some discrepancy that goes back through several quotations quoting other quotations . . . without going directly back to the original work. The figures given in several places are: three inches in 8000 years or 440 to 990 feet in four to five billion years. There is no way that these figures can be squared without additional information as to the various assumptions.

I was bludgeoned with this inconsistency by an evolutionist. Come on now, we can do better than this! Do not put things in print without having twice as many people check it out as the evolutionists do. I want to be quick to say that I have no bone to pick with Dr. Slusher. On the contrary, I appreciate his work. I am disturbed with less than carefully detailed presentations of what is sure to be highly inflammatory information.

The films are well done and very interesting with excellent video features; but I am afraid that if someone with less experience than myself in technical matters, library research, and presentations before large and possibly hostile groups were to show this film to the same group I have, the creationist viewpoint would have sustained a blood bath worse than Pickett's charge! Maybe this is just to be expected from the "open-minded, fair-handed" evolutionists, an unavoidable situation. I hope not.

Another note, somewhat off the subject but related to solar shrinkage. I have developed many computer programs (I turn out about 50K lines of validated FORTRAN and assembler per year). One of the programs that I have recently made available will compute the gravity inside as well as outside a spherical body with non-uniform density, the total potential energy of the body, and the pressure at the center. The executable module and source code as well as several other programs that I have developed (including vector processor emulation for the PC—three to seven times speed increase with no hardware changes and I am the only one that has it) are available on the ASME/CIME-ISE electronic bulletin board which can be reached at 608-233-3378 (8/N/I).

Appendix I

Calculations in Workbook: Shrinking Sun*

J. A. Eddy (astrophysicist with the Harvard-Smithsonian Center for Astrophysics and High Altitude Observatory in Boulder) and A. A. Bornazian (mathematician with S. Ross and Co. in Boston) found that the sun is "shrinking" at a rate of 0.1% per century as reported by G. B. Lubkin in *Physics Today* (1979) 32(9):17-19.

The *CRC Handbook of Chemistry and Physics* (pp. F160-F216) gives the diameter of the sun as 1.4E9 meters. The corresponding shrinkage rate would be:**

$$\frac{(1.4E9 \text{ m})(0.001/100 \text{ y})(3.28 \text{ ft/m})}{(24 \text{ h/d})(365 \text{ d/y})} = 5.2 \text{ ft/h}$$

The time required for the sun to double in size (backward in time) would be:

$$\frac{1}{(0.001/100 \text{ y})} = 100,000 \text{ y}$$

The *CRC Handbook of Chemistry and Physics* (pp. F160-F216) gives the mean radius of the earth's orbit as $1.5E11$ meters. Assuming a constant rate of expansion in the past, this would indicate contact with the earth in:

$$\frac{(1.5E11 \text{ m})}{0.5(1.4E9 \text{ m})(0.001/100 \text{ y})} = 21 \text{ million years}$$

It should be noted that extrapolating back to the "big bang" extends to $1.9E10/2.1E7 = 900$ times as long as this extrapolation!

*The 54th edition of the *CRC Handbook of Chemistry and Physics* was used where referenced in these appendices.

**d — day, h — hour, s — second, y — year.

Appendix II

Calculations in Workbook: Lunar Dust

Hans Pettersson in his article entitled "Cosmic Spherules and Meteoritic Dust," which appeared in *Scientific American* (1960) 202(2):123-32, gave the deposition of meteoritic dust on the earth as between five and 14 million metric tons per year. This is the amount that survives entry through the earth's atmosphere! Certainly most of the incident dust is burned up in the atmosphere and does not make it to the surface as such.

The statement is made in the workbook, that the deposition rate for the moon might be as much as 10 times this amount (ie. $1.4E8$ tons/year). This is a quotation from Harold S. Slusher (1980) *Age of the Cosmos*, Institute for Creation Research Technical Monograph, p. 41. Of course, the deposition rate on the moon is not a measured value (at least not as given in Pettersson's article); but considering the fact that the earth has a substantial atmosphere and the moon does not, this might outweigh the difference in the surface area of the moon and its lesser gravitational attraction.

The *CRC Handbook of Chemistry and Physics* (p. F160) gives the diameter of the moon (D) = $3.5E6$ meters. The density of dry earth (dirt) is 1400 kg/m^3 (*CRC Handbook of Tables for Applied Engineering Science*, second edition, p. 177). Using the high value for deposition rate and the density of "dry earth," the thickness (t) over an 8,000 year period can be computed:

$t =$

$$\frac{(1.4E8 \text{ tons/y})(1000 \text{ kg/ton})(8000 \text{ y})(3.28 \text{ ft/m})(12 \text{ in/ft})}{(1400 \text{ kg/m}^3)\pi(3.5E6 \text{ m})^2}$$

$= 0.82$ inches

Using the low value of deposition rate, over a 4.5 billion year period the thickness would be:

$$t = \frac{(1.4E7 \text{ tons/y})(1000 \text{ kg/ton})(4.5E9 \text{ y})(3.28 \text{ ft/m})}{(1400 \text{ kg/m}^3)\pi(3.5E6 \text{ m})^2}$$

$= 3800$ feet

Appendix III

Calculations in Workbook: Lunar Escape

The *CRC Handbook of Chemistry and Physics* (pp. F160-F216) gives the following data:

rotational speed of the earth (ω) = $7.3E-5$ radians/sec.

rotational moment of inertia (I) = $8.1E37 \text{ kg-m}^2$

relative change in rotational speed of earth = $-2.8E-8/100\text{y}$

mass of the earth (M_E) = $6.0E24 \text{ kg}$

mass of the moon (M_M) = $7.3E22 \text{ kg}$

mean orbital radius of the moon (R) = $3.8E8 \text{ m}$

gravitational constant (G) = $6.7E-11 \text{ N-m}^2/\text{kg}^2$

The corresponding rate of change in rotational kinetic energy of the earth can be computed by taking the time derivative of the rotational kinetic energy as given by Borowitz S. and A. Beiser, 1971, in *Essentials of Physics*. Addison-Wesley, Reading, MA, pp. 164-72.

$$E_E = 0.5 I \omega^2 \text{ which becomes: } dE_E/dt = I\omega d\omega/dt$$

$$= \frac{(8.1E37 \text{ kg-m}^2)(7.3E-5 \text{ radians/s})^2(-2.8E-8/100\text{y})}{(3600 \text{ s/h})(24 \text{ h/d})(365 \text{ d/y})}$$

$$= -3.8E12 \text{ J/s}$$

The total energy of the moon (potential + kinetic) is given by Borowitz and Beiser:

$$E_M = - \frac{GM_E M_M}{2R}$$

Taking the derivative with respect to time of the above equation:

$$dE_M/dt = \frac{GM_E M_M}{2R^2} dR/dt \quad \text{or} \quad dR/dt = \frac{2R^2 dE_M/dt}{GM_E M_M}$$

If this energy from the earth were transferred to the moon as suggested in the workbook on page 13, the rate of change of the moon's orbital radius would be:

$$dR/dt = \frac{2(3.8E8 \text{ m})^2(3.8E12 \text{ J/s})}{(6.7E-11 \text{ N-m}^2/\text{kg}^2)(6.0E24 \text{ kg})(7.3E22 \text{ kg})}$$

$$= 3.8E-8 \text{ m/s}$$

If this rate were constant, dividing it into the orbit radius would yield the following time:

$$\frac{(3.8E8 \text{ m})}{(3.8E-8 \text{ m/s})(3600 \text{ s/h})(24 \text{ h/d})(365 \text{ d/y})}$$

$$= 0.32 \text{ billion years}$$

Appendix IV

Calculations in Workbook: Helium Escape

The *CRC Handbook of Tables for Applied Engineering Science* second edition (p. 655) or *CRC Handbook of Chemistry and Physics* (pp. F160-F213) gives the following data:

extreme temperature at the upper limit of

atmosphere (T) = 2100°K

escape velocity from the earth (v_E) = $1.1E4 \text{ m/s}$

molecular weight of helium (w) = 4 (kg/kg-mole)

Avogadro's number (A) = $6.0E26 \text{ (atoms/kg-mole)}$

Boltzmann's constant (k) = $1.4E-23 \text{ J/}^\circ\text{K/atom}$

The mass (m) of a single helium atom can be computed by:

$$m = w / A = (4 \text{ kg/kg-mole}) / (6.0E26 \text{ atoms/kg-mole})$$

$$= 6.6E-27 \text{ kg/atom}$$

The fraction (F) of helium atoms having a speed greater than or equal to the escape velocity (v_E) can be computed in integrating Maxwell's distribution from v_E to infinity. The resulting formula is given by Pierce, F. J., 1968, *Microscopic Thermodynamics*. International Textbook. Scranton, PA. pp. 38-45 in terms of the complimentary Gauss error uncton:

$$F = \operatorname{erfc}((mv^2/(2kT))^{0.5})$$

$$= \operatorname{erfc}(((6.6E-27 \text{ kg/atom})(1.1E4 \text{ m/s})^2 / (2(1.4E-23 \text{ Joule/}^\circ\text{K/atom})(2100^\circ\text{K})))^{0.5})$$

$$= \operatorname{erfc}(14^{0.5}) = \operatorname{erfc}(3.7) = 1.4E-7$$

This means that under the most extreme upper atmospheric conditions only 1.4 in 10 million helium atoms can escape from the earth's gravity.

Appendix V

The following lists compare the evidences cited for an old/young Earth/cosmos. I do not agree with the predominant interpretation of each evidence. Each one must be responsibly considered. Neither side contains only "trivial" or "easily dismissed" evidence. I think you will conclude that neither side is barren, nor is there any staggering preponderance on one side.

Evidence for an Old Earth/Cosmos	Evidence for a Young Earth/Cosmos
1. "appearance" (weathering, stratigraphy, lithification, Fossilization, etc.)	1. decay of Earths magnetic field
2. extrapolation of erosion and sedimentation rates	2. misalignment of Uranus' magnetic field
3. extrapolation of sea floor spreading/subsidence and plate tectonics	3. solar shrinkage
4. K-Ar dating of rocks (terrestrial and extraterrestrial)	4. spectrum (power vs. wavelength) of light from sun/stars does not match spectrum of "man-made" fusion
5. inferred time to expand from presumed "big bang"	5. "tight focus" (near-sun) comets
6. inferred travel time of stellar light	6. thin layer of lunar dust
7. planar alignment of planetary orbits in solar system	7. lunar escape
	8. polonium (and other radio-) halos indicating rapid creation
	9. lack of build-up of helium in the atmosphere
	10. concentration of tracer elements in runoff higher than in oceans
	11. human population (a mere 32 generations = $(2)^{32} = 4.3$ billion people)

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Concerning Scale Invariance

I thank Eugene Chaffin (1986) for pointing out that the Coulomb force breaks scale invariance and that secular changes in the permittivity are allowable even under current conceptions of cosmology. In proposing such a view, I have always viewed it in light of the miraculous. To learn that it also can fit within the

current conceptions of the fabric of the universe is a pleasant surprise indeed.

Reference

Chaffin, E. F., Hermann Weyl and the unity of knowledge. *Creation Research Society Quarterly* 23:118-120.

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Reply to Woodmorappe's Several Matters

Woodmorappe (CRSQ 23:79-93) raised criticisms of nearly everything I have ever written. Since the number of issues raised is so large, I will only answer some of the more important ones here. More information concerning the expanding earth model of the Flood may be found in my book, *The Geology of the Flood* which can be purchased for \$15.00 from the author.

Woodmorappe misunderstands my position on paleoclimatic evidences. I never said paleoclimatic conclusions are invalid in general. My position is that if the Flood is to be imagined as having accomplished all geologic work within a one-year time frame then paleoecologic and paleoclimatic inferences must be invalid. This can be seen from the major assumption of paleoecology, which is that the fossils buried in a given locality grew within the local region. This is obvious, because if a plant grew somewhere else and was washed into its burial site from a great distance, then its presence at the burial location is of no use in determining the local climate. It did not grow in the local climate.

But if, as Woodmorappe suggests, fossils were not transported very far from their place of growth, then their fossil remains would be indicative of the local climate. In this I would agree. But I think that requiring the creatures to grow, die and be buried in the region in which they are now found as fossils, presents a problem of time which I am sure Woodmorappe would not want to accept. In Michigan the 3,300 feet of Cambrian and Ordovician strata each contain their characteristic fossil fauna which presumably grew and died in the Michigan region. Although no one knows for sure, the lifespan of trilobites found in the Cambrian and Ordovician was probably around two to three years. If they grew and died there then Woodmorappe needs at least that much time. Covering the Cambro-Ordovician strata are the Silurian bioherms in the Niagaran strata. If the crinoids and coral found in these strata also grew and died in this locality they could not have done it at the same time as the trilobites under them since the Silurian limestone completely covers the Cambro-Ordovician strata. Overlying all of this is 2,000 feet of bedded salt, limestones and shales in the Salina group. Above this are the Mississippian, Pennsylvanian and Jurassic formations of Michigan each with characteristic fossils. At the top of the heap are the glacial tills some of which contain buried spruce trees which are more like those found today in central Canada.

It would seem then that if paleoclimatologic and paleoecologic inferences are valid, then we must somehow allow enough time for Cambrian trilobites to grow, die and be buried and then for the Ordovician forms to do the same and so on up through the rock

record. It seems difficult to fit all this into a one-year time frame as Woodmorappe suggests. If, on the other hand, one wishes to allow for the Niagaran reef material to be washed into place from far away, as D'Armond suggested (CRSQ 17:88-105) then it would be difficult to prevent the Flood waters which are carrying a thick lime slurry from also carrying plant remains from afar.

Mr. Woodmorappe insists that most sediments from the Flood would be deposited on the continental shelves not the deep ocean bottom during the Flood. To support this contention he compares the Flood deposition to that which occurs at the mouth of a river today. I question whether such an analogy is valid. If the Flood were no more violent than a modern river, it could not possibly be able to account for all the sediments which are observed. After all, many rivers empty into the oceans and they do not deposit each year anywhere near the 617 million cubic kilometers of sediment known to exist. Even with normal river sedimentation 21 percent of the material carried to the oceans descends to the deep ocean floor, according to Milliman and Meade (1983). How much more sediment would collect on the deep ocean floor if we were currently experiencing a world-wide Flood?

One cannot conclude that just because only 21 percent of Amazon sediment settles in the deep ocean that therefore the Amazon Cone, which extends 2/3 of the way to the mid-atlantic ridge, only contains a small percentage of Amazon sediment. A large percentage of the sediment in the cone came from the Amazon but only a small percentage (21) of Amazon sediment made it onto the cone.

Woodmorappe continues to claim that I believe that Flood sediment is Precambrian even though he can produce no printed statement of mine to that effect and in spite of my previous published denial (Morton, 1983) in response to his last set of criticisms. I cannot be responsible, of course, for what anybody reads into my views but I would like to categorically state again, as I did before, *that I do not believe that Precambrian sediments are Flood sediment*. Having said that, there are still problems deciding which bed is Cambrian and which is Precambrian. Some today are even suggesting that the Infracambrian sediments which contain the Ediacaran fauna should be Cambrian, not Precambrian.

I find it a little more difficult to explain the dinosaur footprints interspersed with clam shrimp layers than does Woodmorappe. In the Newark basin, there are many, many layers with dinosaur tracks interspersed with many beds containing abundant burrows over a thickness of several hundred meters. In a Flood when a layer of dinosaur prints is buried by a several meter thick layer of sand or shale, the burrows made by the clam shrimps are not present at the instant of deposition. It requires some time for the burrowers to repopulate the area and dig their burrows. Even if it only took a few weeks for this to occur, there are more layers with burrows than could possibly be accounted for in a one-year period. Some competent biologist should address the time needed for such creatures to produce their burrows.

Woodmorappe suggests that the animals attempting to escape the Flood need only know how to run away from the encroaching Flood waters. I see several

problems with such a suggestion assuming that the Flood waters only covered the earth to 60 feet, then the rainfall was 18 inches per day over the 40 days of rain. Anyone who has lived in area like southern Louisiana and actually seen rainfall rates like that, as I have, know that the Flood waters do not simply and peacefully "encroach" as he suggests. The Flood waters are mainly everywhere at once. There would be no place above the water after a few days of such rain.

Woodmorappe again raises the issue of whether Noah must have lived in a "state of levitation" if he left the ark as I have suggested and lived on some stable highland while the geologic work of the Flood continued. He points out that I believe that the Mesozoic and Tertiary strata were deposited after Noah and the animals left the ark. Thus, he concludes that Noah could not have lived in the Middle East because it is supposedly underlain by Mesozoic and Tertiary strata and thus would be unsuitable for human habitation. To document this he references his article (CRSQ 18:46-71) in which his data says that there is no Precambrian exposed on the Arabian peninsula. I draw Woodmorappe's attention to what the *Encyclopaedia Britannica* says concerning the geology of the Middle East. It says:

Geologically, Saudi Arabia may be divided into two regions, one composed of rocks that are crystalline and metamorphic and the other of sedimentary rocks. The crystalline-metamorphic series, of Precambrian age (from 4,600,000,000 to 570,000,000 years ago), occupies the western third of the country . . . The sedimentary rocks surrounding the Precambrian rocks on the northwest, east, and southwest range in age from Cambrian and Ordovician (from 570,000,000 to 430,000,000 years ago) to Tertiary. They dip gently toward the Gulf, where they exceed 20,000 feet in thickness. Saudi Arabia's vast petroleum reserves occur in rocks of Cretaceous and Jurassic age (i.e., dating from 190,000,000 to 65,000,000 years ago). (Anon., 1982a)

There is also a strip of Precambrian exposed in central Anatolia, the traditional landing place of the ark. Thus I respectfully suggest that Woodmorappe is in error concerning the availability of Precambrian regions upon which Noah could have lived.

Woodmorappe raises two other issues which we discussed previously. He criticizes the reproduction-repopulation model because he says that migrational barriers would prevent synchronous repopulation all over the world. I agree. But as I mentioned previously (Morton, 1982) we see much evidence for migrational barriers in the fossil record and provided documentation for it. So since I never said that an animal must appear absolutely synchronously throughout the world, I fail to see how this is detrimental to my views.

He also raised the issue of the Tertiary foraminifera again. I have admitted that there is a problem accounting for these creatures within my views but I still contend no other Flood theory has as yet satisfactorily accounted for them either. Woodmorappe suggests that the forams are not found with the trilobites because they were living in separate environments. I find this unlikely since trilobites were bottom dwelling marine creatures and foraminifera are both planktonic

(floating) and benthic (bottom dwelling). The *Encyclopaedia Britannica* (Anon., 1982b) points out that forams inhabit nearly every habitat in marine waters and are found at almost any depth. They live on the ocean bottom as well. Since trilobites also lived on the ocean bottom, it seems that the ecological theory should predict their existence in the sediments in which trilobites are found. Since they are not found together in the fossil record it would seem to me that there is also a problem in accounting for them within the bounds of the ecological model.

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More Problems with Evolutionary Hypothesis

Several startling announcements have been made recently by evolutionist authorities which appear to be strongly damaging to the current evolutionary paradigm and, in some respects, are much closer to the creationist viewpoint so much despised by materialists.

I refer to the following interesting pronouncements which have made headlines in the English-speaking world.

1. Sally MacMillan (1987) reported in an Australian newspaper that biochemists Wilson and Stoneking from the University of California, Berkeley, have tested mitochondrial DNA from 147 women from all races around the world. Working on the assumption that DNA mutates at a constant, known rate, the team mapped out a gene genealogy (family tree) linking all modern humans back to a single female ancestor who lived allegedly between 140,000 and 280,000 years ago in Africa. The report states that the new theory does not contradict fossil evidence. Wilson is reported as saying that previously considered ancestors of Man which lived before 280,000 years ago such as *Homo erectus* (Java Man, Peking Man etc.) did not contribute anything to modern humans. The famous alleged ape-men, the Australopithecines including *Lucy/afarensis* are therefore automatically excluded from human ancestry as they lived long before the 280,000 year limit shown by the research.

Needless to say, the new theory has angered many anthropologists who say they cannot conceive that all humans arose from one single female and that therefore all humans are related. Except for the time scales, the theory sounds remarkably like the plain statement in the Bible; chapters one and two of Genesis!

2. The second fascinating new theory was reported by the Associated Press from Chicago (Anon, 1986).

Alan Guth, professor of astrophysics at the Massachusetts Institute of Technology is quoted as saying that the universe expanded to its present

size and structure of stars and galaxies, not over 10 to 20 billion years as previously claimed almost dogmatically, but in a hundredth of a billionth of a trillionth of a second! Guth says; “. . . the whole process lasted less than a second. Up to now, the astronomers and physicists have solemnly assured us that the so-called big bang which supposedly occurred billions of years ago took all that time to expand to its present size and configuration, and therefore the ‘evolution’ of galaxies was an incredibly long and slow process. Now Guth tells us it all occurred in a split second and inflated at a speed over 100 times faster than the speed of light.

It is common knowledge that the old big bang theory conflicted in many ways with the known laws of physics and the new ‘instantaneous’ formation is now seen as a singularity—it overcomes most objections to the old theory. Once again, does not the new theory sound remarkably like Genesis?—the whole Creation took place in a split second just like the Bible says!

Tony Orman (1987) of the Sunday Times reports Dr. Rowan-Robinson of London’s Queen Mary College as stating:

. . . the single force that must have prevailed at the beginning became the four forces we know today—gravity, electromagnetism, radioactivity, and the force which holds an atomic nucleus together.

It seems that even materialistic scientists are being forced by the plain laws of physics, into a position not unlike the Biblical description of Creation.

3. The third recent remarkable pronouncement seems to have effectively demolished virtually the whole previous fossil case for human evolution. The discovery of an Australopithecine skull named KNM-WT 17,000, allegedly 2.5 million years old, is reported by Californian paleontologist Pat Shipman (1986).

The skull has various features which have thrown the current human evolutionary scenario into complete disarray. The cover story states: “We no longer know who gave rise to whom—perhaps not even how or when we came into being.” The features of the new skull contradict virtually all the ideas previously held as gospel in regard to human evolution. Shipman examines the options available to help reconcile the dichotomies resulting from the finding of the new skull. Each of the three options causes great difficulties for the human evolution tale and one of them involves the acceptance of what some experts already concede—that the famous *Lucy/afarensis* is not one species but a composite of two or more different species.

Shipman is led to openly state on page 93 that:

. . . we could assert that we have no evidence whatsoever of where *Homo* arose from, and remove *all members* of the genus *Australopithecus* from the hominid family . . .

Shipman admits that “changing your ideas is more painful than moving house.”

The dilemma for evolutionists caused by skull WT 17,000 is extremely painful and either way evolutionists

jump, they face contradictions and puzzles for which there is no answer. Shipman's paper is highly recommended for study by creationists. Once again evolutionists confess that they do not know where Man originated.

I also notice that yet again evolutionists have been forced to admit their total lack of ability to explain the origin of sex. Esteemed British expert Michael Rose (1986) made the following confession.

The evolution of sex is one of the major unsolved problems of biology. Even those with enough hubris to publish on the topic often freely admit that they have little idea of how sex originated or is maintained. It is enough to give heart to the creationists.

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Extinction of Species

The California Native Plant Society publishes a quarterly, *Fremontia* similar in size to *CRSQ*. In the January 1986 issue there is an article by G. Jon Roush entitled 'On Saving Diversity.' At the beginning of this article he makes the following observations of great interest to creationists:

We have only a rough idea of how many species inhabit the earth, perhaps as many as ten million. But we do know that they are vanishing at an alarming rate. Normally, existing species become extinct at approximately the same rate as new species evolve, but since the year 1600 that equation has grown increasingly lopsided. Informed estimates put the present extinction rate at forty to four hundred times normal. One estimate says that 25,000 species are in danger right now. Another says that one million could disappear from South America alone in the next two decades. If current trends continue, some twenty percent of the species now on earth will be extinct by the year 2000. Current trends will probably continue.

This awesome rate of extinction is apparently unprecedented in our planet's history. Many experts say it represents our most alarming ecological crisis.

Now of course creationists would say that the original millions of species were created by direct acts of God during the Creation Week described in Genesis. The extinction rate at this time would be zero. Only after the world-wide Flood, when deserts began to form, did species begin to become extinct. This was greatly increased by the cultivation practices of farmers who tilled large areas of soil with little or no regard to

the preservation of the naturally occurring species which had grown there for centuries. Many of us remember the dust bowl era of the mid 1930's, a semi-arid region in the south central United States where the top soil was lost by wind erosion. Who knows how many species were lost in this single great catastrophe? And finally a recent National Geographic television program showed how the careless cutting down of thousands of hardwood trees such as mahogany in the tropical rain forests of South America is causing the extinction of thousands of animals and insects which depend on these trees for their home.

Here is an area which creationists could join hands with ecologists in getting laws passed requiring that endangered species must be especially protected from poor farm practice or the selfish removal of forest trees without any regard as to their replacement.

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Language and Debate

I was interested to read of Dr. Sarich's latest attempt to outpoint Dr. Gish [*Acts and Facts* 16(1):3] by alleging a "parallel" between zoology and philology. I suggest the analogy is false, for the following reasons:

1. In every case the Common-Ancestor-language is/was more complex than its offspring. Sanskrit (e.g.) had some 1500 parts to each verb, whereas (ancient) Greek had only 500. Middle English is highly inflected; modern English much less so. The direction of change is always DOWN, just the opposite of evolution which is supposed to be UP from simple to complex.

2. In South India there are four Dravidian languages, which obviously had a Common Ancestor, but there is no question of any one of them being 'superior' to the others. If you were to suggest to a Tamil that his language was only 'monkey talk' compared with the fully 'human' Telugu, he would 'explode'! In fact each of the four—Tamil, Telugu, Malayalam and Canarese—can perfectly express human thoughts, and each has a considerable literature. Thus there is no parallel between the similarity of these four and the 'similarity' of a chimp, a gorilla, an orang and a man. If there were somewhere a tribe of chimps who could construct airplanes, play chess, and write Shakespearean sonnets, then you might reasonably use microbiology to calculate how long ago we had a Common Ancestor. But I do not think Sarich has yet discovered such a tribe.

3. The only sense in which language may be said to 'evolve' is 'descent with modification.' There are changes, and it is true that they come more by chance than by planning. But the parallel is with minor physical changes among races, e.g. Caucasoid, Negroid and Mongoloid, which have all 'evolved' from Noah and of course are all truly human. So the correct word to use for their differences is 'speciation' or variation. In the field of linguistics there is not a scintilla of evidence to support Sarich's hypothesis of mega-evolution from monkey to man.

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Inclusions in Diamonds: Problem for an Ancient Earth Hypothesis

The review by Chaffin (1985) of the book *Ancient Diamond Time Capsule: Secrets of Life and the World* by Melton and Giandini (CRSQ 23:33-4) on the analysis of inclusions in diamonds was quite interesting. A similar study was reported in *GEO* December 1986, p. 174 (a German magazine similar to *National Geographic Magazine*).

Frances Boyd at Carnegie Institute and John Gurney at the University of Kapstadt (South Africa) analyzed sulfide, garnet, olivine and chronite inclusions in diamonds. Based on the results of their investigation, Boyd and Gurney postulate that the diamonds and the inclusions were formed at temperatures below 1200°C approximately 150-200 km below the surface of the ground. Such conditions are possible under a continental base. Today temperatures of 900-1200°C are possible at depths of 200 km.

This presents problems for the ancient Earth concept since temperatures in the Earth must have been much higher at the alleged 3.2 billion years ago which would have prevented the formation of such conglomerates. But if the creationist time scale of a recently-created Earth is assumed, the problem vanishes since the temperature would not have been too high for the formation of such structures.*

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*Editor's note: Robert Gentry's work on radiohalos indicates that the crust of the Earth may have been formed in a cool state or have cooled quickly.

Inclusions in Diamonds and Earth History

While commenting on my book review (Chaffin, 1985) of *Ancient Diamond Time Capsules, Secrets of Life and the World*, in juxtaposition with some recent work on diamond inclusions by Boyd and Gurney (1986), Stutz (1987) pointed out an inconsistency between the old earth view and the thermodynamic conditions necessary for the formation of diamonds and their inclusions. After concluding that the South African diamonds must have formed at temperatures less than 1200°C, Boyd and Gurney marvelled: "This conclusion is surprising in view of the fact that radioactive heat generation must have been greater 3×10^9 years ago than at present."

Slusher and Gamwell (1978) examined heat flow from the earth from a creationist's perspective and concluded that the cooling time for the earth is vastly less than the evolutionist estimates. However, evolutionists have not had to concede this point, largely due to incomplete knowledge of the actual conditions in the earth's interior. Anderson (1981) in summarizing current evolutionary thoughts about the earth's thermal regime concluded that convection within the earth was possible and necessary to establish equilibrium between heat generation and loss rates. He seems oblivious to the failures of the evolutionary model pointed out by Slusher and Gamwell.

The comments by Stutz show that geological data definitely seem inconsistent with the view of an an-

cient earth cooling off from a once molten condition. At the time of the hypothesized diamond formation 3×10^9 years ago, at depths of 100 to 200 kilometers, the temperature should have been more than 1200°C. Heat is produced in the earth's interior by radioactive decay of uranium, thorium, potassium, etc., and an abnormally small concentration of these substances is necessary to keep the earth as cool as 1200°C at that depth, especially at that epoch before attrition due to decay. Such a small concentration, however, results in a cooling time which is too short for the evolutionary timescale.

The data do seem consistent, however, with Gentry's recent creation model for the earth based on his work with radiohalos. See Chaffin (1987). In Gentry's view there exist granite basement rocks underlying the continents whose composition and texture cannot be explained by a naturalistic origin from a molten proto-earth. Gentry (1986) expressed it as follows:

The Creator, after calling the chemical elements into existence, might well, in the next instant of time have formed these elements into a liquid, and then immediately cooled that liquid so that it crystallized into the granites containing the polonium halos.

There does not appear to be any consistent explanation for the polonium halos than this one of Gentry. It is difficult otherwise to find a way to form halos from isotopes with such short half-lives as Po-218, Po-214, and Po-210 and their precursors. Alternative explanations involving conduits in mica or other devices have failed to stand the test of data from ion microprobe and other impressive techniques. Gentry has repeatedly championed his viewpoint in the technical literature exchanges, and comes out "smelling like a rose."

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QUOTE

Another force contributing to collectivism is what Roepke refers to as "Eternal Saint-Simonism." Positivism and scientism are among the great diseases of the modern mind. His view is not unlike Hayek's in *The Counter-Revolution of Science*. But he describes the problem this way:

This faith in Science . . . in its permanent and benevolent progress, in its promise for the future and its claim to absolute leadership, in a word, that positivist, technically-minded materialistic culture of the laboratories, of mathematical functions, of the microscope and of the mere, stupid facts; this gospel which, after the pattern of French phraseology we call 'scientism,' . . . has today become a world religion to which Christian as well as Mohammedan, Buddhist and Atheist have devoted themselves with equal enthusiasm.

It was in Paris that this new spirit first triumphed, producing positivism "with its familiar hubris and its dehumanising effects." From here the evil genii spread to Germany and became united with Hegelianism and other French tendencies to produce Cartesianism, Encyclopaedists, the Ecole Polytechnique, Prussianism, Relativism, Materialism, Marxism, Utilitarianism, Biologism, Evolutionism, and Pragmatism.

These are the forces of evil and darkness which constitute Saint-Simonism and which intend to establish "the nightmare of a veritable Hell of civilisation brought about by the complete instrumentation and functionalisation of humanity"

Ancil, Ralph E. 1986. The third way: Wilhelm Roepke's vision of social order. *The Intercollegiate Review*. 22(1):34.

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