

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

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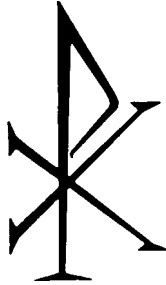
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QUOTE

Sir Bernard Lovell, the astronomer, recently pointed out that "literal-minded, narrowly focused computerized research is proving antithetical to the free exercise of that happy faculty known as serendipity—that is, the knack of achieving favorable results more or less by chance." This word "serendipity," like that quasi-scientific word "entropy," is a tag attached to the inexplicable: an awkward twentieth-century acknowledgment that now and again, in certain persons, there may penetrate to the imagination perceptions of truth which ordinary rationality cannot attain.

Kirk, Russell. 1985. The wise men know what wicked things are written on the sky. *Modern Age*. 29:117.

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COVER PHOTOGRAPH

Glacier Peak (10541 feet) Washington State, looking Southwest from Image Lake. This volcanic peak in a remote area of the North Cascades, is dormant at present. Sometimes violent, yet very beautiful, it is mountains such as these which are discussed in the minisymposium of six articles which begins in this issue of *CRSQ*.

Photograph by Dwight Watson

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 1500 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.

Membership Voting membership is limited to scientists having at least an earned graduate degree in a natural or applied science. Dues are \$15.00 (\$17.00 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 \$15.00 (\$17.00 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: \$18.00 (\$20.00 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. Subsequently a Revised Edition (1974), a Teachers' Guide and both Teachers' and Students' Laboratory Manuals have been published by Zondervan Publishing House. 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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EDITORIAL COMMENTS

George Howe, Director of the Grand Canyon Experiment Station, has organized a minisymposium on orogeny. The contributed articles will appear in this and later issues of the Quarterly. An outstanding feature of this minisymposium is the question and answer sessions at the end of the articles (with the exception of Howe's introduction).

Ellen Myers discusses some of the scientific views of Aristotle. Of interest are his reasoning from within nature, his pantheistic views and his belief in the eternality of the material universe. Clifford Lillo briefly traces scientific philosophical thought from the En-

lightenment to the present "scientific" views of nonreason.

There is an abundance of letters to the editor and book reviews in this issue. Gary Johnson presents a tentative model for the firmament. I am sure he would welcome your comments on his thoughts. Several exchanges concerning recent *CRSQ* articles are featured. A detailed book review answering many anticreationist charges is included. Several of the technical notes offer unique concepts for future research.

Emmet L. Williams, Editor.

INSTRUCTIONS TO AUTHORS

1. Manuscripts shall be typed and double spaced.
2. An original plus two copies shall be submitted to the editor of the Quarterly.
3. All submitted articles will be reviewed by at least two technical referees. The editor may or may not follow the advice of these advisors. Also, the prospective author may defend his position against referee opinion.
4. The editor reserves the right to improve the style of the submitted articles. If the revisions of the editor and referees are extensive, the changes will be sent to the author. If the changes are not suitable to the prospective author, he may withdraw his request for publication.
5. Due to the expense involved, manuscripts will not be returned to authors.
6. All references (bibliography) must be presented in the style shown in the Quarterly. If a prospective author is not familiar with the CRS format, the editor will furnish an example reference page.
7. All figures and drawings must be prepared professionally. No sloppy hand drawings or freehand lettering will be accepted. The editor reserves the right to approve submitted figures. Unacceptable illustrations will result in rejection of the manuscript for publication.
8. Any manuscript containing more than 25 pages is discouraged. If a topic cannot be covered to the author's satisfaction in this length of pages, the author *must* divide his material into separate papers that can be serialized in the Quarterly.
9. The Quarterly is a journal of original writings. Only under unusual circumstances will I reprint previously published manuscripts. Never submit an article to two or three journals, including ours, hoping all of them will publish your work. I consider this practice unethical. When submitting an article, please state if the material has been published previously or has been submitted to other journals.

EDUCATIONAL COLUMN

ARISTOTLE AND CREATIONISM: A COMPARISON

ELLEN MYERS*

Received 28 July 1986; Revised 20 October 1986

Abstract

Many features of modern science reflect some of Aristotle's scientific views, i.e., reasoning from within nature, the eternality of the material universe, the oscillating universe concept and pantheism. The attempted synthesis of the Biblical world view and Aristotelianism is reviewed.

Introduction

Most American college graduates today are acquainted with the great Greek philosopher Aristotle only vaguely, and usually totally ignorant of his many writings in all areas of human thought. Professional philosophers do better, but prefer Aristotle's ethics and perhaps aesthetics to his philosophy of science, which they believe to be outdated. This is true also for Catholic admirers of the synthesis between Aristotle's

philosophy and Christianity attempted by Thomas Aquinas in the thirteenth century, for only 100 years later the Aristotelian-Thomistic cosmology began to be abandoned. A scientific revolution was ushered in by thinkers reasoning from the Biblical Creation perspective, as we shall see. However, their conscious and immensely fruitful dependence upon the Creator of the Bible as their starting point was not imitated by their later successors, who fell back to reasoning from within nature, or implicitly themselves, as Aristotle had done.

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In 1859 Darwin's *Origin of Species* showed a way to make God unnecessary even for explaining the origin of the world, and was hence greeted with open arms. In 1899 Darwin's leading apostle on the European continent, Ernst Haeckel, declared in his enormously popular *Riddle of the Universe* that science had amply demonstrated the eternity of the material universe, that creation, providence and miracles were incompatible with the law of the persistence of matter and force, that ether was a real element, and that organic life arose from the water produced by the geological cooling of the earth (Clark, p. 52). Intoxicated with prevailing materialist-evolutionist bias, the scientific community generally overlooked the fact that actually none of these assertions were, or could be, confirmed by observation. Haeckel offered a welcome religious faith which combined Darwinism with pantheism, monism, and a racist mysticism leading directly to Nazism (Myers, pp. 20-22).

Aristotle and Haeckel

A comparison between Aristotle and Haeckel is instructive. Aristotle, like Haeckel, believed in the eternity of the material universe. He cannot be called a Darwinist evolutionist as he believed in the eternity and fixity of species determined by their eternal, inherent "forms" (*De Generatione et Corruptione*, II). Aristotle, like Haeckel, was a pantheist monist. His divine principle or "prime mover" was in effect one with the highest or outermost sphere of his cosmological hierarchy which consisted of concentric, solid and perfect heavenly spheres. They were guided by their respective intelligences and moved the moon, sun, planets and fixed stars along with them. They also ruled sublunary nature. Aristotle expressly denied creation (*De Caelo*, III) as did Haeckel, and he also denied that his "prime mover" exercised providence over the world (*Metaphysics*). The "prime mover" could know nothing outside itself, and it "moved" the world only in the sense of passively attracting or arousing love for itself in it. Aristotle, like Haeckel, believed in the existence of ether, possibly a fifth "element" of the cosmos. He taught (*Physics*, VIII) that matter and forms were co-extensive and co-eternal with God, a doctrine common to all pagan cosmologies (Jaki, viii and entire book). His philosophy of science is therefore fundamentally incompatible with the Biblical concept of Creation *ex nihilo* by a personal, transcendent, omnipotent God. The racism of Haeckel, deduced from Darwin's principle of evolution by survival of the fittest, was adumbrated in Aristotle's view that the Greeks should not be treated on equal terms with the implicitly inferior "barbarians" of other nations or mingle with them, as Alexander the Great determined in his cosmopolitan policy of conquest (Copleston, 1962a, p. 11).

Somewhat like Haeckel, and much like the vitalist evolutionist philosophers of the nineteenth century, such as Schelling, Hegel, Bergson, and Bergson's disciple Teilhard de Chardin, Aristotle believed in an immanent teleology in natural processes. He postulated the purposeful though unconscious striving of nature's "forms" or "souls" to actualize themselves in fundamental or primary matter (Ross, p. 186). This "animism" in Aristotle's philosophy of science is no

archaic curiosity but a recurring phenomenon in the history of human thought. It is particularly prevalent in the neo-paganism now surfacing in the so-called "New Age" emergent evolutionism.

Oscillating Universe Concept

Aristotle's philosophy of science was certainly not reinstated when the Newtonian cosmology was superseded by Einsteinian relativity in the twentieth century. Going beyond Einstein, Aristotle's belief in cyclical processes in the history of man, sublunary nature and the cosmos (*De Generatione et Corruptione*, II; also see Jaki, pp. 112-113) is reiterated in the latest speculations about an allegedly everlasting expanding and contracting ("oscillating") universe. The Aristotelian belief in an everlasting and cyclical, monist world is in fact the perennial alternative to the Biblical Creation perspective, and it deliberately disregards today the first and second laws of thermodynamics.

Science and Metaphysics

Aristotle has been criticized for his extensive mingling of metaphysics with science strictly speaking. For example, he inferred the earth's spherical shape and its relatively small size in the cosmos from his metaphysical assumption that it was the heaviest of his alleged four "elements" and possessed an inherent "centripetal impulse." He also deduced this conclusion from moon eclipses, observation of the stars from various latitudes, and from mathematical calculations of the earth's circumference (*De Caelo*, II).

His failure to use scientific abstraction and with it laboratory investigation has also been ascribed to the lack of most elementary research equipment in his time. However, such explanations touch only the surface. For a monistic philosophy such as Aristotle's all nature is fundamentally one gigantic, organismic whole. To abstract individual parts from it is to falsify the description of their reality by this very method. The criticism of his commingling of metaphysics with physics misses this crucial point. It is true that Aristotle stressed the world's sensible, moving, "becoming" particulars (the subject of physics proper) rather than its conceptual, absolute, "being" universals or essences (the subject of metaphysics) in opposition to Plato (Copleston, 1962a, pp. 113-120). Yet in Aristotelian monism with its starting point of eternal matter and its inherent "forms," emphasis upon sensible particulars could only be relative.

Aristotle defined nature as a "principle of motion and change" which existed only in things, "for there is nothing over and above them" (*Physics*, III, 1). He defined motion as realizing potentiality:

The fulfillment of what exists potentially, in so far as it exists potentially, is motion — namely, of what is alterable qua alterable, alteration: of what can be increased [or] decreased, increase and decrease: of what can come to be and can pass away, coming to be and passing away: of what can be carried along, locomotion (Physics, III, 1).

As Ross (p. 68) points out, Aristotle "habitually identifies nature as power of movement with nature as form." Aristotle believed that animals (including man, the "rational animal") do not really initiate movement

(*Physics*, VIII). Their change, growth, decay and locomotion were prompted by their immanent forms or souls as they actualized their potentialities, doing so through species rather than “numerically” through individuals (*De Generatione et Corruptione*, II). This concept shows Aristotle’s determinism, as does his belief in the eternally fixed rotations of his heavenly spheres. Aristotle attributed coming-to-be and decay on earth to the motion of the sun (*De Caelo*, II). He denied that a vacuum could exist, in part because he thought that the speed of locomotion varied with the density of the medium and the weight of the moved body. This meant that in a vacuum a body would take no time at all to move from one place to another, and this was not observed to happen. Because he denied the existence of a vacuum, he denied that anything was outside the heavenly spheres (*De Caelo*, III, and *Physics*, IV). Thus the transcendent, supernatural God of the Bible and His Creation *ex nihilo* would have found no room in his cosmology.

Aristotle believed that all things are inherently impelled to seek their proper place or full potential in nature as they strive for its actualization. This metaphysical concept of teleology and what he called “privation” explained for him why acorns grow into oak trees, stones fall downward, and fire rises upward. Besides his unqualified “primary matter” as the essence of all things he postulated qualitatively different kinds of matter according to weight (*De Generatione et Corruptione*, I). Clark plausibly argues that Aristotle uses circular reasoning in defining motion by potentiality, is wrong in so defining it, and really has no explanation for what motion is (pp. 22-27).

Post-Aristotelian science has classified only locomotion as “motion,” and analyzed it without reference to Aristotle’s notions of form, primary matter, potentiality and privation. It did not ask, as Aristotle did, what causes motion, which was taken as simply “given” along with time, space and place, but what makes motion accelerate, slow down or change direction. It became the scientist’s task to formulate answers to these questions in a manner as free from unrelated incidentals as possible. Hence Galileo rolled his marbles on a carefully polished incline in order to eliminate friction as best he could. Hence developed the modern method of “controlled experiments” in the laboratory, so fundamentally opposed to Aristotle’s holistic, organismic way of studying objects as much as possible in their natural environment. Hence came also the development of the whole rich cornucopia of ingenious modern research tools and, finally, the reliance upon an increasingly complex mathematics to describe what could be observed or merely theorized.

Empirical Observations

Despite his frequent reliance upon metaphysics, Aristotle was not an armchair philosopher. For example, the present explanation of scientific revolutions as the rise of new “paradigms” (Kuhn, 1962) was already succinctly stated by Aristotle: “It is . . . wrong to remove the foundations of a science unless you can replace them with others more convincing” (*De Caelo*, III). Over and over again he used the results of empirical observations to falsify the theories of other thinkers, exactly as we do today. Long before William

of Ockham gave us his “razor” of the simplest scientific theory accounting for the appearances being the best, Aristotle already proposed that “it is *possible* to derive reality from a finite number of principles, and a simple explanation, where it is possible, is better than a more complex one” (Ross, p. 64). Aristotle used the philosophies of Empedocles and Anaxagoras to demonstrate this principle (*Physics*, I). While postulating his “prime mover” in and virtually as his highest heavenly sphere, Aristotle yet insisted (*Metaphysics*) that universal causes do not exist (Ross, p. 176). This belief is also implicit in modern Einsteinian relativity. Finally, modern philosophy of science is *de facto* as monistic as Aristotle’s because it excludes a transcendent God and anything supernatural in principle.

Aristotle vs. Creationism

The importance of the doctrine of Biblical Creation as the crucial dividing point between Aristotelianism and Christianity cannot be overemphasized. Aristotle reasoned exclusively from within this world as a monistic whole. For him “God” could not be ontologically different from or above the cosmos. His world was not created but eternal. Man was only a “reasoning animal,” not uniquely created by the personal God of the Bible in His own image and likeness and charged with dominion (stewardship) over His handiwork on earth (Genesis 1:26, 28). For Aristotle all bodies had forms or souls, but only the forms of species were eternal. The Bible teaches that only people have souls, which begin in time and continue to exist forever in God’s new heaven and earth, or in hell. Like all pagans Aristotle thought that cyclical processes determine history. Christians introduced the concept of linear and therefore profoundly meaningful history, beginning with creation and ending with the consummation of God’s purpose for all things (Revelation 4:11). It is therefore greatly surprising that the zenith of Aristotelianism occurred in Western society in the Christian Middle Ages.

Aquinas and Aristotle

Despite his great acumen, prodigious erudition and doubtless sincerity of faith, Thomas Aquinas (1225?-1274) underestimated the depth of the gulf between Aristotle and the Christian, Biblical creation-based world view. His defenders and chroniclers reason that he

lived in a day when Western Europe seemed to be in danger of departing from the Christian faith . . . In the University of Paris, the chief centre for the study of Christian theology, Averroism, with its contradictions of some of the central Christian convictions, was gaining in popularity. The Aristotelian vogue and the use being made by the Averroists of him whom the scholars of the day called the Philosopher was a further threat. By employing Aristotle and by doing so in such fashion as to make him a bulwark of the Christian faith, . . . Aquinas . . . provided Christianity with a firm intellectual foundation (Latourette, p. 513).

However, the synthesis Aquinas attempted between Aristotelianism and Christianity actually consisted in an uneasy coexistence between “Grace, the higher” (things known only by divine revelation) and “Nature,

the lower" (things man can allegedly know by himself through reasoning from within nature as did Aristotle) (cf. Schaeffer, p. 55). Creation *ex nihilo*, Aquinas said, could only be known by revelation (Van Steenberghen, p. 9). As for the "firm intellectual foundation" Aquinas was said to have provided for Christianity, it was extensively based upon Aristotle, especially with regard to natural science. Aquinas adopted Aristotle's cyclical cosmic features in his own cosmology. With Aristotle he

firmly reasserted the efficient causality of a rotating sky on everything in the sublunary world. He found no fault with the generic return of physical patterns, including plants and animal species. He also went along with Aristotle on the point that the cosmos would of itself go on forever through endless begettings of individuals (Jaki, p. 225).

In fact, Aquinas "departed from Aristotle only in cases where the Christian creed allowed under no circumstances for a compromise" (Jaki, p. 225).

Aquinas did disagree with Aristotle about a supernatural heaven and earth. He argued against Aristotle that the world does not last forever on the ground that this would make the number of God's elect infinitely large (cf. Van Steenberghen, pp. 1-27). He said equinoxes should not be coupled with the cyclic theory of the world because this would allow the calculating of the moment of the world's end, and this contradicted the Gospel (Jaki, pp. 225-226). In a thoughtful analysis Copleston (1962b, pp. 144-155) shows the tension latent between Aristotelian and Christian elements in Thomism from the start. He also points out the part Thomism had in leading to the autonomy of philosophy apart from theology. No wonder Thomas Aquinas "was regarded by some zealous traditionalists as selling the pass to the enemy" (Copleston, p. 152).

The Thomistic synthesis did not long endure. Within a century a revolutionary development began in science, which originated in the minds of Christian philosophers reasoning from the starting point of Biblical Creation. John Buridan (fourteenth century A.D.) affirmed faith in the Creator as opposed to Aristotle who denied that the heavens could decay; Buridan held that the Creator could annihilate the world. Thus:

Belief in a Creator whose powers were not limited to the features of the actually observed world contributed . . . most effectively to the liberation of critical thinking from the shackles of Aristotelian science (Jaki, pp. 232-233).

Buridan rejected Aristotle's postulate that a mover must be in continuous contact with the body moved, and proposed instead that the mover imparted "impetus" to that which was moved (Clark, p. 32). Buridan also scorned Aristotle's idea of a body's "attraction" to its "natural" place.

Buridan's pupil Nicole Oresme developed his teacher's concept of "impetus" further in explicit dependence upon the Biblical Christian idea of the Creator. He understood and proclaimed that:

In contrast to the pantheistic and perennial contact of the Prime Mover with the uppermost heavens, the Christian idea of the Creator implied His transcendence over the world in connection with His actual influence on any created being. Clearly,

this transcendence of an active Creator could readily be safeguarded by formulating the idea of an imparting by God of a given quantity of motion (impetus) to the world once and for all. . . . Further refinements in the concept of impetus led to the correct definition of momentum together with inertial motion on which rests the whole edifice of physics.

It was this crucial conceptual development which was impossible to achieve within the framework of the pantheistic necessitarianism of Aristotle's physics and cosmology . . . Set against the Aristotelian background the notion of impetus meant a miracle which, however, could be performed, assuming the existence of a personal, rational, omnipotent and transcendent Creator (Jaki, pp. 239-240).

Here, as so rarely in human history, men reasoned faithfully and consistently from the starting point of Him Who "in the beginning created the heavens and the earth" (Genesis 1:1), rather than from within the world itself. This fact made the beginning of modern science possible in the Christian West, and at no other time and place in history. Assuming the world to be monistic and cyclical from all eternity, Aristotle could only "explain form and order in the world and the intelligible process of development [but] did not explain the existence of the world" (Copleston, 1962b, p. 27). Aristotle also could not explain motion, and such explanations as he offered from within his pagan monistic cosmology and metaphysics were sterile for further inquiry. It was not the fault of the earliest pioneers of modern science that those coming after them built upon their foundations, yet increasingly forgot the key concept, Biblical Creation, to which they owed both the foundations and their own progress.

Conclusions

To sum up, Aristotle's monistic, pantheistic and cyclical philosophy of science is totally incompatible with the Biblical cosmology built upon creation *ex nihilo* by a personal, transcendent, omnipotent and provident God. Aristotelianism reached its zenith in the West in its twelfth-century synthesis with Christianity attempted by Thomas Aquinas. In the fourteenth century it began to be overthrown by the scientific revolution initiated by Christian thinkers (Buridan and Oresme) who reasoned faithfully and consistently from the Creator of Scripture. The whole magnificent edifice of physics today owes its development to this foundation, unique in history.

Unfortunately God was relegated to the background and finally rejected altogether as the new mechanistic model reached its own high point in the nineteenth century. Darwinian evolutionism, championed on the European continent by Ernst Haeckel, was part of the modern unbridled trust in materialistic science to usher in unlimited progress and to arrive at truth about reality. Many parallels can be drawn between Aristotle and Haeckel, though Aristotle was not a Darwinist evolutionist.

The Aristotelian teaching of an immanent teleology, or purposiveness, in natural processes is akin to modern vitalist or emergent evolutionist philosophies such as Hegel's or Teilhard de Chardin's.

References

- Aristotle. 1930. The works of Aristotle, translated into English under the editorship of W. D. Ross (especially Vols. II and VIII). Oxford University Press.
- Clark, Gordon. 1977. The philosophy of science and belief in God. The Craig Press, Nutley, NJ.
- Copleston, Frederick, S. J. 1962a. A history of philosophy, Vol. I, Part II. Doubleday & Co. Image Books. Garden City, NY.
- Copleston, Frederick, S. J. 1962b. A history of philosophy, Vol. II, Part II. Doubleday & Co. Image Books. Garden City, NY.
- Jaki, Stanley L. 1974. Science and creation. Science History Publications. New York.
- Kuhn, Thomas S. 1962. The structure of scientific revolutions. University of Chicago Press. Chicago.
- Latourette, Kenneth Scott. 1953 A history of Christianity. Harper & Row. Publishers. New York.
- Myers, Ellen. 1982. Monistic evolutionism as a pseudoparadigm, *Creation Social Science and Humanities Quarterly*. V(2):14-28.
- Ross, Sir David. 1966. Aristotle. Fifth edition revised, reprinted. Methuen & Co. London.
- Schaeffer, Francis A. 1976. How should we then live? Crossway Books. Westchester, IL.
- Van Steenberghen, Fernand. 1980. Thomas Aquinas and the radical Aristotelians. The Catholic University of American Press. Washington, D.C.

MINISYMPOSIUM ON OROGENY—PART I

MOUNTAIN MODERATED LIFE: A FOSSIL INTERPRETATION

GEORGE F. HOWE*

Received 15 November 1986 Revised 11 January 1987

Abstract

This paper and the five which follow make up a CRS symposium on orogeny which is the study of the origin of mountains. Because of their influence on local climate, mountains have helped to govern the associations of plants and animals which have survived in any particular region, as widely evidenced from the fossil record. Which species lived where after the Flood and during postFlood times has to some major extent been controlled by the formation of the world's mountain ranges. It is extremely important that Flood geologists wishing to explain biogeography past and present, give deep thought to such questions as how and when mountains arose.

In the second paper of the symposium a creationist meteorologist has written how mountains modify climate and presently dictate patterns of vegetational distribution. Next, three earth scientists and one geologically-trained theologian have prepared four very different creationist interpretations of how the Creator synthesized mountains.

Fossil Plants Differ From Plants Today

Extensive catalogues or "floras" of fossil plants have been produced at many localities throughout the American West and elsewhere. The results of these studies have been summarized in several volumes of which the following are representative: Andrews (1947), Andrews (1961), Arnold (1947), Darrah (1960), and Taggart and Cross (1980). From these the fact emerges that there are distinct differences between the species found in the fossil strata and the plants living at those same sites today. Near Clarkia, Idaho, for example, there are abundant fossils of subtropical plants where today only conifer forests flourish—Clutter (1985). In the Green River fossil flora of southwestern Wyoming there are fossil palm leaves in situations which now support only sagebrush, grassland, and dwarf conifer life forms—Andrews (1947, p. 203). The Kenai fossil flora of Alaska contains such subtropical species as the magnolia and fig—Darrah (1960, p. 231). Fossil floras labeled Eocene from Oregon and California appear to contain tropical plant species which are very much unlike the forms currently growing in those areas. In regions of the western United States that presently support grassland, chaparral shrub, or desert vegetation, there are numerous fossil beds containing temperate, subtropical and even tropical plants.

Climatic Change

Uniformitarians assume that this shift in plant life reflected a gradual modification of the climate cover-

ing millions of years of Cenozoic (Paleocene, Eocene, Oligocene, Miocene, and Pliocene) time. Instead, catastrophists suggest that perhaps soon after the Flood the earth was repopulated with plants—Howe (1968) (1979, pp. 42-3) (1981, p. 224), and Golike and Howe (1975). During the decades and even centuries that followed the Flood, fossilization evidently continued while striking climatic changes transpired. Plants which were designed for cooler and drier climates at first flourished only in marginal habitats. When the climatic shifts took place, these species which were "preadapted" or "pre-designed" perhaps began to invade larger and larger land areas at the same time that the original tropical and subtropical plants diminished and even disappeared. Catastrophists hold that this rapid appearance of drought-tolerating plants was not a rapid evolution, as many macroevolutionists imagine, but that it was rather an ecological selection favoring preexisting forms that were able to cover larger land areas than previously.

Involvement of Volcanoes

Both the uniformitarians and the catastrophists agree that the climate has changed since ancient times—becoming cooler and drier. A sizeable part of this shift is attributed to the uplift of mountains. Volcanoes themselves have played a two-fold role in that they first yielded gas and ash-fall that were directly responsible for wholesale fossilization of plant life and for erasing existing vegetational cover. This in itself would allow for migration and colonization by plants that had previously been of less overall importance in the vegetational cover.

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Taggart and Cross (1960) report for the Succor Creek area of Oregon and Idaho that there was a:

pattern of repetitive disruption of mid-Miocene forest communities. The probable cause of these periodic disruptions was direct ash falls and gas venting that resulted from the volcanic activity that produced the volcanically derived sediments in which the flora is preserved. p. 185.

In some situations like those near Clarkia, Idaho, the plants were fossilized so quickly and thoroughly by volcanic action that their cellular details and even colors are still visible—Clutter (1985):

Silt and periodic blankets of volcanic ash (that continue today from such Cascade giants as Mount St. Helens) steadily filled the resulting deep lake, innocuously burying layer after layer of wind-blown forest debris . . . Below, however, the age-old sediments are still wet with the lake's original water, and actual branches, leaves, needles, cones, flowers, seeds, and even pollen are trapped within the soft, clay-like rock. Nearly every piece yields fossils—an average cubic foot of the ancient lake silt contains 267 specimens, with a high of 862. . . There's something wondrous, almost magical in seeing a color that's millions of years old . . . Pastel against black rock, avocado's dull green, or oak's dusty red disappear rapidly upon exposure to light and air. On a hot day, eons vanish in seconds. pp. 22 and 24.

Andrews (1961) has emphasized the extent of volcanism in the American Northwest:

Vast outpourings of lava took place in Miocene times east of the Cascade range, resulting in the area known as the Columbia Plateau; some concept of the magnitude of this volcanic action may be gained from the fact that the total accumulation of lava is estimated at about 100,000 cubic miles. New lakes and swamps developed as a result of damming of streams and valleys, and numerous fossil localities were formed as plant remains, and ash from local volcanoes, accumulated in these newly formed bodies of water. pp 205-6.

Creationist researcher S. Austin (S. Nevins) (1971, p. 222) asserts that this tremendous lava bed was the result “. . . of a single, regionally extensive lava flow.” Yet he reports that there are widely different dates from various portions of the basalt which would “. . . seem to invalidate the potassium-argon dating method.”

Mountains Played a Role

But volcanic activity is important for another reason: it was one of the means by which large masses of rock got projected above the horizon to produce mountains and plateaus which in themselves are believed to have modified the movement of storms from the oceans. Hence this would have wrought lasting changes in the climate of large areas inland. Andrews (1961) attributes much of the vegetation change to the uplift of mountains in the United States:

Extensive uplift of the Cascade-Sierra Nevada mountain range in early Pliocene times resulted in still greater aridity of the Great Basin area. This allowed a more northerly extension of the xero-

phytic elements of the north Mexican vegetation . . . p. 209.

This role of mountains in regulating the types of plants which will thrive or even survive at a particular location was emphasized earlier and even more forcefully by Andrews (1947) in the following passage:

It has been concluded from the former eastern range of the moisture-loving sequoias that the Cascades had not been elevated to the height they have now attained. But as they continued to rise during the Pliocene less and less of the air-borne water passed east of this mountain barrier. The early and middle Pliocene floras of eastern Oregon and Idaho reflect a much drier climate than that of the Miocene, a vast drought that has continued to increase in intensity to the present time. pp. 208-9.

Darrah (1960) extends this mountain-generated climatic shift to cover the whole Great Basin:

In western North America there was an extensive uplift, the Cascade-Sierra Nevada revolution commencing in late Miocene and continuing in the Pliocene. The immediate effect on interior America was decreased rainfall. The Great Basin became more arid and awesome Colorado River system erosion increased. p. 241.

The effects of mountain uplift on storm distribution patterns were the cause of some rather amazing changes in temperature and rainfall for various regions inland. Andrews (1961, p. 203) points out that the Florissant fossil beds now high in the Colorado Rockies contain plants which suggest more moderate climate with an absolute minimum temperature greater than 20°F., an average annual temperature greater than 65°F., and a rainfall above 20 inches. Summarizing the work of Chaney and Sandbom, Andrews (1947) asserts that the rainfall of west central Oregon (Goshen flora) was about 70 inches annually in fossil times whereas it is presently only about 38 inches. The distribution or pattern of rainfall throughout the months of the year has apparently changed in eastern Oregon as well:

The nature of the plants comprising the fossil flora indicate, moreover, that the rainfall, nearly twice that of the present, was more uniformly distributed throughout the year. This is especially important since the nature of distribution of the annual precipitation in a given region generally has an even greater effect on the flora than the actual amounts of rain in inches. Two-thirds of the annual rainfall at Eugene now falls from November through March and the rainfall from June through August is extremely scanty, amounting to but 2.5 inches. Andrews (1947, p. 202).

Evidently the major fabric of tropical and subtropical vegetation which at first clothed the western United States was broken so that only various clusters of plant species from that original fabric survived to populate large land areas. Paleobotanists speak of this as a “segregation” of modern vegetational assemblages from the pristine original forest and the communities of plants which resulted from this segregation are often called “association segregates.” Thus Darrah (1960) explains that the various modern plant communities in the Southwest have “segregated” from a rich, earlier flora:

Clements and Chaney have pointed out that the woodland association was established in Miocene times and that the present-day climate associations of the Southwest were *segregated* from this ancient complex. The three modern communities, oak-juniper (southwestern United States and northern Mexico), pinon-juniper (Great Basin and Colorado Plateau), and digger pine (California) were *segregated* in the Pliocene. p. 241, (Emphasis added).

A Creationist Interpretation

Our existing vegetation is thus seen by paleoecologists to be an inheritance from species that once composed a rich "upper Cretaceous flora" from which various association-segregates have arisen over widespread areas today. It is unnecessary to make any references to macroevolution in such a scheme since the rich "upper Cretaceous floras" might have been the vegetational fabric which covered the earth before the Flood and was rapidly reestablished on earth shortly after the Flood as "Paleocene" and "Miocene" vegetation. Perhaps subsequent stages in postFlood ecological history were fossilized successively by volcanic and other means so that paleobotanists now have a representative view of changes which took place throughout the postFlood interval.

Evolution is in fact embarrassed at several points in this connection because "new" major vegetational associations *appear* suddenly, as D. I. Axelrod (1961) has understood but has not been able to explain. Such new associations of plants seem not to have evolved but rather to have been "waiting in the eaves" until a time when the climate would become more suitable for widespread survival of their genotypes over vast acreages. Plants like yuccas, cacti, creosote bush, chamise, juniper, and others which presently enjoy a widespread distribution in the Southwest may have lived on marginal habitats, covering only small areas in the original postFlood forests. Whether dealing with macroevolutionary ideas or those of creationism, the scenario for development of vegetation over vast continental areas is somewhat speculative. In all of the speculation, however, the overall factual importance of mountain uplift emerges as a source of major climatic change which indirectly governed the current distribution of plant species. Thus the subject of orogeny takes on a biological as well as geological significance.

How the Present Symposium was Developed

The five papers which follow in this series are based on an entire year of correspondence about orogeny among the writers. Each author read the letters of the other participants and posed written questions to which replies were given.

Each writer's letters were subsequently edited to produce short papers followed by questions and answers. Although these essays are authoritative and generously documented, they still maintain the vigor and clarity of letters as opposed to scientific reports. The question and answer sections contain an ongoing debate concerning the merits and demerits of each option proffered.

The other authors and I trust that this symposium will generate more papers on orogeny and letters to the editor from readers be they authorities or amateurs

in geology. Please address editorial letters to the Quarterly Editor, E. L. Williams. Each author also invites personal correspondence so that we may become better equipped to continue our studies.

Some Other Views

Several other scientifically-minded creationists corresponded with me during this time but since the number of papers possible in this one issue was limited to only six, some of the views of these other correspondents must be only briefly summarized.

Water Expansion as Steam—James and Westberg

Douglas James (1985) supposed that in ancient times a cubic mile or so of water somehow entered the interior of the earth and as it came into contact with some 250 million cubic miles of molten material, produced a gigantic subterranean steam generator. He assumes that the water expanded its volume by a factor of 1670. The escaping steam would have had many effects and would have gone a long way, James holds, to synthesize mountains at "... a greater speed than any ice age could produce them."

V. L. Westberg, author of *The Master Architect* (n. d.) has sent some interesting ideas on orogeny. He stresses that lava eruptions, which covered land areas of the western states, would have synthesized portions of many mountains and plateaus. Furthermore he believes that Psalm 104:6 and Genesis 7:11 speak of such events.

Westberg, like James above, believes that "... there is no force equal to steam to raise mountains (1986). He ties the genesis of such mountains to the Flood event which he holds to have involved an ice canopy—Westberg (n. d.). There was an interaction between Flood waters and lava producing many of our mountains. Westberg believes (1986 and n. d.) that some of the mountain-building earthquakes were actually caused by Flood waters lubricating vast underground regions like spill waters which run back into mines may generate earthquakes today.

Tectonics During the Flood—Woodmorappe

J. Woodmorappe (1983b) produced a monumental synthesis of geological index fossils from which he concluded that the entire fossil assemblage at any given point on the earth was not the result of successive "ages" of deposition but of tectonic action superimposed on ecological zonation at the time of the Flood. While he did not treat directly with orogeny in the 1983b paper, he clearly assumes that much tectonic activity (and hence by inference mountain synthesis) occurred during and immediately after the Flood. He has not specified what mechanism the Creator may have used to induce tectonics during the Flood.

Woodmorappe and one of our symposium writers (G. Morton) have had an extensive and profitable series of discussions in *CRSQ* — Woodmorappe (1983a) (1985) and (1986) and Morton (1983). Woodmorappe has an important comment and question for Morton regarding the distribution of sediments—a question which has appeared in print (Woodmorappe, 1986) but which also appears here in Morton's question and answer section.

Island-Dump Hypothesis—Daly

In his book (1972) and in several letters (1985) Daly asserted that the mountains near coastlines were most likely formed, like offshore islands as well, during the Flood in the form of gigantic dumpheaps of sediments and remains draining off nearby land. He assumes that these offshore Flood deposits remained on the continental shelves. He has sited many examples of offshore islands as evidence in support of such an orogenic view.

His proposal for the origin of mountains surrounding the Pacific Ocean is as follows:

The 'Ring of Fire' around the Pacific fits smoothly into the Flood theory. Flood debris from the continents poured into the receding Flood waters. The velocity automatically decreased. Debris and mud with quite a quantity of animal and fish life was precipitated in a Pacific "ring". . . of mountains. They are set back from present shorelines because the water line had not yet receded. All over the world this phenomenon of mountains set back from the present beaches exists and is explained by this debris dump hypothesis. (1985)

Mountains far inland—such as those along the continental divide—Daly (1972) also feels were formed by the Flood itself:

As the highest part of each continent first sank beneath the rising water, and then again rose out of receding Floodwater mud, a long, thick bank of alluvium was thrown up first along the submerged crest, and then along the shore of the rising continental divide, forming the Himalayas, Andes, and all other ranges that run along the crests of high level watersheds. pp. 294-5.

It is hoped that this brief paleobotanical introduction and summary of views of orogeny will whet the readers' interest toward carefully considering how mountains influence climate today in the next article and then how mountains arose (in the subsequent four papers).

Acknowledgements

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References

- CRSQ—*Creation Research Society Quarterly*
- Andrews, H. H. Jr. 1947. Ancient plants and the world they lived in. Comstock Publishing Associates—Cornell University Press, Ithaca, NY.
- Andrews, H. N. Jr. 1961. Studies in Paleobotany. John Wiley and Sons, Inc. New York.
- Arnold, C. A. 1947. An introduction to paleobotany. McGraw-Hill Book Co., New York.
- Axelrod, D. I. 1961. Lectures at National Science Foundation Desert Biology Institute, Arizona State University, Tempe, AZ. Also personal conversation with G. F. Howe after one lecture.
- Clutter, T. 1985. The Clarkia fossil bowl. *American Forests* 91(2):22-25.
- Daly, R. M. 1972. Earth's most challenging mysteries. Craig Press, Nutley, NJ.
- Daly, R. M. 1985. Private correspondence with G. F. Howe.
- Darrah, W. C. 1960. Principles of paleobotany. Second edition. The Ronald Press, New York.
- Golike, S. and G. Howe. 1975. The Grand Canyon—a winter ecology laboratory. *Bible-Science Newsletter* 13(2):1-3.
- Howe, G. F. 1968. Seed germination, sea water, and plant survival in the great Flood. *CRSQ* 5:105-12.
- Howe, G. F. 1980. Biogeography from a creationist perspective I: taxonomy, geography, and plate tectonics in relation to created kinds of angiosperms. *CRSQ* 16:38-44.
- Howe, G. F. 1981. Which woody plants grow where at the Grand Canyon. *CRSQ* 17:19-26.
- James, D. 1985. Private correspondence with G. F. Howe.
- Morton, G. 1983. A letter to the editor—Reply to Woodmorappe. *CRSQ* 20:56-9.
- Taggart, R. E. and A. T. Cross. 1980. Vegetation change in the Miocene Succor Creek flora of Oregon and Idaho: a case study in paleosuccession. in Dilcher, D. L. and T. N. Taylor, Editors. Biostratigraphy of fossil plants. Dowden, Hutchinson and Ross, Inc. Stroudsburg, PA.
- Westberg, V. L. n. d. The master architect. Napa, CA.
- Westberg, V. L. 1986. How God made mountains. Unpublished paper available from the author, Napa, CA.
- Woodmorappe, J. 1983a. A letter to the editor. Concerning several matters. *CRSQ* 20:53-6.
- Woodmorappe, J. 1983b. A diluvial treatise on the stratigraphic separation of fossils. *CRSQ* 20:133-85.
- Woodmorappe, J. 1985. A letter to the editor—Some additional comments on several matters. (Part I) *CRSQ* 21:209-10.
- Woodmorappe, J. 1986. A letter to the editor—Some additional comments on several matters. (Part II) *CRSQ* 23:79-83.

MOUNTAINS AND LEESIDE CLIMATE: AN INDICATOR OF CHANGE

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Abstract

There is substantial evidence that significant changes have occurred in the plant distribution found today in the American West and other mountainous regions as compared to those of earlier times. My purpose in this paper is to summarize the ways in which existing mountains modify climate on their own slopes and on leeward land masses nearby, possibly accounting for the observed patterns of plant distribution. An alternative suggestion is also briefly discussed.

Introduction

Mountains act as barriers and alter the prevailing windflow. The effect of mountain distribution on precipitation can be significant. It is not the mountain

or mountain range alone that determines the result, but a combination of factors that characterizes the synthesis between the mountains and the atmosphere as emphasized by Barry (1981):

Mountains have three types of effects on weather in their vicinity. First, there is substantial modification of synoptic weather systems or airflows, by

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dynamic and thermodynamic processes, through a considerable depth of the atmosphere. Second, there is the recurrent generation of distinctive regional weather conditions, involving dynamically and thermally induced wind systems, cloudiness, and precipitation regimes and so on . . . The third type of mountain effect is a result of slope and aspect variations. It operates primarily at the local scale of tens to hundreds of metres to form a mosaic of topoclimates. p. 10

Precipitation Effects

In the synoptic or overall case, it has been shown that precipitation is normally enhanced on the windward side and decreased on the leeside when there is a significant wind component perpendicular to the mountain. The windward effect on precipitation is referred to as the "orographic component," while the leeside effect is referred to as the "sheltering" or "rain shadow" effect.

In the western United States and Canada, the mountain ranges are generally aligned in a north-south direction. Frontal systems predominate in the winter, sweeping in from the Pacific with a generally west to east movement. We would expect a significant orographic component to the precipitation on the windward mountain slopes, as Barry also asserted:

Reinelt shows that the orographic component for the Rocky Mountains in Alberta averages 37 percent of the total annual precipitation and exceeds 50 percent during September through April. (1981, p. 189)

Although the size and the orientation of mountains are important, it is not necessary for the mountains to be particularly high to produce these effects under certain meteorological conditions as Barry and Chorley have shown (1970):

Even quite low hills such as the Chilterns and South Downs (in Great Britain) cause a rise in rainfall, receiving about 12-13 cm (5 in.) per year more than the surrounding lowlands. Indeed detailed studies in Sweden show that wooded hills rising only 20-50 meters (100-150 ft.) above the surrounding plains may cause precipitation amounts during cyclonic spells to be increased by 50-80% compared with the average falls over the lowland. However, in most countries, the rain gauge networks are too coarse to detect such small-scale variations. p. 192

Mountains and Arid Climates

It is therefore possible that some desert or arid climates, including those of the western United States, owe their origin to the presence of mountains—Odum (1983):

Regions having less than 10 inches of rainfall, or sometimes regions with greater rainfall that is very unevenly distributed, are generally classed as deserts . . . Scarcity of rainfall may be due to (1) high subtropical pressure, as in the Sahara and Australian deserts, (2) geographical position in rain shadows, as in the western North American deserts, or (3) high altitude, as in Tibetan, Bolivian and Gobi deserts . . . p. 535

The fossil strata indicate that a more temperate climate existed in areas which are more arid today—see paper by Howe in this symposium. There are at least three possible mechanisms that could account for this. The geology, the climate or both, were evidently vastly different in millenia past.

From a geological point of view, the mountains could have been much lower in early times. This would explain how plants that need warmer average low temperatures and greater, more evenly distributed amounts of rainfall could have existed in regions that have since been dominated by steeper vertical temperature gradients and the rain shadow effects of high mountains. As we have shown, the resulting rain shadow is sufficient to maintain arid climates today. It is therefore likely that an uplift of mountains could have induced the leeside climate change as well.

From a meteorological point of view, however, it is conceivable that the mountains have always been there to some extent. Yet the climate could have differed from today's climate that induces a significant orographic component on the windward side and rain shadows on the leeside. Likewise the current vertical thermal lapse rate was probably less steep than it is today. Therefore, if mountains coexisted with the more temperate plant life found in the fossil record, precipitation or some form of moisture must have been distributed differently. Perhaps this was true because mountain ranges in the preFlood world were not as tall as they are now.

At any rate, the thermal lapse rate (at least up to the levels of the mountains), would have to have been more nearly isothermal to support the observed plant life. Some sort of 'greenhouse effect,' perhaps resulting from an atmospheric water vapor canopy, may have been sufficient to produce these effects—Whitcomb and Morris (1961):

The most immediate and obvious of these effects would be to cause a uniformly warm temperate climate around the earth . . . This effect in turn would largely inhibit the atmospheric circulations which characterize the present troposphere . . . The constant battle of "fronts" would mostly be absent . . . p. 240.

In this article, I am not necessarily proposing a water vapor canopy, and its subsequent elimination, as the mechanism to explain local or global climate changes. My point, rather, is that a 'greenhouse effect' would allow the fossil plant life found on the mountains and in their rainshadows today to have existed with the mountains we see now. However, this may be evidence to support the existence of a preFlood canopy. More work needs to be done in this area.

Summary

It has been shown that within today's observed atmospheric circulations, mountains act as barriers producing rain shadow effects on the lee side. These shadow effects are recognized by others to be sufficient to have originated and now to maintain more arid climates than in the past. Therefore, there appears to have been a time when the mountains or the earth's climate, or both, were vastly different than today. From the meteorological evidence presented here, we cannot rule out the possibility that mountains may

have been relatively recent additions. If they were postFlood additions then it is possible that their origin in early postFlood times has caused some of the peculiar patterns of plant distribution seen today. Possible mechanisms in support of this idea appear in the following articles.

References

- Barry, R. G. 1981. Mountain weather and climate. Methuen and Co, New York.
- Barry, R. G. and R. J. Chorley. 1970. Atmosphere, weather and climate. Holt, Rinehart, and Winston, Inc. New York.
- Odum, E. P. 1983. Basic ecology. Saunders College Publishing, New York.
- Whitcomb, J. C. and H. M. Morris. 1981. The Genesis Flood. Baker Book House, Grand Rapids, MI.

Comment and Question from Waisgerber to Nash

Climatic conditions on this planet are controlled by other factors among which are (1) three dimensional motion of ocean water, (2) the presence of continental barriers to ocean water circulation, (3) probable change in poles, as well as (4) tectonism.

(1) When relating climate to fossil distribution of plants why do certain areas known as Precambrian Shields yield no plants but exhibit apparent ice age conditions? (2) Could the Canadian Shield of eastern Canada, the Baltic Shield of Europe and the Angara Shield of Asia have been the north pole area for a prior earth?

Reply by Nash

(1) Although there-might be several possible answers, I will only suggest three: (a) the shield areas exhibit ice age conditions because they were indeed once covered with ice soon after their formations, i.e. no plants ever lived there: (b) plant fossils are not found because the conditions for forming fossils were never met even though plants actually existed, ice age conditions occurred afterwards. (c) The apparent ice age conditions were formed by a much different

mechanism than the advance and retreat of glaciers, and the lack of fossil plants may be related directly to this mechanism.

(2) I suppose it is possible. If these Precambrian Shields were in fact evidence of a prior north pole location, then we should find temperate and tropical/equatorial fossils in the resulting mid and low latitudes.

Questions from Waisgerber to Nash

(3) Can meteorological evidence be interpreted to suggest that the earth always exhibited polar, temperate and equatorial regions?

(4) Presuming the existence of three climatic regions during the ancient past, could not arid conditions be a part of any of the three climatic regions?

Reply by Nash

(3) My opinion is no. "Always" is a strong, restrictive word. I am not prepared to say that polar, temperate and equatorial climate regions always coexisted. Another opinion I have is that if we resist the temptation to chop up the earth's past into segments of time, it appears the predominant feature of our past climate (singular) is warm: i.e. ice "ages" are an anomalous feature.

(4) Yes. In fact aridity does not appear to be limited by latitude. From a precipitation standpoint some of the driest places on earth are on the ice caps and over large areas of the tropical oceans (there are obviously plenty of dry places on land too!).

Question from Waisgerber to Nash

(5) Presuming a prior North Pole for the earth within the shield areas, would not the areas exhibiting warm climate fossil plants exist about an ancient temperate region or even an equatorial region?

Reply by Nash

(5) Yes, I would think so. See answer to (2).

PANORAMA OF SCIENCE

Barbed Wire Placed in World War II Already Petrified

Editor's Note: This selection is taken from an article in *Illustrert Vitenskap* (1986) October, p. 26 sent to me by Olav Wik. Mr. Wik also provided a translation which has been edited for clearer reading.

Norwegian geologists examining a barbed wire sandstone in Jaren (near Stavanger), Norway have discovered that petrification can occur very rapidly, geologically speaking. During World War II the Germans, fearing an invasion from England across the North Sea, built a complex defense system along the coast of southwestern Norway. The German occupation forces placed tons of barbed wire on some of the long beaches which extended nearly uninterrupted from Sola to Ognå as part of the defenses.

After the war, most of the barbed wire was removed. However some of it was covered with wind-blown sand. After winter storms in 1981, some of the buried wire was uncovered on the shore of Hellestrio in the municipality of Sola after about 40 years of

burial. The buried wire had been transformed into lumps of sandstone sediment.

While sandstones which occur naturally in the mountain areas of Jaren are heavily deformed and are dated up to 800 millions years (Precambrian), this sandstone is of far younger age and can be dated accurately. From scientific literature it is known that similar sandstones are formed when iron corrodes. The chemical reaction starts when iron which is buried in sand begins to corrode. It seems that FeO_2 combines with CO_2 and CaCO_3 to form a hard crystalline substance that is precipitated between the grains of sand.

As this process only can be demonstrated in close proximity to the barbed wire, it is clear that iron from the wire plays an essential role for the sediment to be precipitated and petrified. A third ingredient needed, of course, is either salt or fresh water to start the process. The stratification of the sediment is probably due to an episodic supply of salt or fresh water which penetrated the pores in the sandstone.

Translated and Contributed by Olav Wik

Editor's Note: The rapid hardening of sediments is a very fertile area of research for some creationist chemist.

Missing Talus

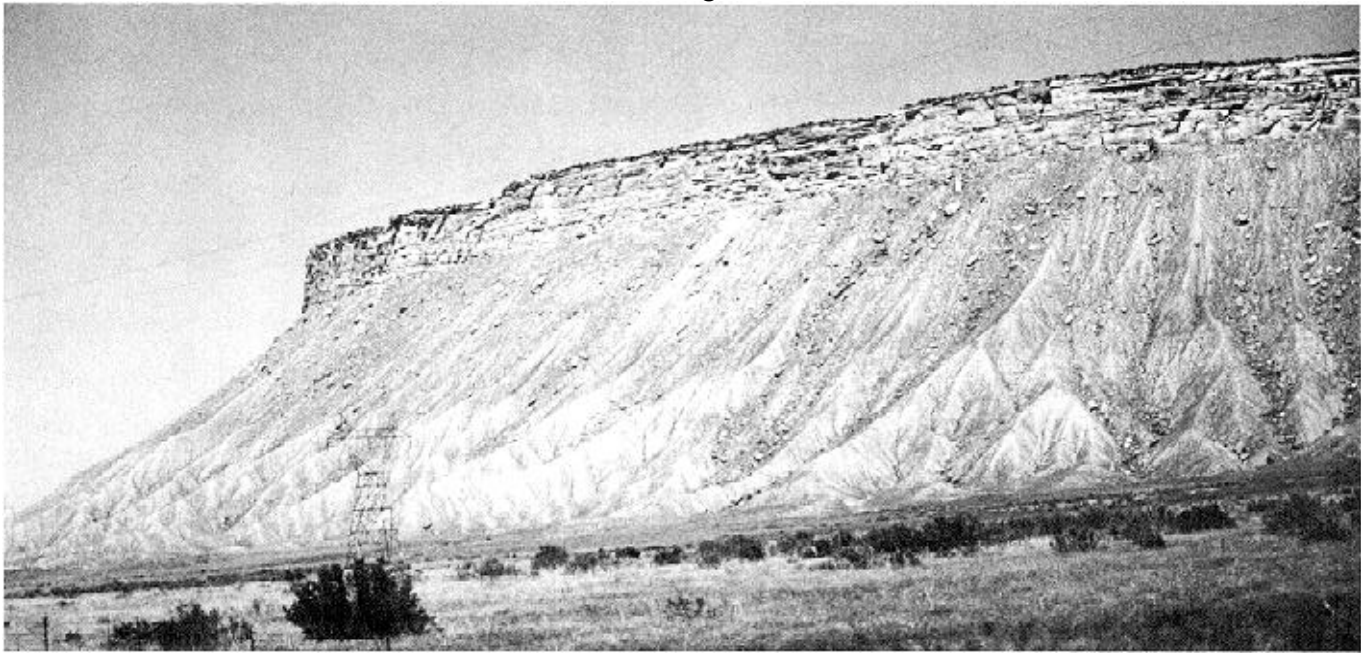


Figure 1. There is little talus on these slopes on the west side of Mesa Verde Colorado, and essentially none on the valley floor over a thousand feet below the top of the cliff. Yet the sandstone talus is much more durable than the shale, mud and clay on which it rests. Could the missing talus be testimony of a large body of water which removed it in the past? Photograph by Edmond W. Holroyd, III

While traveling along the highway south of Cortez, Colorado, one passes between some peaked mountains to the west and a high mesa to the east known as Mesa Verde. That mesa is famous for some old Indian dwellings. It has a high, sharp escarpment on its western side, dropping abruptly to a broad generally flat valley in which the highway is located. (See Figure 1) There is no significant river presently draining that valley.

Just under the valley surface is located the Dakota Sandstone formation. That rock is quite durable and is frequently the top formation remaining in southwestern Colorado and southeastern Utah. Above this sandstone is Mancos Shale, a regional deposit having original thicknesses up to a few thousand feet. This shale is one of the weakest rocks in the territory. It easily weathers into mud and clay. Its surface forms slumps or landslides when wet. Man-made structures built on this unstable Mancos Shale are in constant need of repair. Abandoned roads and railroad beds built on Mancos hillsides can become impassible in less than 50 years. The formation erodes rapidly when exposed, creating broad valleys with badlands formations at the edges. Above the Mancos Shale are the strata of the Mesa Verde formation, mostly durable sandstone.

The valley appears to be there because the Mancos Shale has been eroded away. At the edge of Mesa Verde the hard sandstones protect the shale below from rapid erosion. The erosion continues, however, and blocks of Mesa Verde sandstone are undermined and fall down the face of the escarpment and can be seen littering the shale slopes. Such a process of talus formation can be found in many texts, such as Gilluly et al. (1952) and Holmes (1965).

What seems unusual is that the sandstone blocks do not litter the entire valley floor. They lie from where

the shale surface is vertical at the escarpment to where the shale levels out in the valley. Farther out into the valley the blocks seem to vanish. They are not being obscured by vegetation because the dry desert climate does not support much growth.

It would seem that while the sandstone is in place at the top of the cliff it is very durable, hardly eroding at all compared to the shale. One would expect the undermined sandstone blocks to still disappear very slowly; they should litter the flat valley floor as well as the slopes. Yet once they reach the valley floor they seem to vanish faster than the shale, mud and clay.

Perhaps the sandstone becomes slightly wetter on the lower slopes and is crumbled by freezing and thawing. Perhaps the binder of the sand grains is attacked by alkali from the valley soil. In either case it should then be possible to find rock fragments surrounded by the resulting sand. Perhaps some of the sandstone is buried by mud slides. It should then be possible to excavate the slides and measure the decomposition of the sandstone into sand. Yet even so, one would expect the blocks to be re-exposed on the valley floor at a later time as the softer mud is washed away by the summer showers. From a uniformitarian viewpoint the rate of decomposition and removal of the talus must be greater than its rate of formation for it to vanish so quickly. (As of this writing several geologist friends have not been able to locate any articles giving either of those quantitative rates.) But why should such a hard rock disappear faster than the soft rock remnants on which it is resting?

Perhaps another explanation is that the valley shale was eroded up to the escarpment by a raging flow of water which removed all talus as well. The present sandstone talus on the slopes is only that which has fallen since the escarpment was initially carved. The

flow of water would seem to have been hundreds of miles broad, for it has scoured off the shale to the Dakota Sandstone throughout much of the region. The present mesas would then be "relic landforms" as Steve Austin calls them, and would be testimony of catastrophic processes.

This same phenomenon of missing talus can be observed in the same formations to the north of Grand Junction, Colorado, where some sandstone blocks can be seen coming down the slopes of the Book Cliffs but not across the valley. There is also minimal talus from hard welded volcanic tuff and lava laid on soft Mancos Shale between Montrose and Gunnison, Colorado. The spectacular forms in Monument Valley, Utah, involve different formations but also show minimal talus on the valley floors. Perhaps this missing talus phenomenon is widespread in the western deserts.

Another possibility for talus removal is shoreline destruction of rocks by wave action. The West appears to have had large lakes in relatively recent history. These lakes, such as Lake Bonneville, have left elevated beaches in the desert as a record of their former presence. One could also imagine a series of lakes if the Colorado River was plugged by high ground between the Kaibab and Coconino Plateaus at about the Grand Canyon Visitor Center. A lake surface at about the 1700 meter (5600 ft) level could be supported by the present regional topography without the water spilling out over another divide to the north. The resulting series of lakes along the Colorado, Little Colorado, Green, and San Juan Rivers would resemble several of the Great Lakes in size. (Some believe that the sudden release of such a great quantity of water through a fault-generated crack between the north and south rims of the Grand Canyon near the Visitor Center is responsible for the bulk of the carving of the Grand Canyon.) What is interesting for this discussion is that the shorelines of such lakes would wash the escarpments of the Mesa Verde cliff in Figure 1, the Book Cliffs, Monument Valley, and numerous other escarpments in the region. The pounding of shoreline talus by the waves of such great lakes could also account for its removal in the past. One could investigate the possibility of that mechanism by mapping the remnants of those ancient shorelines.

Several mechanisms for the removal of talus from several western escarpments have been mentioned here in order to suggest opportunities for fruitful research. Until the proper field research is done it cannot be known which mechanism is or was dominant in this region. The necessary research does not appear to be a difficult task. It is a topic waiting to be investigated even from a uniformitarian point of view. Yet there is a strong possibility that it has implications relating to creationism and catastrophism as well.

References

- Gilluly, James, Aaron C. Waters, and A. O. Woodford, 1952: Principles of geology. W. H. Freeman & Co., San Francisco. 631 pp, specifically pp 230 ff.
 Holmes, Arthur, 1985: Principles of physical geology, second edition. The Ronald Press Company, New York. 1288 pp, specifically pp 477 ff.

Contributed by Edmond W. Holroyd, III

Relativism (Herberg)

It was precisely this conviction about truth that was the first to be challenged with the emergence of modernity. It was challenged on one level by the rise of relativism. What sense did it make to speak of truth in the old way when truth was so relative, so obviously man-made and culture-made, varying (as Pascal had put it) with the degree of latitude, or (in the later vocabulary) with the psychological conditioning and cultural pattern? This kind of relativism was full of contradictions, to be sure, and flew in the face of the best evidence, but it appealed to the modern mind, which was rapidly losing all sense of transcendence. Relativism, of a kind more radical and pervasive than the Greeks had ever dreamed of, soon came to dominate the advanced thought of the West, and increasingly also the convictions and the feelings of the common man. In this kind of cultural climate, the dissolution of moral standards, in the sense in which Greek philosophy and Hebraic religion had understood them, was only a matter of time.

But if relativism began the process, it was the triumph of technology that carried it to its disastrous completion. We are not yet in a position to grasp fully what the accelerated and unfettered expansion of technology has done to human life in the past three hundred years. But we can at least begin to assess its major impact upon the consciousness of the West, and that is the *exaltation of power over truth as the object of man's intellectual and moral quest*. From the earliest times, the object of the knowledge-seeking enterprise had been *truth* — but truth as something to apprehend *intellectually* and live by *morally*. Now, however, some time in the sixteenth or seventeenth century, perhaps, a new conviction arose, constituting a radical subversion of the older view. The whole tradition of the West—that "knowledge is truth"—was overturned, and replaced by the new, militantly proclaimed creed, "knowledge is *power*!" — first, power of man over nature; then power of man over man. This shift from truth to power marks the full scope of the revolution effected by the technological spirit at the very dawn of modernity.

The evacuation of moral standards soon came to aggravate the effects of technology. Nearly a hundred years ago, Jacob Burckhardt, the great historian who so well discerned the ominous outlines of the twentieth century, pointed out with great penetration:

When men lose their sense of established standards, they inevitably fall victim to the urge for pleasure or power.

This "urge for pleasure or power" defines as nothing else can the pseudo-ethic of our time.

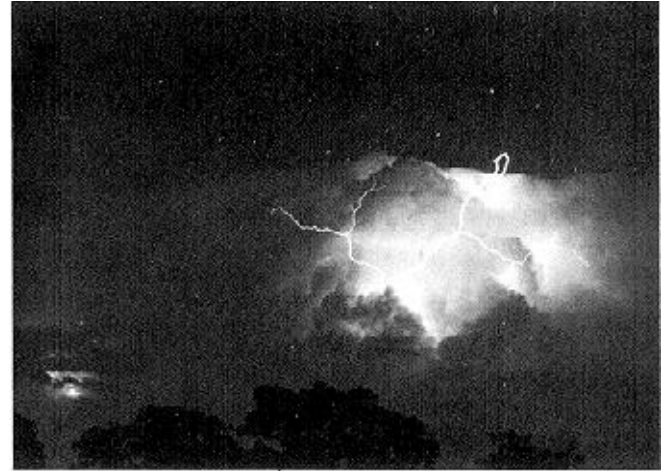
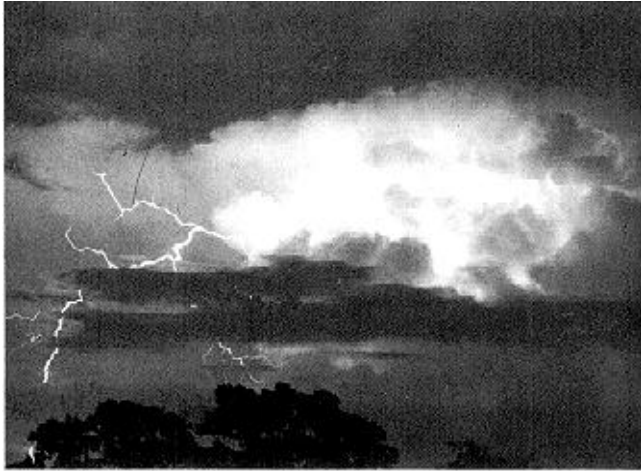
The technological spirit exalting power, and the ideological relativism that destroys the authority of all moral norms, have cooperated to undermine the older foundations of morality, in fact, the very meaning of morality itself. Human problems are increasingly seen as technological problems, to be dealt with by adjustment and manipulation; the test is always how it satisfies desires or enlarges power, not conformity to a truth beyond man's control. In fact, the belief seems to have emerged that there is nothing beyond man's desires, nothing beyond man's power. His "values" are

his to make or unmake, the only criterion being satisfaction and power. Pleasure and power have taken over, and the bitch-goddess Success, which William James so scornfully denounced, has come into

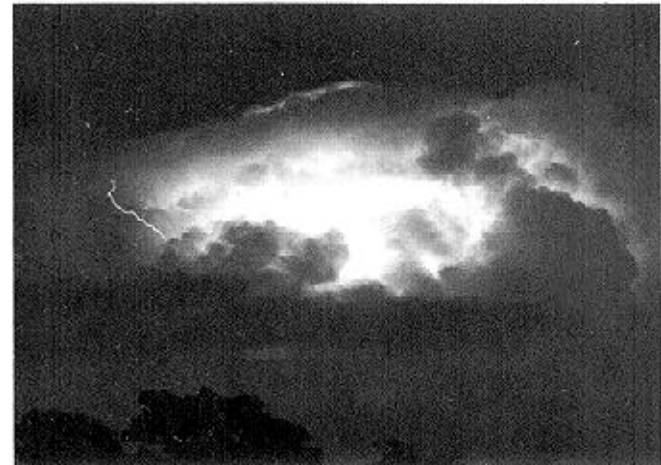
her own. This is the moral crisis of our time in all its amplitude.

Reference

Herberg, Will. 1986. What is the moral crisis of our time? *The Intercollegiate Review*. 22(1):10-1.



All photographs of an evening thundershower were taken by Kenneth A. Nash. See cover photograph and caption (CRSQ 23:137-8). The teleological view of afternoon and evening thundershowers is presented in a minisymposium (CRSQ 23:6-11).



QUOTE

It is a historical truism that Western civilization's moral and evaluative roots lie in a blend of Greco-Roman and Hebraic-Christian cultures. Augustine molded and explicated Christian faith with aid of Platonic philosophical tools, forming the foundation for the intellectual development of the Middle Ages. Aquinas and the scholastic tradition in general took this Augustinian tradition and created a grand synthesis with the newly introduced philosophical system of Aristotle. The disintegration of the scholastic systems of the late Middle Ages and the resurgent biblicism of the Reformation were soon accompanied by attempts to formulate ethical world views which were not directly derived from the Bible of the Church's philosophical and theological tradition. It can be safely said, however, that until the late nineteenth century, most of these non-theological approaches presumed the same general moral outlook as the theologians. There was a common core of moral and ethical principles that was taken for granted, and most disagreement concerned either their proper foundation and origin or their relative importance and priority. These differences were not unimportant, for not every moral viewpoint gave the same emphasis or importance to the same principles. Nevertheless, sufficient agreement existed over fundamental values to give Western society the unity and coherence necessary to make it an identifiable tradition.

In the last 100 years, however, these foundational values themselves, previously considered invaluable and irrevocable, have been seriously and radically challenged by Marxist and secular interpretations of history, Darwinian and naturalistic theories of the natural order, and Freudian and Behavioristic beliefs about the nature of man.

Individual freedom, the ultimate worth of the individual in particular and of humankind in general, the dignity of work, and sexual mores are just some of the values whose traditional understanding and/or validity have been questioned and often rejected for alternatives.

Burke, Thomas J., editor. 1986. *The Christian vision: man and morality*. The Hillsdale College Press. Hillsdale, MI, p. vii, viii.

Rapid Development of Calcium Carbonate (CaCO_3) Formations

While visiting Cumberland Mountain State Rustic Park in Crossville, Tennessee in September 1986, the author found many calcium carbonate formations on a picturesque dam in the Park. Construction was started on the dam in 1936 by the CCC and it was completed in 1938 (Lyon, 1987). Several stalactite-like formations can be seen in the arches of the bridge (the structure serves a dual purpose of a bridge into a portion of the park and a dam over Byrd Creek). The structure was built using a local sandstone referred to as Crab Orchard sandstone (Lyon, 1987).

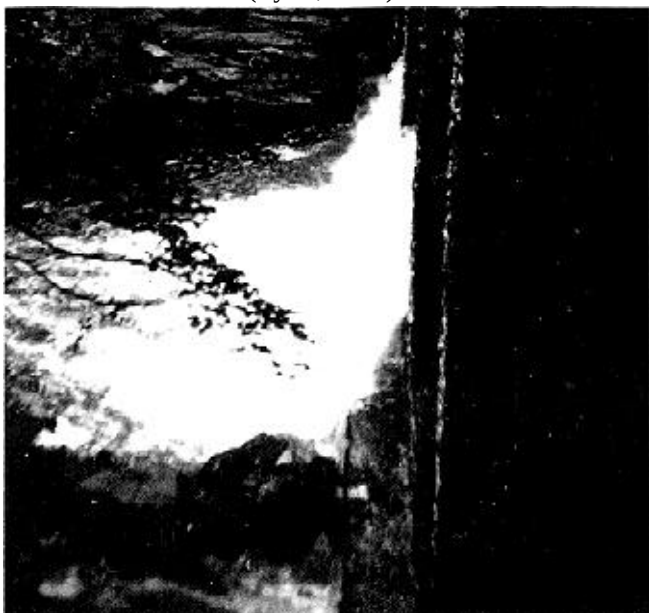


Figure 1. Stream side of dam over Byrd Creek showing the water flow in early September 1986.

The stream side of the dam is shown in Figure 1 indicating the amount of water that can flow through the structure. Figures 2-4 show the various CaCO_3 stalactite-like formations that have developed out of the mortar between the sandstone blocks. The formation in Figure 4 measures two feet in length. These beautiful cave-like formations have developed within 50 years.

When one visits a commercial cave, he is often presented with exaggerated stories from the guide as to the ages of the various stalactites and stalagmites in the cave. Authors of scientific papers on the subject have warned that the age of a cave formation cannot be determined by its size and present rate of increase in volume. For instance in some areas of the same cave, CaCO_3 precipitates can be actively growing rather rapidly whereas other sections of the cave are relatively dry with very little CaCO_3 precipitation. This subject has been of interest to creationists and many articles and research reports have been published in the Quarterly dealing with conditions under which calcium carbonate formations have and can develop quickly under the proper conditions. (Anon., 1971; Harris, 1971; Keithley, 1971; Armstrong, 1972; Brady, 1973; Williams, 1975; Williams, et. al, 1976; Williams and Herdtklotz, 1977, 1978; Helmick, Rohde



Figure 2. "Dripstone" in arches of dam.

and Ross, 1977; Amer, 1978; Cannell, 1978; Williams, House and Herdtklotz, 1981) In-depth literature reviews can be found in many of the articles.

It has been claimed (Moore, 1961) that the rapid growth of dripstone under and around concrete structures cannot be compared with the growth of stalactites and stalagmites in natural limestone caves. The reason given is that Ca(OH)_2 in the cements is more soluble in rainwater than natural CaCO_3 . However this



Figure 3. "Dripstone" precipitation in arch of dam.



Figure 4. "Stalactite-like" formation, 24 inches in length, above arch in dam.

presents no problem for the creationist viewpoint of a recent Flood. If limestone precipitated and hardened in the Flood waters similarly to the hardening of mortar or Portland cement (Williams, House and Herd-klotz, 1981, pp. 207-8), would it contain considerable amounts of $\text{Ca}(\text{OH})_2$ and be easily dissolved as the Flood receded? Thus stalactite and stalagmite formation would have been more rapid in newly-formed

limestone caves. This has been a fruitful area of creationist research and still offers possibilities for further effort. Prior creationist work can be used as a starting point for future work.

References

- CRSQ—*Creation Research Society Quarterly*
 Anon. 1971. Cover illustration and caption. *CRSQ.* 8:93-4.
 Amer, J. 1978. More recent stalactites. *CRSQ.* 15:8-9.
 Armstrong, H. L. 1972. Catastrophic storms and cave formation. *CRSQ.* 8:144.
 Brady, J. C. 1973. More on stalactites. *CRSQ.* 10:130-1.
 Cannell, E. B. 1978. Rapid stalactite formation observed. *CRSQ.* 15:9-11.
 Harris, Robert. 1971. Article review. *CRSQ.* 8:144.
 Helmick, L. S., J. Rohde, and A. Ross. 1977. Rapid growth of dripstone observed. *CRSQ.* 14:13-7.
 Keithley, W. E. 1971. Notes on stalactite formation. *CRSQ.* 8:188.
 Lyon, A. 1987. Personal correspondence.
 Moore, G. W. 1981. Dolomite speleothems. *National Speleological Society News.* 19(7):82.
 Williams, E. L. 1975. Laboratory production of limestone formations. *CRSQ.* 12:120.
 Williams, E. L., et al. 1976. Deposition of calcium carbonate in a laboratory situation. *CRSQ.* 12:211-2.
 Williams, E. L. and R. J. Herd-klotz, 1977. Solution and deposition of calcium carbonate in a laboratory situation II. *CRSQ.* 13:192-9.
 Williams, E. L. and R. J. Herd-klotz. 1978. Solution and deposition of calcium carbonate in laboratory situation III. *CRSQ.* 15:88-91.
 Williams, E. L., K. W. House and R. J. Herd-klotz. 1981. Solution and deposition of calcium carbonate in a laboratory situation IV. *CRSQ.* 17:205-8, 226.

Contributed by Emmett L. Williams

ENLIGHTENMENT OR ENDARKENMENT

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Abstract

This article provides thoughts on the Enlightenment by seventeenth and eighteenth century writers and the belief by a modern writer that the world is headed toward a dark period in history. The Age of Enlightenment has been described by scholars as a period of great intellectual awareness with emphasis on the experimental method in science. What has not been emphasized is that some leaders of the Enlightenment were creationists. Another fact brought out in the article is that a surprising number of modern day scientists are turning toward God, reversing a trend toward endarkenment.

Introduction

Few would quarrel with the statement that Sir Isaac Newton was one of the greatest figures in the history of science and that his *Principia* was the single most important book of the scientific revolution in the seventeenth century. Although there may be some question of whether or not Newton was a Christian ("Newton . . . sought evidence to bolster his own principles of faith, which were anti-Trinitarian." (Cohen and Glazebrook, 1973) there is no doubt that he was a creationist. Newton's declarations about induction from empirical observations and John Locke's general theory of knowledge, as expressed in his *Essay Concerning Human Understanding*, were the start of what some have called the Age of Enlightenment. According to R. F. Baum, writing in *The Intercollegiate Review*:

Objections may be raised to the statement that the epistemological revolution promoted by Locke

and his successors has been driving us toward an endarkenment in which no light whatever, let alone certainty, will illuminate the world we live in. Yet such an unexpected outcome is written large on the characteristic thought of our time. (1986, p. 39)

The age of Enlightenment has been described as a period of great intellectual awareness and activity with emphasis on the experimental method in science. Some scholars believe that The Age of Enlightenment started with the skepticism of Voltaire in France, but there can be no doubt that its principles were inherent in Newton's writings at least half a century earlier. Some might even claim that "the ancestral ideas of the Enlightenment reach deep into ancient Greece." (Haggerston, 1973)

Isaac Newton published his *Philosophiae Naturalis Principia Mathematica* in three editions from 1687 to 1726. In the first edition, he concluded that God had placed the planets at different distances from the sun so that they would receive heat from the sun according

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to the proportion of their densities. According to I. Bernard Cohen, writing in *Introduction to Newton's 'Principia'*:

... this reference to God is indeed present in E1, but ... it has disappeared in E2 ... It seems likely that Newton had not originally intended to make quite so pronounced a statement about God in the midst of the propositions of Book III ... (1971, p. 155)

In the second edition of *Principia*, there was a reference to God in a different location (in the concluding Scholium Generale) according to Cohen: And so much concerning God: to discourse of whom from phenomena surely belongs to experimental philosophy. (1971, p. 244). A similar statement was included in the third edition, except that the wording was changed. Cohen says:

... Newton thus states that phenomenologically based discussions of God do have a place in natural philosophy, while hypotheses have no place in experimental philosophy. (1971, p. 245)

An insight toward Newton's views on God and gravity is provided by a contemporary, David Gregory. Cohen tells us:

Gregory also recorded certain views of Newton's concerning God's role in the operation of the system of the world. Thus ... '[Newton says] that a continual miracle is needed to prevent the Sun and the fixed stars from rushing together through gravity: that the great eccentricity in Comets in directions both different from and contrary to the planets indicates a divine hand ...' (1971, p. 192)

Admitting then that Newton did believe wholeheartedly in God, was he a Christian? Frank E. Manuel, in his book, *The Religion of Isaac Newton*, says:

John Conduitt, who married Newton's niece, was somewhat dismayed that Newton on his deathbed had failed to ask for the final rites, but he consoled himself with the reflection that Newton's whole life had been a preparation for another state. (1974, p. 6)

Manuel (1974, p. 7) gives several instances in which Newton is apparently as much a Christian as anyone of his day. "... during Newton's lifetime nobody cast aspersions on his Anglican orthodoxy." Manuel includes, as an appendix to his book, a treatise written by Newton in which he quotes from the Old Testament prophets and the Revelation of John. Newton says:

In the next place I would observe out of the Prophets that in the end of this present world when Christ shall come to judge the quick and dead, the quick to be then judged are the people of this kingdom, both Jews and Gentiles. (1974, p. 130)

Based upon his writings, it must be concluded that Newton believed in Christ, even though he may not have met the expectations of the clergy of his day. How then could Newton have been the one credited with leading people away from God as the prime mover of the Age of Enlightenment? This surely was not his intention. In contrast, he was quoted as a leading authority by theologians to bring people to God. Manuel says:

In the eighteenth and nineteenth centuries Newton was occasionally cited by English apologists to illustrate the compatibility of science and faith. If the greatest of all scientists was a believer, ran the argument, how could any ordinary mortal have the impudence to doubt? German theologians of the Enlightenment leaned heavily upon Newton's confession of belief in a personal God in the General Scholium to the *Principia*, and Albrecht von Haller, the paragon of science in the Germanic world of his day, reverently quoted Newton as authority to support his own reconciliation of science and religion. (1974, p. 4)

But scientists ignored his religious beliefs when quoting him. Manuel continues:

But it must be admitted from the outset that an interest in Newton's religion can hardly be justified by its power as an instrument for the propagation of faith. His scientific discoveries and what Newtonians made of them, not his own religious utterances, helped to transform the religious outlook of the West—and in a way that would have mortified him. (1974, p. 4)

Locke's Contributions

Before Newton published his *Principia*, his friend John Locke, a religious dissenter, wanted to use the prestige of Newton to further his own ideals. According to Baum:

Locke wanted finally to free men's minds from the metaphysical-theological convictions, usually deduced from revelation, that had fueled Europe's religious wars. With the publication of *Principia* in 1687, and the vaulting prestige of a science that Newton declared induced from empirical observations, Locke's ambition found its opportunity. In 1690 Locke's *Essay Concerning Human Understanding* developed what Locke took to be Newton's induction of his cosmology from empirical observations into a general theory of knowledge ... (1986 p. 39)

The Enlightenment movement was based upon the concept that right reasoning came from true knowledge. In his biography titled *John Locke*, D. J. O'Connor says:

It is with knowledge in this last sense [i.e., knowledge that calls for observation, inference, testimony and, in general, evidence of various kinds] that John Locke was concerned in his *Essay Concerning Human Understanding*. (1967, p. 24)

As further explanation O'Connor tells us:

Ways of knowing which do not satisfy these very stringent conditions Locke refuses to call 'knowledge': he uses instead the words 'belief,' 'faith,' 'judgment' or 'opinion' to refer to them ...

By thus raising the nature of knowing as a problem, Locke was introducing a new point of view into European philosophy. And this point of view, for good or ill, has dominated philosophy since his time ... Locke was the first important philosopher to develop a suggestion implicit in the work of Descartes: that philosophy should begin with epistemology [i.e., the study of the nature and origin of knowledge]. (1967, pp. 26, 27)

Baum reiterates Locke's concept, saying that, according to Locke's *Essay*:

... it was not in metaphysics or theology, not in any constructions of man's speculating mind, but in the testimony of the senses and reflection on it that 'Certainty, real Certainty could be found.' (1986, p. 39)

Voltaire's Opinions

The ideas of Locke were carried to France by Voltaire says Baum, "and there simplified by Condillac, Helvetius, Holbach, and others..." Baum further says that:

... an empiricism derived from Locke and acclaiming sense experience as the source of knowledge became the epistemological buttress of the eighteenth-century Enlightenment. The naturalistic bent of that Enlightenment soon became overtly atheistic in France. (1986, p. 39)

As a disciple of Locke, Condillac believed that all thought is derived from sensations and experience, and not from innate qualities. According to *The Oxford Companion to French Literature*, Etienne de Condillac:

took little part in the violent controversies of his time... he went beyond him [Locke] in tracing the development of the various human faculties—memory, imagination, reflection, etc.—to their origin in sensations, and held that it was possible to apply logical reasoning in metaphysics and morals with the same precision as in geometry... (1969, p. 159)

Another biographer, A. Owen Aldridge, in his book, *Voltaire and the Century of Light*, made this statement about Helvetius:

In complimenting Helvetius on an English translation of the latter's *De l'esprit*, he [Voltaire] predicted that 'enlightenment will spread in France as in England, in Prussia, in Holland, in Switzerland, even in Italy...' (1975, p. 289)

and further:

In a superb letter to Helvetius, he traced the gradual history of reason in France from the time of Fontenelle to the year in which he was writing. From England the French people had adopted not only the scientific truths, principles of economics, and mechanical advances, but also 'their noble liberty of thought.' (1975, p. 303)

Aldridge says that Voltaire was alarmed at the publication:

of the *Systeme de la nature* by the Baron d'Holbach, a materialist work that did incalculable harm to the cause of the philosophes by associating rationalism and religious toleration with unequivocal atheism. (1975, p. 362)

Aldridge contrasted that to one of Voltaire's poems in this manner: "In Voltaire's poem the emphasis is more on the existence of God than on doubts concerning such a belief." (1975, p. 362) Expressed another way, Voltaire wrote about God but did not himself seem to doubt God's existence and Voltaire viewed as wrong the belief that rationalism should be equated with atheism.

In some of Voltaire's writings it might be inferred that Voltaire was an atheist. In his biography of Voltaire, Haydn Mason gave us a rare early instance of Biblical criticism by Voltaire. Mason says that, in Voltaire's publication *Le Mondain*, he presented this portrait of Adam and Eve:

... their nails long and dirty, their hair unkempt, dining on millit and acorns and sleeping on the hard ground, ... two brutes without the slightest sense of civility, let alone the polish of elegant Paris society. (1981, p. 33)

However, this paints a false impression of Voltaire's true beliefs. Mason goes on to say:

The appearance of *Le Mondain* ... was embarrassing. There is every reason to believe that Voltaire intended it, as he said, to be a *badinage* for the eyes of select friends. (1981, p. 33)

Mason later tells us that Voltaire said:

I have discovered one of the secrets of the Creator. [Newton] is the greatest man who ever lived ... the guiding light who has demonstrated that the universe has an ordered plan, centred on the unchangeable force of gravitation. (1981, p. 38)

Locke's doctrines were written into America's Declaration of Independence in 1776. When the French Declaration of the Rights of Man was written in 1789 the French also borrowed from Locke's philosophy and the work of the French writers.

If we can now accept the origins of the Enlightenment as suggested by Baum, we are in a position to consider his views on the endarkenment.

Logical Positivism and Popper

Baum described the "Logical Positivists" as a group that "hailed as an adequate guide for living the allegedly verified theories, the accepted laws of 'inductive science'." (1986, p. 40). He says that these Logical Positivists:

dominated and even domineered in many Anglo-Saxon universities—until Karl Popper's *Logic of Scientific Discovery* demolished both the induction notion and the idea of verified theories or laws. Popper correctly perceived that from particular observations one could neither induce nor verify universal laws. (1986, p. 40)

Berkson and Wettersten tell us some of Popper's ideas in their book, *Learning from Error — Karl Popper's Psychology of Learning*. They say:

He argued that the theory of meaning could not reasonably be upheld since, according to its own standard, it was meaningless...

In attempting to provide an alternative to positivism, Popper at times fell into accepting positivist aims, such as minimizing the influence of metaphysics on scientific method. (1984, p. 44)

Writing further, Baum states that:

Popper's conception of scientific method and knowledge has corrected a centuries-old misunderstanding. Scientific knowledge grows or progresses not, as even Newton thought, by induction from accumulated observations but by a process of trial and error, by bold *a priori* hypotheses and retention of those that survive factual and logical tests. (1986, p. 41)

There is an opposite opinion. Jonathan Lieberman, in his article "The 'Truth' of Karl Popper," says:

Though he has been much honored, his reputation has always been uncertain. Some—and not only philosophers, but scientists, politicians, artists—have professed to find unsurpassable wisdom in his works, while others, no less acute, regard the work as too blunt, oversimplified, audacious . . . (1982, p. 67)

In reviewing Popper's book *The Logic of Scientific Discovery*, Lieberman says:

This entire view of science, according to Popper, is misconceived. To him it suggests that scientists are engaged in an impossible "quest for certainty." . . . Popper believes that in our quest for knowledge there are simply no "secure" starting points that do not have presuppositions: such starting points can be found neither in *a priori* dogma nor in sense experience: we are, he says, never in a situation prior to all theorizing. (1982, p. 67)

To illustrate Popper's reasoning when he says that "induction is mythical," Lieberman introduces the white polar bear concept. He says, in quoting Popper:

No one has encountered or inspected all possible polar bears, but judging from the sample we have come across, can't we rationally claim that most polar bears are white? . . . Popper argues that induction (in this latter sense) is not a logically reputable inference: a hundred or a million observed white polar bears provide no decisive reasons for thinking that all polar bears are white . . . (1982, p. 67)

Lieberman then provides Popper's best line of reasoning in saying:

Popper thinks he has a more rational and coherent answer than "inductivism." We cannot justify a claim that a hypothesis is true, but we can retain both rationality and the empiricist's demand that our knowledge be supported by observation. For while no number of white polar bears could establish or verify the claims that all are white, nevertheless, a single polar bear that is not white can falsify the hypothesis. (1982, p. 68)

According to Lieberman, Popper provides an all encompassing statement of philosophy:

No scientific theory, he claims, not even the greatest of them, Newton's universal mechanics, has ever been "established" or "verified": after all, if Newton's theory was certain or "inductively proved," how could it have been overthrown and superseded by Einstein's theory of relativity? (1982, p. 68)

Some philosophers may not agree either with Popper's philosophy. One such writer is Lee Dembart, who reviewed the book, *The Nemesis Affair: A Story of the Death of Dinosaurs and the Ways of Science*, by David M. Raup. He states:

When scientists decide what the truth is at any given moment, there is more going on than experiments and appeals to reason. The models of science developed by Karl Popper and Thomas Kuhn may not take sufficient account of the role of

non-reason in the development and assessment of scientific theories. (1986, part V, p. 1)

To this point, my discussion has centered on reason, but if some scientists want to use non-reason as the basis for their conclusions, they should at least be allowed to express their viewpoint. Raup's book claims that the dinosaurs died out about 65 million years ago during a periodic mass extinction caused by the Earth's colliding with a comet. Dembart notes that:

Raup's contribution to this hypothesis is the discovery, with Jack Sepkoski, that the fossil record indicates that extinctions of species were not randomly spaced but were bunched every 26 million years for the last 250 million years. (1986, part V, p. 1)

Where then does the non-reason come in? Dembart continues:

Raup's book is an insider's look at the sociology of a scientific hypothesis, how an idea starts, develops, is tested, gains adherents and sparks new work . . . Raup even-handedly assesses the evidence . . . In short, there is not a shred of evidence to support the idea that a periodic comet shower has caused periodic mass extinctions throughout geological time. In fact, there isn't even any evidence that the Oort Cloud of comets exists. (1986, part V, p. 1)

An opinion of what happens when scientists start using non-reason has been correctly stated by Baum:

Contrary to naturalistic opinion, modern knowledge, whether physical or historical, factual or theoretical, has been rooted in theistic faith. When that connection is severed, knowledge of every kind loses grounding in external reality and hence its authority in men's judgment. (1986, p. 46)

This concept has been further demonstrated in several books on evolution which have been published recently, foremost among them being Michael Denton's *Evolution: A Theory in Crisis*. In his book, Denton rejects outright the possibility of creation of plants and animals and humans by God, while recognizing the utter impossibility of life forming by itself and of its continuation through macroevolution. In discussing Darwin's general theory about all evolution being due to the gradual accumulation of small genetic changes, Denton says that it:

remains as unsubstantiated as it was one hundred and twenty years ago. The very success of the Darwinian model at a microevolutionary level . . . only serves to highlight its failure at a macroevolutionary level. (1986, pp. 344, 845)

Here then is another example of non-reason in action.

Conclusion

The enlightenment begun by Newton, a creationist, that led men to reason, has been replaced by an endarkenment, leading men to non-reason, with non-believers in God in the forefront. But, are all scientists and philosophers heading down the same path? John Gliedman, in his article in *Science Digest* titled "Scientists in Search of the Soul," paints a slightly modified picture. For example, in writing of Sir John Eccles, Gliedman says:

Winner of the 1963 Nobel Prize in Physiology or Medicine for his pioneering research on the synapse . . . Eccles strongly defends the ancient religious belief that human beings consist of a mysterious compound of physical matter and intangible spirit . . . The Australian born Eccles was a young Rhodes scholar at Oxford when he became a close friend of the famed physiologist Sir Charles Sherrington, who believed that a nonmaterial self controlled each person's brain. Eccles's own belief in the immortal soul originates in solid scientific statistics . . . (1982, p. 77)

Gliedman also says that:

Eccles has a powerful ally in Sir Karl Popper, who agrees with Eccles in every crucial respect except the soul's immortality. Popper is the most famous philosopher of science of our age . . . "What experiments can you do to test Popper's theory of scientific theories?" asks Eccles. "Can you put Popper's theory on the mat and try to falsify it the way he says that a scientist should try to falsify an empirical scientific theory? The answer is 'no' because Popper's theory of scientific method is not science; it is metaphysics. (1982, pp. 77, 78)

Lest creationists rejoice that Popper and Eccles are believers in Christ, remember that Popper does not believe in the immortality of the soul. Further, Eccles's belief is that:

Each of us embodies a nonmaterial thinking and perceiving self that "entered" our physical brain sometime during embryological development or very early childhood . . . (1982, p. 77)

Therefore, neither of these men professes Christian beliefs. Gliedman mentions a few others:

[1] Brian Josephson, who received the 1973 Nobel Prize in Physics for his pioneering research in superconductivity, studied under Sir Charles Sherrington.

[2] Wilder Graves Penfield, neurophysiologist, who felt that humans were not just material beings, also studied under Sherrington.

[3] John von Neumann, who brought the rigorous principles of mathematics to the fledgling science of quantum mechanics, believes man may have a nonmaterial consciousness.

[4] Roger Sperry, neurobiologist, recently awarded the Nobel Prize in Medicine for delineating the functions of the brain's two hemispheres, maintains that the self is a new property of matter. (1982, pp. 78, 79)

There are thousands of other scientists who share the belief in a soul that exists apart from the brain, as attested by the membership in the Creation Research Society. Maybe, just maybe, more and more scientists are turning from the concept of a Godless universe and are recognizing that the world and its life forms were indeed created by God and the endarkenment trend is being reversed.

References

- Aldridge, A. Owen. 1975. *Voltaire and the century of light*, Princeton University Press, Princeton, NJ.
- Baum, R. F. 1986. The age of endarkenment: naturalism and nihilism in modern thought, *The Intercollegiate Review*. 21(3):39-48.
- Berkson, William, and John Wettersten. 1984 *Learning from error—Karl Popper's psychology of learning*, Open Court Publishing Co., La Salle, IL.
- Cohen, I. Bernard. 1971. *Introduction to Newton's 'Principia.'* Harvard University Press, Cambridge, MA.
- Cohen, I. Bernard and Sir Richard T. Glazebrook. 1973. Newton. *Encyclopaedia Britannica*. London 16:418.
- Dembart. Lee. 1986. Of faith and comets: an inside look. Book Review: The nemesis affair: A story of the death of dinosaurs and the ways of science. *Los Angeles Times*. June 24.
- Denton, Michael. 1985. *Evolution: a theory in crisis*, Adler and Adler, Bethesda, MD.
- Gliedman, John. 1982. Scientists in search of the soul, *Science Digest*. 90:77-9, 105.
- Haggerston, D. J. 1973. Enlightenment. *Encyclopaedia Britannica*. London. 8:599.
- Harvey, Sir Paul, and J. E. Heseltine. 1969. *Oxford companion to French literature*, Oxford University Press, London.
- Lieberson, Jonathan. 1982. The 'Truth' of Karl Popper, Book Review: The logic of scientific discovery, *The New York Review of Books*, 29:67-8.
- Manuel, Frank E. 1974. *The religion of Isaac Newton*, Oxford University Press, London.
- O'Connor, D. J. 1967. *John Locke*, Dover Publications, Inc., New York.

BOOK REVIEWS

In the Beginning: A Scientist Shows Why Creationists Are Wrong. by C. McGowan 1984. Prometheus Books. Buffalo, New York. 208p. \$12.95.

Reviewed by A. W. Mehlert*

PART I Introduction

McGowan's detailed defense of evolutionism is the most comprehensive I have yet seen, but it is a great pity that he has based his whole case on only two creationist sources—Henry Morris's *Scientific Creationism* (1974) and Duane Gish's *Evolution: The Fossils Say No* (1973). Apparently he is ignorant of the existence of many other creationist works of later date and high technical quality.

The Origin of Matter and the Universe

McGowan decided not to discuss the origin of the

universe (page xii). The Professor is indeed wise to leave sleeping dogs lie but this subject is so important. A glance at some of the more recent writings by astronomers and physicists on the mysteries of the universe will show that they appear to be up against insurmountable problems and are no nearer to solving them than they were 100 years ago.

Since the mid 1960's when theories of an eternal universe were largely abandoned, the other model, the 'big-bang,' has also suffered many setbacks. John Gribbin (1986) says ". . . many cosmologists now feel that the shortcomings of the standard (big-bang) theory outweigh its usefulness . . ." He goes on to say that ". . . new models are based on the *concept* that particles (of matter) can be created out of nothing at all . . . under certain conditions" and that ". . . matter might suddenly appear in large quantities . . ." Does this not sound remarkably like Genesis 1:1 — Creation ex *nihilo*? After some technical discussion Gribbin concludes that "Perhaps cosmologists have been charging

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up a blind alley for the past quarter of a century, and there never was a big-bang at all. It would not be the first time that science took a wrong turning."

This is quite an amazing confession of the bankruptcy of evolutionary cosmology and the appeal by modern astronomers to a singularity (a unique happening not in accordance with known physical laws), reveals their desperation at not being able to explain the origin of matter. Akridge (1982) has also pointed to fatal flaws in the big-bang expanding universe theory.

The static state, eternal universe concept is now out of favor for several good reasons, one being that no matter how evolutionist cosmologists may twist and turn, there is no getting past the second law of thermodynamics—if the universe were of infinite age then it would have run down infinitely long ago. Its main proponent, Fred Hoyle (1981a) long ago abandoned the idea and he expresses much cynicism about the barren state of cosmology today. Steidl (1979) points out that it is no wonder that mechanistic theories of the origin and structure of the universe do not work because non-theistic evolutionist astronomers dogmatically rule out the most important element before they start—the possibility of a Creator Supreme Being. From a purely scientific materialistic point of view, nobody can ever solve that ultimate mystery.

Organic Evolution

McGowan moves on to the broad question of evolution and says on page 5 that the theory of evolution would be falsified if:

1. The earliest fossils were not the simplest ones and,

2. All the types appeared at the same time.

Further, if the theory were correct he would expect geographic distribution to be a strong support—the close proximity of like types around the earth. I think McGowan could have added another support—if transitional forms could be found.

In respect of point one, McGowan is putting his neck on the line as there are a number of cases of the 'earliest' fossils being more complex than later ones. Some examples are graptolites (Davies, 1961) and trilobites (Eldredge, 1986). Eldredge tells us that "Instead, I found most of the various kinds, including some unique and advanced trilobites present in the earliest known fossil beds."

However it must be conceded that within the evolutionist geology paradigm presently ruling, there is a strong tendency to find the simpler forms of life at the lower end of the geologic 'column' with increasing complexity towards the top. Later I will seriously question the validity of the concept of the geologic column. This study will also embrace the creationist view that all fossil forms were contemporaneous. Many of the so-called earliest life forms were, in fact extremely complex (trilobites, corals, jellyfish, etc.) with no apparent predecessors and that *even today* there is an enormous range of contemporaneous life forms ranging from bacteria, fungi, jawless fishes (lampreys), amoeba, etc., right up to the pinnacle of living forms, birds, mammals and man.

With regard to the argument of geographic distribution, there are indeed questions to be answered, but none are insurmountable. As Morris and Whitcomb (1961) point out, little is known about animal move-

ments in the past, either from science or Scripture, but we only need to show that a general migration of animals from the Near East since the Flood is reasonable and possible. For example, fossil marsupials have been found not only in Australia but in Europe and the Americas and that no fossils have yet been found in Asia does not mean any more than any argument from silence. Marsupials have been widespread in the past. How many lion fossils have been found in the Palestine area where they once thrived? None. There is nothing at all that bars the migration of the kangaroo kind to Australia via south-east Asia, and this could have occurred within a few dozen years without leaving fossil evidence. Morris and Whitcomb (1961, p. 85) write that "... the fauna of Madagascar is most similar to ... that of Asia 2200 miles away." Somehow the lemurs made it all the way to Madagascar which is now their home. Of course creationists would see the hand of God in almost every event in life, but we must not say too much about that because it is 'unscientific.'

Evolutionist zoologists might also be asked to explain the presence of tapirs today only in South American and the Malaysian islands—on opposite sides of the Earth. What is sauce for the evolutionary goose should also be sauce for the creationist gander!

Under *both* the creationist and evolutionist paradigms there is nothing unusual about endemic species. There is nothing against finding 'closely related types living in close proximity to each other. We accept speciation *within* types or kinds as the dormant or available genes express themselves in response to different environments or in a 'sorting out process (adaptive variability).

Most creation scientists would have no difficulty in allowing a single or very few 'kangaroo' kinds speciating by peripheral isolation—even to the point of possible inability to reproduce with the parent stock. This barrier to successful reproduction may be due in part to the genetic load—mutations which may affect the possibility of being interfertile, but nobody really knows as Carson, (1975) admits "The origin of the genetic basis of species differentiation is an important unsolved problem of evolutionary biology." No vertical evolution is involved and all the species, subspecies or races only reflect the different expressions available *within* the total gene pool.

In short, geographic distribution and endemic species are inconclusive in respect to evolution and creation.

Thermodynamics

On page 6 McGowan questions our concept of a perfect creation which is disintegrating. He needs only to consult a copy of the Bible where the full description of how sin entered the world and brought with it disaster and death, not only to living things but also to the universe itself. (Genesis 3:3-24 and Romans 8:20-22).

McGowan goes on (pp. 6-11) to ridicule the creationist position in respect to the second law of thermodynamics. He comments that this law only applies to 'closed' systems and implies that energy alone is sufficient to ensure vertical evolution. However to achieve upward complexity he needs not only energy, but a high level of input of genetic information and *organization*. Anyway, where in the world can we find these mysterious 'closed' systems? As far as science can tell,

everything on this Earth interacts with everything else. Properly closed systems appear not to occur in nature, whether in geology, chemistry or biology.

Lack of Transitionals

On page 13, McGowan flatly denies the fact of the non-existence of transitionals, both at the species level and in the major categories. Apparently he has never read Eldredge (1980, p. 50) who wrote that:

... the apparent lack of progressive change within fossil species has been ignored or else the evidence—not the theory—has been attacked and—
... it is time to reexamine evolutionary theory itself.

Other senior world experts who admit openly to the absence of major transitionals are Patterson (1979) and Gould (1980). Gould said "... the absence of fossil evidence for intermediate stages between major transitions ... has been a persistent and nagging problem for gradualistic accounts of evolution."

Gould and Eldredge (1977) stated that smooth intermediates between Bauplane (different forms) are "... almost impossible to construct ... there is certainly no evidence for them in the fossil record. Curious mosaics like *Archaeopteryx* do not count."

Mark Ridley of Oxford University (1981) wrote:

(People) think that the main evidence for evolution is the gradual descent of one species from another in the fossil record ... the fossil record (however) is useless for testing between evolution and special creation.

D. S. Woodruff, (1980), reviewing a book on evolution by his friend Steven Stanley, openly admitted: "... but fossil species remain unchanged throughout most of their history and the record fails to contain a single example of a significant transition."

Quotes like these could be recounted by the dozen but many evolutionists are not so frank even though they are quite aware of the lack of major transitions. In many cases some evolutionists are prone to mistaking lateral speciation within types for vertical evolution. Also I strongly suspect, after 15 years of study, that many fossils are wrongly classified as being separate types when in fact they may be only variations within a created kind. Despite McGowan's claim on pages 14-15 that "Our evidence is historical," i.e., the record of the fossils and the rocks, the quotes above, especially the one by Mark Ridley, flatly contradict McGowan.

The Problem of Species

On page 17, McGowan says the yardstick of a species is the aspect of ability to interbreed. What then does he make of a liger (the healthy offspring of mating between a tiger and a lion)? Are the two really one species? Creationists would have little difficulty in accepting that there is only one cat kind which diversified at the same complexity level so as to produce all cats—domestic, bob-cat, jaguar, leopard, lion, tiger, etc. Similarly with dogs, horses, pigeons and many others.

In view of the obvious difficulties in accurately defining extant species, how then would McGowan propose to give clear definition to fossil species where the interbreeding factor is completely unknown? By morphology alone? The problem is the same for both

creationists and evolutionists and this even extends to genera. I would suggest that the level of classification at which we might find more accuracy of definition would be as high as the family taxon, at which level the blurring which is often found with species and genera largely disappears. Even then there is no guarantee of 100 percent accuracy and the plain truth is that nobody can scientifically equate humanly devised taxa with created kinds.

Speciation and Allopatry

On page 22 of his book McGowan admits that Darwin could not find a single example of gradual evolutionary sequences and therefore he has decided that the modern punctuated equilibria (PE) model fits the fossil record better—this is stasis over long periods with sudden rapid evolutionary bursts. This idea is often referred to by evolutionists as allopatry which means that small, isolated portions of a mainstream population undergo rapid evolution while the parent species continues unchanged for long periods. Unhappily for evolutionists, this theory is severely flawed (Mehlert, 1982). Firstly allopatry is firmly based on *missing evidence* — the lack of transitionals, and it is only a hypothesis invented to account for that missing evidence. I know of no other scientific theory which is based on something that is missing.

As I showed in my 1982 paper, if allopatry had occurred in the same geologic sequence, we should find a mixing of the mainstream species and the peripheral newly-evolved species. If allopatry occurred away from the geologic area of the mainstream species then we should find countless cases of contemporaneity of the two forms which would play havoc with the time scales and fossil sequences of the geologic column, and with fossil correlation. I put my case against allopatry, with illustrations, to Tom Kemp of Oxford University Museum. In his personal reply dated October 20, 1982, Kemp admitted that:

If either of your two illustrations could be shown to apply to known fossils, then we would know a little more about evolution. However, and *this is the whole problem*, (emphasis mine), neither of them can be seen.

Kemp then went on to blame the worn-out excuse of the imperfection of the fossil record, apparently oblivious of what he had just conceded! Of course neither of my illustrations could be found and never will be because it did not happen that way; which was exactly what I was demonstrating. Kemp finished by stating "Unfortunately, the absence of data (fossil transitions), being negative evidence, does not permit us to distinguish between the two." (creation and evolution.)

What more could I ask than the above statement by an avowed evolutionist? A further point to remember is that for many years we were taught that evolution proceeded so slowly that we could not detect it; now the story is that evolution occurred so fast that there was not enough time for the rocks to record the transitions! Without allopatry, punctuated equilibria is as dead as the proverbial doorknob. McGowan's comment (p. 34) that stasis is in perfect accord with modern evolutionary thinking is remarkable because it is only since the undeniable fact that the missing transitionals has been widely but grudgingly acknowl-

edged, that PE has become respectable!

McGowan does claim (p. 23) that there are a few gradual sequences but says that they are the exceptions; however he fails to give actual examples. It should be noted that blaming the imperfection of the geologic record is now being increasingly abandoned and this is a further reason for acceptance of PE. Actually of course the fossil record is now remarkably rich and more and more paleontologists are taking the record at face value. (Intense creationist pressure over the last 20 years has also contributed to this resort.)

McGowan also implies that the extremely wide range of variability within some species is somehow a problem for creationists and he seems to believe that we insist on absolute fixity of created species. Actually of course, most species and types require a considerable variability factor in order to cope with environmental fluctuations, e.g. if the Creator allowed humans, for instance, to be only capable of existing within a temperature range of 70 to 80°F, no human could survive an African summer or a Canadian winter.

Living Fossils

On pages 26-27 McGowan makes fun of the creationist attitude towards living fossils. He lists many cases from the Coelacanth to horseshoe crabs, and says that if an animal is already adapted to an environment and that environment does not change even over 500 million years, there is no selection pressure to cause change. Can he be serious? In most of the cases cited by McGowan, *close relatives* of the living fossils have allegedly changed enormously. A good example is the Crossopterygian fish, the rhipidistian Eusthenopteron which made it all the way through to amphibian, reptile, to bird and mammal, while its close cousin the Coelacanth, *in the same environment*, retained its form, with little or no change right up to today—280 million years with no environmental changes—unbelievable! Why would so many fishes allegedly undergo repeated change while others remained unchanged in the same environment? It is therefore clear that 'living fossils' are an embarrassment to evolutionists, not to creationists, because change is limited variation *within* types but not between types.

McGowan (p. 29) reverts briefly back to the peripheral evolution idea and cites the case of fish separated from each other in two African lakes for 3500 years—Lake Nabugaboo and Lake Victoria. Most species common to the lakes are not affected but five fish species are now endemic to Lake Nabugaboo only. To me this is trivial and is a poor example for evolution, as we creationists know that speciation, sorting out, and the arising of breeding barriers between very closely-related species does not mean that vertical evolution has occurred. The fact is that no increase in genetic complexity is involved.

An excellent paper on the sorting out process involved in the origins of the human races is given by Mackay (1984). Mackay points out that the whole genetic variability in modern races could easily have been present in just one pair of humans of middle brown hue.

An Analogy

On page 33, McGowan attempts to minimize Alfred Wallace's problem with evolutionary theory. Wallace

wanted to know, quite rightly, why a 'primitive' native with little or no culture possessed brain power of equal capability to the people of higher civilizations in Europe and North America when they did not need such great capabilities. How could natural selection account for a human being with brain power far in advance of his needs? McGowan says the native *did* need that great capability to survive. How then did so-called *Homo erectus* survive with only about 1000 cc brain capacity compared to today's average of about 1350 cc? McGowan gives a bad analogy—a radio set can tune in to several stations but we only use one frequency at a time. I am afraid radio sets are not equatable with human brains—Wallace was, and still is, right in his objection.

Major Change—Macroevolution

By page 34 McGowan is ready to ask whether the accumulation of small changes is enough to account for macroevolution and the appearance of radically new and complex forms. He discusses fully such things as the shuffling of chromosomes, cross-overs and various types of mutation. For him, the reshuffling of existing genetic material, available in such large amounts within types, plus 'beneficial' mutations is the major factor. He gives examples of the grass *Agrostis tenuis* and the sweet vernal *Anthoxanthum odoratum*. *A. Tenuis* can tolerate lead and copper contamination in the soil and *A. odoratum* is tolerant of zinc contamination. However some varieties of these plants cannot tolerate such poisons and McGowan believes the ones which can, have evolved resistance to such poisons by mutations. But this is like the alleged evolutionary resistance to DDT by bugs and flies—some had the genetic ability to be resistant to sprays and insecticides right from the start and some did not. (In any case this is still rather trivial when compared with the major puzzle—macro change.)

The genes which confer the immunity against the lead and zinc were present right from the start but the reason for their existence is probably related to some other factor and the immunity is fortuitous. Some of the varieties of the grass and the sweet vernal apparently have lost this portion of the genome. Unless *all* of the genetic material is expressed (and only a fraction actually is), then we cannot tell whether the total genome had all the necessary 'advantageous' or 'disadvantageous' material; i.e., the total created genome may have had variability of considerable range and no mutations may have been involved. Certainly McGowan has not demonstrated vertical evolution and that is the burning problem for him.

On the subject of the supply of new genetic material necessary for evolution, Leslie, (1984) is most informative. He makes a skilled and technical analysis of mutational effects on DNA. There is no escaping the hard and central fact—DNA, by mutational events cannot evolve to a higher degree of information content and order.

Pierre Grasse, (1977) the most outstanding French zoologist, is not at all impressed by mutations. Even though he is an evolutionist, Grasse is scathing when he refers to mutation. He writes:

A single plant, a single animal would require many thousands of lucky (mutations), all at the right time in exactly the right places. Thus miracles

would become the rule . . . there is no law against day dreaming, but science must not indulge in it. (p. 103).

Later on page 107 Grasse says, "To insist . . . that life evolved in this fashion is an *unfounded assumption* and *not in accordance with the facts.*"

Francis Hitching, a modern British science authority attacked the mutation theory in 1982. He pointed out (pp. 55-61) that *resistance to change* is a central and leading function in genetic systems and is known as genetic homeostasis.

To put forward sickle-cell anemia as McGowan does, as evidence for evolution is rather pitiful—it is so trivial and questionable when we are looking for the cause of macroevolution. Evolutionists are quite well aware that mutations are harmful and do not supply increased DNA complexity, but they are stuck with mutations because they have nothing else. As for the cause of macroevolution, McGowan is unable to supply answers, but he consoles himself with the observation that evolutionists may disagree about mechanisms but not about the fact (!) of evolution. McGowan fails to supply anything more than trivia.

The Beginning of Life—How Did it all Start?

McGowan (p. 42) is ready to tackle another fundamental puzzle—how did life evolve from non-life? At this point I must give him some credit—he attacks the 'numbers game' (his words), used by creationists. As he states, using numbers and 'odds against' in refuting chance evolution of primitive living systems is not reliable. Numbers and odds, in my opinion are largely irrelevant because chemicals and various compounds do not react or interact equally with one another. In fact, many chemicals interact selectively, but I feel that both sides are missing the point—life itself, (or the life force) although bound up with chemistry and molecule formation, is *above* the physical material on which it rides. By that I mean that even if future scientists, *using their creative powers* ever do succeed in assembling some sort of cell, it will be a dead one—like an automobile engine which remains lifeless until the ignition is engaged. The individual components, although vital are not in themselves alive; they lack the life-force which living cells pass on to each other down through time.

McGowan admits that we can never know how life originated (p. 45), but he *assumes* that the early earth had a reducing (oxygen-free) atmosphere, in order that the right conditions were present. However, this assumption is almost certainly wrong as shown by Hoyle (1978). He claims that the early atmosphere was not a reducing one. The early earth was dry and barren and had an oxidizing environment, and the alleged 'primeval soup' could not have formed. Hoyle states that in accepting the primeval soup theory, science has replaced the religious mysteries of the origin of life with "equally mysterious scientific dogmas."

Dr. Steven Austin published an interesting paper which includes evidence of a non-reducing early atmosphere (1982). But even if oxygen were not present there is still a great problem. McGowan refers to the experiments of Urey, Miller and Fox who made an 'atmosphere' similar to what they *thought* may have been in existence at the time of the supposed origin of

life. These experimenters did produce certain amino acids, which are not living things, and 'proteinoids,' but each one had to carefully make use of mechanical means *to prevent nature taking its full course*; i.e. Miller's apparatus included a trap to separate the amino acids immediately to stop them being broken down *by the same atmospheric conditions which produced them.*

Further, McGowan's claim (p. 46) that a virus is a thin line between life and non-life is absurd. A virus cannot reproduce itself and is totally inactive outside a living cell. Even then it is rather the cell which reproduces the virus, using the DNA mechanism of the virus itself.

What does British scientist Andrew Scott say about the origin of life? After technically examining the enormous problems inherent in a mechanistic origin of life, Scott concludes by admitting (1985):

. . . researchers interested in the origin of life sometimes behave a bit like the creationist opponents they so despise—glossing over the great mysteries that remain unsolved and pretending they have firm answers that they have not really got.

Fred Hoyle, a life time evolutionist had to abandon his previous ideas and accept that there must be a Creator even though he is not totally happy about his conversion (1981b). It is clear that evolutionism is on really barren ground when it postulates that life arose by accident from non-living matter.

Noah's Ark and the Flood

McGowan reserves much sarcasm for his attack in chapter five on the ark and the Flood—neither is historical and he wants to know where all the water came from and where it went after the Flood. If he glanced at a copy of the Bible he would find that it rained for 40 days and nights. (At one inch per hour, that would total 960 inches or 80 feet of rain!) Also Scripture tells us that the great fountains of the deep gushed forth. We have ample reason to believe that an enormous amount of juvenile water came from the under the Earth's surface and probably supplied more water than the rain. After the Flood the waters filled oceans which were probably much larger and deeper than they were pre-Flood. Also the ice-caps hold vast amounts of water and if McGowan did his sums properly he would find that if all the continents and the sea floors were leveled out, the Earth would be *completely covered* by water about 0.75 mile deep.

On page 55 McGowan complains that the ark would have had to carry most marine creatures because—"there would be too much fresh water which would destroy most marine forms." Exactly! That is what did happen which is why the world's fossils are overwhelmingly of marine origin. As for the alleged lack of space on the ark, he forgets two more things—1. Noah could have taken aboard mostly young creatures and 2. There is no reason why all or most of the life forms on the ark could not have been in a state of hibernation. This idea in the past has been ridiculed by evolutionists as a creationist 'copout'—another miracle. Well why not—only recently a noted evolutionist, William Clemens of the University of California argued at the 98th meeting of the Geological Society of

America that dinosaurs survived a huge catastrophe 65 million years ago by hibernation! This news item appeared in 1986 *Bible Science Newsletter*, 24(6):17.

Clemens' argument rests on the thesis that the plant-eating saurians found in the Arctic survived the long, dark times after the amount of vegetation was greatly reduced and the only solution was that the animals hibernated.

With regard to McGowan's argument (p. 58) that after the Flood it would be a long time before plant life regenerated to provide food, we do not know how long the ark rested on dry ground before Noah and the animals emerged, but it was at least several months (Genesis 8:5-14). Many seeds, grasses, plants and other forms of vegetation are quite resistant to long periods of inundation (Howe, 1971). Carnivorous animals would not have been able to eat much meat for a considerable time, but *all* carnivores can live for awhile on a vegetarian diet. There may have been quite a few rotting carcasses around also. Noah certainly would have had ample supplies of various foods to last the young animals and birds etc. until natural vegetation returned.

Flood Geology

The time is now opportune to return to the subject of fossil succession—Flood or uniformitarianism? McGowan (pp. 59-67) makes light of the problems of historical geology and delights in ridiculing Morris and Whitcomb's Flood geology model. He asks why do we find new types at certain places in the column at their *first* appearance. That is, if the Flood model is right, why do we not find 'advanced' reptiles at the same level as 'primitive' ones—why are not sluggish animals with few escape or mobility facilities found much lower down the column?

This is indeed a subject in itself. To be brief, the main problem as many creationists see it, is the concept of the geologic column. The column is part physical (actual, in situ), but is largely conceptual, and the evolutionary concept constantly overrides the physical part. The correlation of fossils, especially on a world-wide basis is an *art*, often based on unknown factors such as the uncertainty of just when and for how long any given index or other fossil existed. How is it *known* that the (estimated) time span of an index fossil is the same in all parts of the world? How about skipping fossils?—those which appear in one epoch then disappear for many millions of years only to "return" much later in the column. What about living fossils? How can anyone be certain of the exact 'first' or 'final' appearance of an organism?

Why is a tree branch, dated by the Carbon 14 method of Berger of UCLA at 12,800 years BP, found embedded in so-called Cretaceous rock which is allegedly over 70 million years old? (J. Morris, 1981, pp. 62-3). Why are the understrata of the earth (especially in areas like the Grand Canyon which I examined in 1983) so overwhelmingly parallel without the usual signs of erosion which should be evident if they span many millions of years?

McGowan has obviously never bothered to study the recent works of creationist John Woodmorappe who has supplied some excellent technical answers to uniformitarianism in his published works, especially in

regard to the question of the general fossil succession found broadly in the rocks. (Woodmorappe, 1978, 1980, 1981, 1982, 1983).

The uniformitarian/evolutionary geological paradigm is only valid if the column is as precisely and exactly physically correct as historical geologists would have us believe. While some degree of fossil separation and correlation can be useful in localized areas, the *assumption of evolution*, when correlation is attempted over far-flung areas hundreds or thousands of miles away, overrides all else and makes global determinations quite suspect. Woodmorappe's works show the serious flaws and subjectivity inherent in global correlation of fossils and at the same time provide a catastrophic basis for evaluating the fossil record.

Before concluding this section I must answer McGowan's challenge as to how creationists explain the 'immense time' needed for the formation of the Grand Canyon sedimentary rocks. The plain *fact* of the great number of paraconformities and parallelisms found in the Canyon is strong evidence in favor of *short-term* deposition. If many millions of years separated these various strata, how do evolutionists explain the anomaly of a river (the Colorado) taking only a few million years to cut through some 8,000 feet of sediments which supposedly took up to 500 million years to be laid down, when those same strata exhibit no sign of erosion themselves. The obvious and simplest explanation is that these sediments were laid down in too brief a time span to allow erosion to take place, which means that the still soft sediments were scoured out by a large body of moving water much bigger than the the present-day Colorado, and not very long ago.

Radiometric Dating and the Age of the Earth

McGowan (pp. 83-5) asserts that although there are some anomalies, the broad majority of radiogenic dates support the uniformitarian position. My answer is that it is common knowledge *within* the scientific community that any dates which are at variance with the evolutionary viewpoint are rejected as anomalous. An excellent example is given by evolutionist John Reader (1981, pp. 206-9). He reveals that the first radiometric dates for the rocks at Koobi Fora where Richard Leakey's famous skull KNM ER1470 was found, yielded an age of 221 million years which was *rejected as impossible*. (The ruling theory is that Man did not evolve until a couple of million years ago.) Further samples were then examined by Miller and Fitch of Cambridge University and the dates given by the fresh tests ranged from 2.4 to 2.6 million years, which reasonably agreed with Leakey's opinion, based on fossils and geology. However a paleontologist named Cooke did not agree with the 2.6 million year result because he complained it did not agree with his estimates *based on pig fossils in the area*.

G. Curtiss of the University of California at Berkeley (Reader, 1981, pp. 206-9) performed some tests using the potassium/argon method (K/Ar) and announced a date of about 1.8 million years. The evolutionist-orientated ideas prevailed and, not entirely to Richard Leakey's satisfaction, a date of about two million years was stipulated. But the controversy continued when Miller and Fitch (Reader, 1981, pp. 206-9) declared that they could not have been so wrong and further samples of rock were flown to Cambridge and tested

in the late seventies. An incredible spread of ages ranging from 290,000 years to 19.5 million years was obtained. Needless to say these were rejected by the scientific community and only a date that corresponded to morphologic and geologic estimates was accepted. One is therefore justified in having considerable skepticism when it is known that even radiometric dating must give way to evolutionary preconceptions.

Reader conceded the great difficulties inherent in K/Ar dating and wrote that very often the evidence is contradictory and that scientists often have to rely on geologic or morphologic methods; i.e., in the final analysis the evolutionary scenario rules. What more need be said? When science can absolutely prove that the following assumptions connected with radiometric dating are always valid, then their case may be more believable—

Assumption 1.

There were no primordial daughter isotopes present at the time of the genesis of the rock.

Assumption 2.

The system is and always was closed. (In reality, minerals in the rocks are subject to contamination by leaching, mixing and many other spoiling factors.)

Assumption 3.

The decay rates have never varied.

There are some other assumptions involved but these three are vital and not subject to absolute proof.

Finally, Woodmorappe (1979) has listed over 300 cases of seriously discordant radiometric dates and has also presented strong evidence that many other badly discrepant dates are not published.

Oil and Hydrocarbon

Like all evolutionists, McGowan (p. 80) assumes that oil formation requires massive time periods and this belief is now almost a dogma. We are told that oil is the product of long decayed marine and other life forms and took millions of years to form. However, Tom Gold of Cornell University has published a recent paper which seems to provide a very strong case for an *inorganic origin* for oil—by outgassing from within the pressure cooker and heat deep in the earth's interior and that organic traces in most oils are due to contamination (Gold, 1986). Gold's views are largely based on the recent discovery that the Solar System contains enormous amounts of *naturally occurring* hydrocarbons such as methane.

Gold also acknowledges that most geologists have long abandoned the idea that the earth formed as a ball of liquid rock. He says now that 'we know' that the earth accumulated from solids. How fickle are the theories of scientists!

Coal

Coal does not require millions of years to form and Snelling (1986, pp. 20-1) writes that modern research indicates it may only require one or two feet of vegetation to make one foot of coal, i.e., if coal also is of organic origin. However it too may well be of inorganic origin—massive amounts of natural hydrocarbon, similar to oil, formed under heat and pressure. Not all coals yield evidence of organic plant material, even under the microscope.

Further strong evidence of a young earth is presented by Dr. Thomas Barnes who shows that the

available data on the decay in the earth's magnetic field indicates a maximum age of less than 20,000 years. The counter-argument by evolutionists is that the reversals of the field over time nullify the original arguments of Barnes (1981). However, J. A. Jacobs (1980, pp. 105-6) urges caution on the alleged self-reversals of magnetisms in the rocks and says it is a virtually impossible task to prove the alleged reversals. Dr. Barnes' case therefore seems very strong and he has published recently a paper indicating that his theory is now confirmed (Barnes, 1986).

Dr. Robert Gentry's published works on pleochroic halos (1965, 1966, 1967, 1973, 1974, 1976) indicate that the earth was formed cool and has only a young age. Gentry has found that, because Polonium 218 has a half life of only three minutes, the simple evidence of the halos is that the basement rocks of the earth were formed solid. Furthermore the existence of the halos in other minerals give equally startling evidence of a young earth. The halos prove that either the rocks appeared instantly (less than three minutes) or if they were once molten they would have had to cool within that three minutes. It is regrettable that McGowan apparently has never studied any of Gentry's major works, because Gentry, formerly an evolutionist, was converted to creationism because of the incontrovertible evidence of the radioactive halos and his research is of such high quality that even orthodox physicists have been unable to find fault with his work, as admitted by several experts such as Talbot (1977).

In closing this section on radiometric dating and the age of the earth, I must mention the works of Arndts and Overn in the field of isochrons (1981a, 1981b, 1981c). They have contributed very meaningfully to the growing body of scientific creationist literature on the subject. When uniformitarians find dates which seem to fit their theory, they accept them, but when their methods yield 'impossible' or discordant dates, they say the samples must have been contaminated or at least partially mixed. Arndts and Overn show quite dramatically that turbulent mixing in a *recent* catastrophe affords an excellent alternative explanation for the linear array of isotope data (isochrons). The technical data supplied by the authors challenges strongly the conventional explanations and are valid refutations of evolutionists' claims that their assumptions inherent in radiodating are valid. As usual, McGowan seems totally ignorant of the large and recent body of technical creationist works. The creation science case (positive evidence as well as anti-evolution evidence) now covers virtually every field involved in the creation/evolution battle and if the orthodox writers are not conversant with the high level of creationist scholarship attained lately, then out of date critiques of creation science are of little value.

Cosmic Dust

McGowan (p. 87) attacks creationist views on the lack of meteoritic and cosmic dust on the earth but notably fails to mention the missing dust on the moon where there are not atmospheric reasons for dispersing such dust. Even the most conservative evolutionist must surely wonder at the fact that after an alleged time span of over four billion years, the astronauts found only about an inch of dust on the lunar surface.

The Universe—Size, Age and Structure

I wish to make some observations about his views that the expanding universe, the distance of far galaxies, etc., are fatal to the creationist case for a young universe. McGowan (pp. 88-9) uncritically accepts the majority view of the age and structure of the galaxies, stars and the universe itself. Our own sun, of course, is a quite ordinary star and I wonder whether McGowan has ever heard of the very sound conclusions of a minority of his fellow evolutionists and of certain creationists that our sun is not necessarily old at all and that a very good case exists for the sun's energy, heat and light to be the result of solar contraction and not thermonuclear fusion (Eddy, 1979). The shrinkage in the solar diameter (about five feet per hour), has been carefully observed and measured over a considerable period of time and the massive pressures from the contraction are a sufficient cause for the enormous output of the sun. Steidl, (1979, pp. 93-6) has pointed out the lack of evidence for the emission of neutrinos in sufficient numbers from the sun, which we would expect to see, as a result of the fusion process. These energetic neutrinos which would be a necessary by-product of fusion, are lacking in sufficient numbers so that it appears that the evolutionary postulate that hydrogen nuclei are constantly converting to helium along the pathway is denied by the very lack of evidence. Steidl observes that Davis, of the Brookhaven National Laboratory has been diligently searching for these elusive neutrinos for many years with an elaborate device, but has been virtually unsuccessful. Davis was so concerned by this result that he has called on astronomers to suggest answers, but none have been forthcoming. Steidl states that the obvious reason the neutrinos have not been detected is that the sun has not been converting hydrogen into helium.

If Steidl is right, and the evidence supports him, there is no necessity to ascribe a past history of billions of years for the sun's alleged formation, evolution and development, and therefore there is not a single compelling reason to deny that the sun may be only a few thousand years old. Steidl also has a chapter on problems with the alleged evolutionary formation of the solar system (pp. 101-23). Every mechanistic theory faces insoluble problems which defy solution. He lists 13 facts about the solar system including the sun's small magnetic field; different planets have different chemical composition; the fact that two planets (Venus and Uranus) rotate in the opposite direction to all the others; some of the planetary moons rotate in the 'wrong' direction; and the fact the planets are divided into two groups—small terrestrial, (Earth, Venus, Mars and Mercury), and large, (Jupiter, Saturn, Uranus and Neptune). These hostile facts have been puzzling orthodox astronomers for many years and the 13 problems raised by Steidl are so great that it is virtually certain that planets could not and did not evolve—if the reader doubts this, let him study the current scientific literature and see the enormous debate that rages continually among the experts and the answers have still not been found.

I now turn to McGowan's charge (p. 89) that since we can see the light from galaxies up to six billion and more light year's distance, creationists must be wrong in their belief that the universe is young; however he is

apparently quite oblivious of several ways by which we can see so far away (and therefore back in time) and still have a universe of less than 10,000 years age. The evolutionary big-bang expanding universe is based on two or three main premises—(1) The Doppler or doubling effect; that is the shifting of the spectrum of stellar light towards the red end of the scale, indicating that, according to Hubble's Law, the farther away a galaxy is, the more noticeable is the redshift and that means that the farthest galaxies are speeding away from us and each other at speeds approaching the speed of light; (2) The speed of light has always been constant—approximately 186,000 miles per second. (3) The remains of the big-bang should be evident as a background radiation like a black body radiating at about 3 K, as has been observed.

However each of the above three tenets are susceptible to other and better explanations and in fact the whole idea of a big bang is under challenge from something quite simple—the Big Bang Paradox—according to which authority you believe, the universe is either 10 or 20 billion years old. If we can see galaxies 6 and more billion light years away, and therefore that old in time, we should be seeing the objects much closer to the original alleged big-bang and we would expect to find the oldest galaxies and quasars more clustered together. However we find just the opposite with galaxies and quasars scattered in *all* directions and with indescribable distances between them. There is no sign whatever that 6+ billion years ago the material of the universe was clustered close together around the central point of the big-bang explosion and therefore the theory appears to be wrong.

Further, there is now strong evidence that Hubble's constant is very much in error (Hanes, 1979), (Huchra, Aronson and Mould, 1979). The new constant is now believed to be 95km/sec/Mpc, as against the 'incorrect' figure of Hubble's—50km/sec/Mpc, which would mean that the universe is only half the size and half the age previously considered as fact. Also Halton Arp of Mt. Palomar Observatory has found gross contradictions between the distance and the amount of the observed redshift of many quasars (Ferris, 1981; Kaufmann, 1982). This means that the redshift may be virtually useless for calculating the recession speed of distant galaxies and, of course, would destroy one of the main pillars of the expanding universe idea.

We must therefore look for other reasons for the phenomenon of the redshift and Hovis (1984) believes the Doppler effect is mainly due to the increase of entropy, as a consequence of the second law of thermodynamics, on the nature of the photon. Akridge, (1982) finds that photons traveling for vast times (thousands of years) must remain at *constant* energy or the observed redshifts to be Doppler shifts and this means the distant galaxies are receding at great velocities. But *at the same time* free photons traveling over vast times must *decrease* in energy so that the 3K photons detected now can be identified with the original high energy big-bang photons. These contradictory requirements on the photons lead to the great *internal inconsistency* of the big-bang expanding universe—because the universe has 'expanded' since the big-bang, the photons from a galaxy 100 million light years away will have increased their wave length by

.05 percent. However, that .05 percent wave length increase must also be attributed to the Doppler effect (the shift to the red). We therefore are left with only one alternative—if the wavelength increase of .05 percent is *entirely* due to the expansion of the universe, then the Doppler effect must be in reality nil! Because all of the redshift is required to indicate *distance traveled*, there is nothing left for the Doppler effect in relation to indicating the velocity of the light source. In turn this means the distant galaxies are not receding and there is no expanding universe and therefore there was no original big-bang! Akridge's technical paper is highly recommended for further study.

Another non-creationist researcher who disagrees with the accepted redshift interpretation is Victor Hobson of Adelaide, Australia who did most of his work at Rugby College, England. Hobson (1972, 1974) has produced a model of a static, nonexpanding universe in which quanta of energy (light photons) are absorbed by the 'gravity field,' lowering their energy and emitting a red recession. The reduction in energy is linear with distance and is the direct cause of the redshift. This is yet another blow against Hubble's constant and its interpretation in respect to an expanding universe. Hobson has a no-beginning, no-end universe but differs from the famous and now abandoned Hoyle eternal universe in that the Hobson model is self-sustaining and 'feeding' on its own energy, while Hoyle's model required a mysterious constant creation of matter from 'somewhere.' Hobson's eternal, self-sustaining, non-expanding universe is quite compatible with his reasoning on the redshift, but as he has to allow for individual galaxies to eventually die a 'heat death,' he fails to explain why, if his universe was infinitely old, it is not cluttered up with an infinite number of dead galaxies. His quantum gravity field can certainly 'soak up' the energy lost by the traveling photons of light and could theoretically manufacture stars and galaxies but eventually the heat death factor in individual galaxies would bring the universe to an end.

I have mentioned these various theories about the form and structure of the universe not to prove any particular one is true, but to show how little evolutionary astronomers and physicists really know about the subject. As I stated earlier, if we leave out the Creator before we start, then endless difficulties arise with attempts to explain the universe by mechanistic, materialist theories. To illustrate my point, a recent paper by Chown and Gribbin (1986) shows that nobody knows by scientific methods the age or even the size of the universe. See Williams (1970).

Continental Drift

As usual, McGowan uncritically takes the 'fact' of continental drift for granted, but there is no necessity whatever for any creationist to accept the theory.

In 1973 an interesting book was published, edited by the Indiana State University geologist, Bruce Moulton (1973, pp. 154-162). It contained a paper entitled 'Continental Drift and a Dynamic Earth' by John C. Maxwell who urged caution by all regarding the theory of drift. Maxwell pointed out some virtually fatal objections to the theory, including—

1. Underthrusting of the required magnitude should *initiate* compressive buckling of the crust, but

instead the associated oceanic downwarping reflects *passive* sinking and stretching.

2. The figure of the Earth departs sufficiently from the ideal ellipsoid of revolution to imply considerable strength and therefore a high viscosity *incompatible* with a convecting mantle.
3. The linkage of crust to mantle extending to depths of several hundred kilometers is difficult to reconcile with active upper mantle convection.

Maxwell writes "To the above *fundamental objections* may be added several others." (Emphasis added.) The worst of these is the 'impossibility of forcing thousands of cubic kilometers of light crustal rock downwards into heavier mantle rock.' He goes on to say that pileups of enormous amounts of oceanic sediments and basaltic rocks against the margins of continents with bordering young mountain systems should be found but they are not found, certainly not in the volumes required. This fact has puzzled a number of geologists and I predict their puzzlement will long continue while they hold to the theory.

William Corliss, a noted non-creationist researcher, (1980, p. 444) has this to say on the theory:

Continental Drift, once anathema and now enshrined, faces scores of technical objections. To illustrate one class of objections, it has been noted that many continents fit together well regardless of where they now 'float.' Australia, for example, locks well into the U.S. East Coast(!) Like evolution, Continental Drift seems to explain too many things too superficially.

Some serious critics of the theory are Oppenheim (1967), Meyerhoff and Meyerhoff (1972) and Wesson (1972). One of the foundation stones of plate tectonics and drift, paleomagnetism, is commented on unfavorably again by Corliss (1980, p. 746):

... the modern edifice of Global Plate Tectonics has been built largely upon the foundation of paleomagnetic data. This foundation, however may be seriously flawed due to: (1) self-reversal of rock magnetism; (2) self magnetism; (3) distortion of the magnetized sediments; and (4) external physical and chemical processes that may modify magnetic properties. Caution must be advised in accepting generalizations based on paleomagnetism.

Others, such as Owen, (1984) look to theories of an expanding earth to solve their problems. Owen comments:

I cannot offer any firm physical explanation of why the Earth is expanding. But geophysicists often conveniently forget that *nor can they* offer a firm physical theory to explain continental displacement. (Emphasis added.)

Lack of space prohibits the inclusion of much more powerful evidence against drift, which still has a sizeable minority of qualified opponents, including most Russian geologists. I close this section by quoting from the 1971 edition of Encyclopedia Britannica, under 'Paleontology,' page 139 "Much fossil evidence has been adduced for and against Continental Drift, but the evidence is *far from conclusive*." (Emphasis added.)

I believe that it was creationist pressure in the 1960's and 1970's that eventually forced the evolutionary

establishment to finally admit openly the great problem of the missing links, a problem which had been the trade secret of the paleontologists ever since Darwin. We must remember that creationism has made a great contribution to science by forcing evolutionists to be more honest and this is a very positive effect. We must also remember that modern evolutionary theory is not an established fact which has only one or two minor problems over mechanisms. The problems are *fundamental and serious* and as Michael Denton, (1985, p. 16) is forced to admit:

. . . nearly all (evolutionary biologists) take an ultimately conservative stand, believing that (the problems) can be explained away by making only minor adjustments to the Darwinian framework. In this book . . . I have tried to show why I believe that the problems are too severe and too intractable to offer any hope of resolution in terms of the orthodox Darwinian framework . . .

Like most other critics, Denton still apparently believes in some sort of evolution even though he cannot supply answers to the 'severe and intractable' problems, and I must therefore conclude that evolutionists believe in the theory in spite of the evidence, and not because of it.

References

- CRSQ—Creation Research Society Quarterly
- Akridge, R. 1982. The expanding universe theory is internally inconsistent. *CRSQ* 19:56-8.
- Arndts R. and W. Overn. 1981a. Pseudo-concordance in U-Pb dating. *Bible Science Newsletter*. 19(2):1-7.
- _____. 1981b. Isochrons. *Bible Science Newsletter*. 19(4):5-6.
- _____. 1981c. Proof of the validity of the mixing model. *Bible Science Newsletter*. 19(8):1-8.
- Austin, S. 1982. Did the early earth have a reducing atmosphere? Impact No. 109. Institute for Creation Research. El Cajon, CA.
- Barnes, T. G. 1981. Depletion of the earth's magnetic field. Impact No. 100. Institute for Creation Research. El Cajon, CA.
- _____. 1986. Earth's young magnetic age confirmed. *CRSQ* 23:30-3.
- Carson, H. L. 1975. The genetics of speciation at the diploid level. *American Naturalist*. 109(965):83-92.
- Chown, M. and J. Gribbin. 1986. Sizing up the universe. *New Scientist* 109(1501):30-4.
- Corliss, W. 1980. Unknown earth: a handbook of geologic enigmas. The Sourcebook Project. Glen Arm, MD.
- Davies, M. 1961. Paleontology: the graptolites. Cassell. Sidney, Australia p. 30.
- Denton, M. 1985. Evolution: a theory in crisis. Burnett Books. London.
- Eddy, J. A. 1979. Secular decrease in the solar diameter 1836-1963. *American Astronomical Society Bulletin* 11:437.
- Eldredge, N. 1980. An extravagance of species. *Natural History* 89(7):50.
- Ferris, T. 1981. The spectral messenger. *Science* '81. 2(9):66-72.
- Gentry, R. V. 1965. Pleochroic halos and the age of the earth. *American Journal of Physics*. 33:878.
- _____. 1966. Variant pleochroic halos and extinct radioactivity. *American Geophysical Union Transcript*. 47:421.
- _____. 1967. Extinct radioactivity and the discovery of a new pleochroic halo. *Nature* 213:487.
- _____. 1973. Radioactive halos. *Annual Review of Nuclear Science* 23:347.
- _____. 1974. Radiohalos in a radiochronological and cosmological perspective. *Science* 184:62-6.
- _____. 1976. Radiohalos in coalified wood: new evidence relating to time of uranium introduction and coalification. *Science*. 194:315.
- Gish, D. T. 1973. Evolution: the fossils say no! CPL Publishers. San Diego.
- Gold, T. 1986. Oil from the center of the earth. *New Scientist* 110(1514):42-6.
- Gould, S. J. 1980. Is a new and general theory of evolution emerging? *Paleobiology* 6:127.
- Gould, S. J. and N. Eldredge. 1977. Punctuated equilibria: tempo and mode of evolution reconsidered. *Paleobiology* 3:146-7.
- Grasse, P. 1977. Evolution of living organisms. Academic Press. New York. pp. 88-107.
- Gribben, J. 1986. Cosmologists move beyond the big bang. *New Scientist* 110(1511):30.
- Hanes, D. A. 1979. A new determination of the Hubble constant. *Monthly Notices of the Royal Astronomical Society* 188:901-9.
- Hitching, F. 1982. The neck of the giraffe or where Darwin went wrong. Pan Books. London. pp. 55-61.
- Hobson, V. 1972. The unified quantum field theory. Austaprint. Adelaide, Australia.
- Hobson, V. 1974. The eternity theory. Romas Press. Worcester, England.
- Hovis, J. B. 1984. A reinterpretation of the stellar radial Doppler redshift. *Contrast* 3(6):1-2.
- Howe, G. F. 1971. Seed germination, sea water and plant survival in the great Flood. Lammerts, W. E. (editor). Scientific studies in special Creation. Baker Book House. Grand Rapids. pp. 285-98.
- Hoyle, F. 1978. Life cloud. Dent and Company. London. pp. 25-6.
- _____. 1981a. The big bang in astronomy. *New Scientist*. 92(1280) 521-7.
- _____. 1981b. There has to be a God. *Courier-Mail*. Brisbane, Australia September 20. p. 37.
- Huchra, J., M. Aronson and J. Mould 1979. The universe is smaller and younger than estimated. *Courier-Mail*. Brisbane, Australia. November 16. p. 7.
- Jacobs, J. A. 1980. The earth's core and geomagnetism. MacMillan. New York. pp. 105-6.
- Kaufmann, W. 1982. The world's most controversial astronomer. *Omega Science Digest*. February. pp. 74-127.
- Leslie, J. 1984. Mutation and design in the genome. *Creation Ex Nihilo* 6(4):38-45.
- Mackay, J. 1984. The origins of the races. *Creation Ex Nihilo* 6(4):6-9.
- Mehlert, A. W. 1982. Flaws in allopatry. *CRSQ* 18:233-4.
- Morris, H. M. 1974. Scientific Creationism. CLP Publishers, San Diego.
- Morris, H. M. and J. Whitcomb. 1961. The Genesis Flood. Baker Book House. Grand Rapids. pp. 80-8.
- Morris, J. 1981. Tracking those incredible dinosaurs and the men who knew them. CLP Publishers. San Diego. pp. 62-3.
- Meyerhoff, A. A. and H. A. Meyerhoff. 1972. The new global tectonics: major inconsistencies. *American Association of Petroleum Geologists Bulletin* 56:269-336.
- Moulton, B. 1973. Continental drift and a dynamic earth: readings in earth science. W. H. Freeman. San Francisco. pp. 154-62.
- Oppenheim, V. 1967. Critique of hypothesis of continental drift. *American Association of Petroleum Geologists Bulletin* 51:1354-60.
- Owen, H. 1984. The earth is expanding and we don't know why. *New Scientist* 104(1431):27-9.
- Patterson, C. 1979. Personal communication to Luther Sunderland in 1986. *Bible Science Newsletter* 18(8):8.
- Reader, J. 1981. Missing links. Collins. London. pp. 205-8.
- Ridley, M. 1981. Who doubts evolution? *New Scientist*. 90(1259): 830-1.
- Scott, A. 1985. Update on genesis. *New Scientist*. 106(1454):30-3.
- Snelling, A. 1986. Science for the layman. *Creation Ex Nihilo*. 8(3):20-1.
- Steidl, P. 1979. The earth, the stars and the Bible. Baker Book House. Grand Rapids. pp. 193-205.
- Talbot, S. L. 1977. Mystery of the radiohalos. *CRSQ* 14:103-7.
- Wesson, P. S. 1972. Objections to continental drift and plate tectonics. *Journal of Geology* 82:185-97.
- Williams, E. L. 1970. Is the universe a thermodynamic system? *CRSQ* 7:46-50.
- Woodmorappe, J. 1978. The cephalopods in the creation and the universal deluge. *CRSQ* 15:94-112.
- _____. 1979. Radiometric geochronology reappraised. *CRSQ* 16: 102-48.
- _____. 1980. An anthology of matters significant to creationism and diluviology: report 1. *CRSQ* 20:9-19, 227.
- _____. 1981. The essential non-existence of the evolutionary uni-

formitarian geologic column: a quantitative assessment. *CRSQ* 18:46-71.

———. 1982. An anthology of matters significant to creationism and diluviology: report 2. *CRSQ* 18:201-23, 239.

———. 1983. A diluviological treatise on the stratigraphic separation of fossils. *CRSQ* 20:133-85.

Woodruff, D. S. 1986. Book review of Macroevolution pattern and process. *Science* 208:716.

The Search for Extraterrestrial Life: Recent Developments. Proceedings of the 112th Symposium of the International Astronomical Union. Edited by Michael D. Papagiannis, 1985. D. Reidel Publishing Company, Dordrecht, Holland. 579 Pages. \$64.00.

Reviewed by Kenneth A. Nash*

This very readable volume contains a wealth of information on the search for extraterrestrial life. The book is a compilation of papers, speeches, and events that took place at Boston University June 18-21, 1984. This symposium was the first official scientific meeting of the youngest IAU Commission (being officially recognized by the IAU only in 1983). The objectives are:

1. The search for planets in other solar systems.
2. The (search for) evolution of planets and their ability to sustain life over cosmic periods.
3. The search for biologically relevant interstellar molecules and the study of their formation.
4. The search for radio signals, intentional or unintentional, of extraterrestrial origin.
5. The search for different manifestations of other advanced civilizations.
6. The spectroscopic detection of biological activity of primitive forms of life in other stars.
7. The coordination and promotion of all these activities at the international level and the collaboration with other international organizations (astronautical, biological, chemical, etc) that share with our Commission common interests in these objectives. (p. 554)

The editor did a splendid job with the book's organizational arrangement and introductions to each of the eight major sections. Although the typographical errors are noticeable, and the variations in print of the different papers obvious, they do not detract from the overall reading. They serve as reminders of the international flavor of the symposium and those involved in this field.

Section I is a series of introductions about the book and the field itself. Here the reader first encounters a new term, Bioastronomy, coined to describe this new direction in science. The name aptly describes the notion that somehow biology and astronomy are being forced together by the possibility of finding signs of life outside of the Earth. Whether or not the fires that seem to be burning inside many of the participants are sufficient to permanently weld these two sciences together, only time will tell. For now at least, the telescope is being turned into a cosmic microscope.

Every article of Section I is must reading. The editor attempts to make the point that this new field has transited from the speculative phase to the experimental phase in the last 25 years. However, many of

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Radio Antenna

The experimental search for life outside Earth began in 1960 using a radio antenna. Since then, more searches have been conducted. Some, such as the ones conducted by Ohio State University and Harvard Observatory, are in continuous operation. The Search for Extraterrestrial Life (SETL) is becoming more widely accepted by some scientists and the public. Will the CRS have a role in this new area?

the papers, and apparently many in this field, are not through with speculating about life forms and super-civilizations. The field has gained a measure of scientific respectability. This achievement is due in part to the passionate belief and efforts of those involved, Carl Sagan being the most well known. In fact, the government, through NASA is actually funding some of the search projects. The symposium was held during the 25th anniversary year of the landmark publication of "Searching for Interstellar Communications" published in *Nature* on Sept. 19, 1959. The authors, Giuseppe Cocini and Philip Morrison, both provided background papers published in this section that provide a brief sketch of what has happened and is happening in this field. Section I ends with the Invocation given at the symposium banquet. Since the Creator was never mentioned in any of the subsequent papers I read, one wonders if the participants grasped the thoughts of the prayer:

We glorify, we honor, and we thank You God Almighty, Creator of the Universe, Lord of time and eternity, Father of all beings and things visible and invisible, Source of knowledge and wisdom, Center of life and light.

We give thanks to you for the unique opportunity granted to us to live in your huge Cosmos, to study the immense Universe, to unravel the mysteries of the planetary systems, the galaxies, the interstellar spaces, the extraterrestrial realities.

We stand in deep awe and amazement in front of your Creation, being a part of it. We humbly ask you to bless our scientific work and to offer us the indescribable joy of a continuous discovery to knowledge, from wisdom to wisdom.

We ask you to bless the present Symposium and its participants and to make it a significant contribution to the progress and the well-being of our fellow human beings, of our fellow citizens of the planet Earth. (p. 25)

Each section is briefly summarized by the editor, who also provides his comments relating each paper in the section as a whole to the search. In this way, the reader can get an idea of which papers to read at length, as well as a brief overview of the entire symposium.

Section II is entitled, "The Search for Other Planetary Systems," and describes current and soon to be deployed technology at other than radio wavelengths (Radio searches are covered later in Section IV). Finding planetary systems other than our own is central to the search. Both ground based and space based systems are described. The only hope for direct extrasolar planetary observations rests with the Hubble Space Telescope (HST), which is waiting for a Space Shuttle launch. J. L. Russell's paper, "Prospects for Space Telescope in the Search for Other Planetary Systems" is quite informative. Apart from the HST, other instruments, primarily ground based, will attempt indirect observations to prove the existence of other bodies around nearby stars. The new technology is supposed to be able to detect the perturbations of nearby stars that would occur if a planet the mass of Jupiter were in orbit around them. One technique, infrared speckle interferometry, has already detected what is now classed as a brown dwarf star around VB 8B in 1984. (You may recall the publicity that discovery generated). As more searches are begun, more objects are likely to be found that fall outside the conventional classification of 'star,' and 'planet.' What creationist role is there in the search for other planetary systems? What should we expect from the Hubble Space Telescope? Are there any experiments we could suggest?

Section III's title, "Planetary, Interplanetary, and Interstellar Organic Matter," might lead you to believe that organic matter had already been found beyond the Earth. The articles concentrate primarily on chemical "evolution." The premise of this section is that since life 'evolved' here on earth, it must be evolving elsewhere in our solar system, and between the stars. Titan, the largest moon of Saturn, is Carl Sagan's choice for the most likely place for evolution to be occurring now. By exploring everything from comets to asteroids within the solar system, the search hopes to find something in the 'pre-evolutionary' stage. What is the creationist role here? What if some primitive form of life (either dead or alive) were found nearby the earth? Would not the Earth be the likely source?

Section IV, "Universal Aspects of Biological Evolution" is a collection of many ideas evolutionists hold dear, plus a few new ones.

In this section the currently popular theory of mass extinctions is included (comets hit the earth every 26,000,000 years, eventually rub out dinosaurs and pave the way for humans to evolve and search for extraterrestrial life!). The paper by Richard A. Mueller, University of California-Berkeley, "Evidence for a Solar Companion Star," however, provides an experimental look at the question: Does the Sun have a companion star? His search, now underway, uses an automated telescope equipped with a Charge Couple Device (CCD) camera to perform a limited sky survey in the nearby solar neighborhood for candidate companion stars. This search should produce very interesting data even if no companion star is found. What

creationist role do we have here? What prediction should we make about the results of this search?

Sections V and VI are entitled "Radio Searches—Recent Observations" and "Technological Progress in Radio Searches" respectively. They contain up-to-date facts about who is doing what in this spectrum of the search. In addition to searching for civilizations that might be trying to contact us, we find that the search will also be looking for radiation by-products or tell-tale signatures of a technological society, i.e. eavesdropping.

Section VII, "The Fermi Paradox and Alternative Search Strategies," is quite speculative. Fermi is supposed to have asked "Where is everybody?" The implication being that since they are not here, they must not exist. Many fantastic ideas are presented to the reader. The editor's paper, "An Infrared Search In Our Own Solar System As Part Of A More Flexible Search Strategy," for example, suggests 'they' could be deliberately hiding from us right behind a nearby asteroid! (p. 565)

Section VIII, the final section, summarizes the Commission's proceedings and completes the volume.

After reviewing this book, several themes seemed to be evident. First, although we may be skeptical about life elsewhere in the universe, we cannot ignore what is happening in this field. There is a commitment to the search. This may be due in part to the public's interest being stirred by the successes of the space program, as well as the entertainment media (Star Trek, etc). These are strong influences. This grass roots support for, at least the idea of the search, is being capitalized on by the familiar presence of Carl Sagan (*Cosmos*, *Comet*, *Contact*). Second, the technology being employed at very sophisticated levels will produce enormous quantities of data. It is likely that our knowledge of the space near Earth is due for a revision. Will creationists be ready for this new information? Will we get any of it? All this looking, probing and searching could also lead to some unpleasant things. Since false alarms are already being observed, the possibility of an erroneous interpretation or even a hoax seems much more likely than actually making contact with another civilization. Who will be able to 'prove' a hoax without understanding the methods? Are we in for another, more serious, episode like Percival Lowell and the Martian Canals? Finally, the lack of a creationist role, so far, is obvious. Some influence is sorely needed in this new field. What effect could the CRS have on the future of this field? On our technologically oriented society? Is anyone out there?

Addendum

In conjunction with the Nash book review on *The Search for Extraterrestrial Life*, an article entitled "Scientists Listening for Space Voices Get Discouraging Words" (Thomas, 1986) appeared in *The Wall Street Journal*. The gist of the article is that the team of Ohio State astronomers searching for intelligent life in space have obtained zero results. Frank Tippler, an astrophysicist at Tulane University, is quoted as saying that the entire project ". . . is a boondoggle—a tremendous waste." Still federal agencies are pouring funds into projects of this type.

Reference

Thomas, Paulette. 1988. Scientists listening for space voices get discouraging words. *The Wall Street Journal*. ccvii (82):1,14.

Emmett L. Williams

Creation's Tiny Mystery by Robert V. Gentry. 1986. Earth Science Associates, Box 12067, Knoxville, Tennessee 37912-0067. 316 pages. \$11.95 plus \$2.66 p & h.

Reviewed by Eugene F. Chaffin*

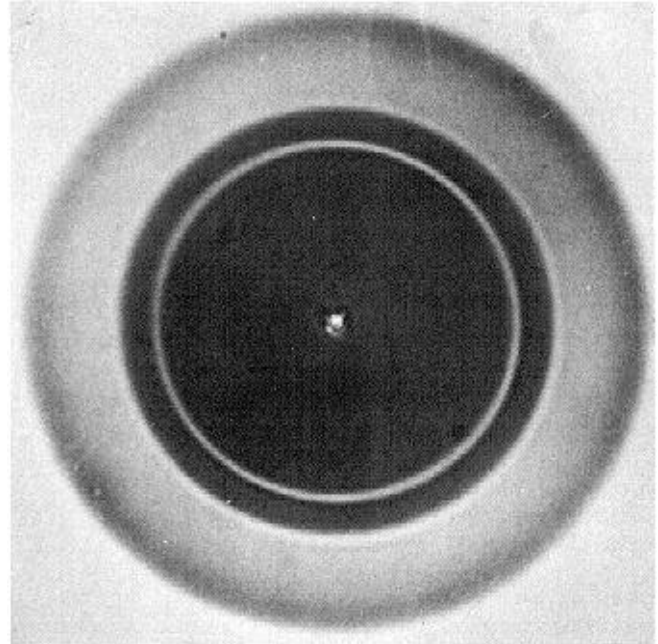
Robert V. Gentry is a well known physicist whose name is synonymous with the study of radioactive halos in granites, coalified wood and other rocks and minerals. This book outlines Gentry's career, including his graduate work, his 13 years as a physicist with Oak Ridge National Laboratory, his testimony at the Arkansas creation-evolution trial in 1981, and his more recent career as a speaker and author. The book has been characterized as and is the story of a struggle for academic freedom in a scientific world dominated by the evolutionary view of the earth's history.

Radioactive halos are spherical regions of radiation damage surrounding an inclusion of radioactive material or formerly radioactive material. Alpha particles emitted by the decay of nuclei in the inclusion do damage to the surrounding crystalline structure. Thin sections of the mica or other minerals can be viewed through a microscope and/or photographed to show circular "halos" of discoloration. Since the alpha particles demonstrably do most of their damage near the end of their paths the outer edges of the halo rings can be darker than the interior regions. Gentry's book contains a catalog section of beautiful color photographs showing over 100 halos relevant to the discussion.

Gentry's discovery of the enigma of the polonium halos makes his work relevant to young earth models of origins. Evolutionary views of earth history assume that Precambrian granites formed by slow cooling over periods of millions of years. But Gentry has discovered halos in granite due to Po-210 (half life 138 days), Po-214 (half life 164 microseconds), and Po-218 (half life 3 minutes). Studies by ion microprobe mass spectrometry, by electron-induced x-ray fluorescence analysis, and other advanced techniques have signally failed to upset Gentry's view that these granites were formed quickly during the creation week of Genesis, and the existence of parentless polonium halos is evidence of this rapid formation.

Some years ago Gentry issued a challenge to evolutionists. He boldly stated that he would consider his view of these halo containing granites to have been falsified when laboratory experiments synthesized a hand-sized piece of granite of the type in question. He would consider the hypothesis doubly falsified if a polonium halo could also be produced in the granite. In other words, if the granite did form by a slow cooling of a molten proto-earth, then the process can easily be repeated in the laboratory. G. Brent Dalrymple, a star witness for the evolution side of the Arkansas trial, was well aware of Gentry's falsification test, and admitted that it is impossible to synthesize granite in present day laboratories. However, he

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A ^{218}Po Polonium halo in a biotite specimen taken from a Precambrian pegmatite. This halo was formed by radiation-damage effects produced by the sequential alpha decay of ^{218}Po (middle ring), ^{214}Po (outer ring), and ^{210}Po (inner disc). The degree of coloration developed in this halo required about a billion atoms of ^{218}Po , whose half-life is 3 minutes, to be initially present in the halo radiocenter. (Magnification x1330) Photograph courtesy of Dr. R. V. Gentry.

claimed that this was due only to technical reasons that could be overcome. Instead of accepting the challenge, he then also stated that it would be a meaningless test, and dismissed Gentry's halos as a "tiny mystery." Dalrymple went on to claim that rocks presently cooling in the Kilauea-Iki lava lake in Hawaii refute Gentry's statements. In the book, Gentry brilliantly counters this claim and others, noting that the Kilauea-Iki lava lake rocks are basaltic rocks grossly different from the texture of the granites in question.

This book is must reading for every creationist and other persons honestly seeking the truth in this area. It thoroughly documents the relevant happenings at the Arkansas trial, Gentry's subsequent dismissal from his position at Oak Ridge National Laboratory (apparently due to his stand in favor of creationism), the political aftermath, and scientific symposia up to 1986 in which Gentry was a prime figure. In the appendices, articles which Gentry has written for technical publication are reproduced along with letters from U.S. Senators, Congressmen, and other important persons involved.

Space Medium: The Key To Unified Physics by Thomas G. Barnes, 1986, Geo/Space Research Foundation, El Paso, 170 pages. \$12.95.

Reviewed by Harold S. Slusher*

Since we can not conceive of waves where there is nothing to wave, Dr. Thomas G. Barnes has proposed in this most revolutionary book an ether—an all pervading medium capable of transmitting wave motion

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and dynamically reacting on bodies in space. The Earth is considered to carry the ether along with it as the Earth moves through space. This book does not revive the "old" mechanical ether of the nineteenth century but proposes a new theory of the space medium affording an ordered scheme of description of the whole course of phenomena based on causality and understanding.

I recall as a graduate student at the University of Oklahoma hearing Dr. Norman Ricker, the greatest authority on waves, remark that there had to be an ether in which waves could propagate and that the giving up of the concept of an ether by modern-day physicists was a grave error leading to many misconceptions about the universe. My astronomy professor there, Prof. Balfour Whitney, made similar remarks. Dr. Barnes considers a space medium necessary not only for the propagation mechanism of waves in space, but also for the dynamical mechanism that acts on bodies in space.

This book proposes a new theory of the medium in space different from any of those summarized and described in E. T. Whittaker's excellent history, *Theories of the Aether and Electricity*. Dr. Barnes proposes that the medium is both a reactive and propagative medium consistent with the classical laws of physics and with all of the applicable terrestrial and astronomical experiments. The same space and motional properties of the medium were suggested in an 1845 paper by George Stokes. He based his suggestion on astronomical observations and his wave theory solution for the propagation of light in the medium.

Dr. Barnes used the same postulates as Stokes proposed for the space and motional aspects of the medium. Stokes erred by considering the medium as a mechanical one thus having certain impossible properties. However, Stokes' approach regarding the spatial distribution and the motional properties were ingenious. The approach using a medium in space provides the basis for classical explanations of many phenomena thought only to be explained by relativity. High speed phenomena in mechanics and electrodynamics become explainable by ordinary time and the classical view of space.

Forces exerted by the medium are used to explain the properties of inertial mass and gravitational mass. An entirely new interpretation regarding mass and energy is proposed. The reactive properties of the medium provide an explanation for Newton's third law. Radiation of energy into the medium and gravitational waves are also explained in terms of classical electromagnetism and the reactive properties of the medium.

This book represents a return to basic foundations of physics laid by the great masters of physics such as Newton, Kelvin, and Maxwell for understanding and explaining the physical phenomena of the cosmos. However, it is also a vast leap forward beyond the work of these men. This work involves a rational, causal approach to understanding a cosmos that is believed to be reasonable in its Creation. Further, this work is a complete turning away from the Alice-in-Wonderland, topsy-turvy, imaginary world of the relativist.

The work of Dr. Barnes is truly a refreshing and

illuminating return to the real world in which explanations follow the tried and true approaches of classical physics. This book provides a logical, rational understanding of major physical phenomena on the basis of a reactive medium, pervading space. It is as if a dust-covered painting has been cleaned and suddenly the magnificent vistas in the painting are so clear and plain. This treatise is a rational, causal approach to the world based on classical physics opening vast and unexplored fields of research. It is a work on the same order of importance as Newton's *Principia* in opening this cosmos for real understanding.

Seven Clues to the Origin of Life: A Scientific Detective Story, by A. G. Cairns-Smith. 1985. Cambridge University Press, Cambridge. 131 pages. \$17.95.

Reviewed by Larry S. Helmick*

In this interesting layman's version of his more technical book, *Genetic Takeover and the Mineral Origins of Life*, A. G. Cairns-Smith, Senior Lecturer in the Department of Chemistry at the University of Glasgow, presents a somewhat unique evolutionary view concerning the origin of life. Although he is thoroughly committed to the concept that chemical evolution ultimately resulted in spontaneous generation of life, he recognizes and stresses the enormous difficulties that are encountered by chemical evolutionists in trying to bridge the gap from inorganic compounds assumed to be present on a primitive Earth to the simplest of the complex living organisms presently found. He states:

Much of this book is devoted to seeking out, and making as stark as possible, the difficulties in the case of the origin of life on the Earth. Not so that we can throw up our hands and say, 'Look how impossible it all is!' Not at all. Rightly or wrongly we will be assuming that life really did arise on this Earth from natural causes! We look for difficulties to see as clearly as possible what the real problem is, and to fashion a key to unlock it. (p. ix)

In clearly recognizing and boldly stating for the layman several of the fantastic and possibly insurmountable difficulties encountered by scientists involved in research in the area of chemical evolution, the author makes an unintended contribution to the creationist literature. In that sense alone, this book is reminiscent of the more technical and revolutionary book, *Mystery of Life's Origin: Reassessing Current Theories*, by Thaxton, Bradley, and Olsen. (See book review, *CRSQ* 22:200-1) However, the author's real purpose is not to support creation in contrast to evolution, but to lay a foundation for suggesting his own "key" to solving the problem of the origin of life through chemical evolution. His "key" is a unique concept involving the evolution of the first of our present highly complex and integrated ("high-tech") living organisms, based upon proteins, nucleotides, lipids, etc., from a completely different and admittedly still unrecognized type of simple ("low-tech") life forms based upon inorganic crystal chemistry involving clays. In this regard, the book quickly becomes unconvincing. Even Cairns-Smith himself seems somewhat skeptical of the details, for he states:

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But what was the bridge between evolving mineral organisms and the altogether different form of life that now dominates the Earth? . . . Let us now try to sketch-in the required bridge in more detail—simply as a mental exercise, without any assertion that the details are true. (p. 107)

Due to his unusual and intimate integration of valid scientific data and sound analytical thinking with a growing pyramid of questionable assumptions, conjecture, and imagination, the typical layman will need to have some degree of chemical and biological expertise and will want to read this book with an unusual degree of critical thinking and evaluation. His summary of the “seven best clues to the origin of life” are very helpful in allowing one to follow his line of reasoning, but in reality, the known laws of science are probably much more important clues in allowing one to recognize the actual origin of life.

The Geology of the Flood, by Glenn R. Morton. DMD Publishing Co. Dallas, TX 75278. 176 pages, Index. \$15.00.

Reviewed by George F. Howe*

A creationist physicist with experience in geology and oil exploration tries to meet and overcome many of the most severe objections leveled at the young-earth creationist concept of Flood geology. To this end he postulates one major miracle at the onset of the Flood; a miracle which directly or indirectly explains many otherwise puzzling features of earth's history. On p. 54, for example, Morton lists 10 physics problems confronting creationists; problems which he sees as solvable if this one major assumption is made.

The reader learns in the Preface that Morton is a creationist who flatly asserts that “If evolution is true, then the Bible is wrong.” An anti-evolutionary theme emerges periodically throughout the book as Morton deals with such matters as gaps in the fossil record, problems with “Big Bang,” thermodynamic improbabilities of evolution, and many more.

He asserts that although the creationist view is superior on all accounts, it stands rejected merely because it violates certain naturalistic philosophical rules cherished by various authorities. Scientifically, creationism is superior even to theistic evolutionism, writes Morton, because the latter requires hosts of miracles throughout vast ages of time.

Yet creationism plays second fiddle to evolutionism because non-creationists simply deny its validity—“. . . a denial which is logically unjust but which has had an eminently successful promulgation,” p. 64. The author's Christian stance is obvious in the last chapter of this work where a short appeal is made for readers to place faith in Jesus Christ as God's means for human salvation.

The major thesis of the work is the assertion that at the time of the Flood the Creator caused a change in one very basic property of all matter; an increase in the permittivity of free space(ϵ). In general terms this would cause atoms to move apart from each other, some atoms and molecules expanding more than others.

As a consequence of a changed “ ϵ ” Morton shows that

the radius of the earth would have approximately doubled.

While others prior to Morton have produced books propounding an expanding earth radius, no others have proposed a mechanism sufficient to the task. This means that the concept of an increasing permittivity of free space is an important new ingredient in the repertoire of those who would seriously defend radius-expansion models of earth history.

If the value of “ ϵ ” were changed during the Flood, argues Morton, we can understand how the earth's land surface would be composed of several polygons: an original land mass was simply pulled apart, no thanks to plate tectonics which, writes Morton, has many problems and no sufficient mechanism. One of its shortcomings is the total lack of subduction “sinks” anywhere near Antarctica. But Morton sees these same data as no problem to the expanding radius view as such sinks would not be expected if the earth's original land mass was merely torn asunder by expansion, p. 70.

In Morton's model the oceanic crust would have expanded more rapidly than the rest of the earth, something that he employs to explain earthquakes and earthquake zones—pp. 76-7. Thrust faulting and other compressional geologic features he sees as resulting from the differential expansion of various rock materials. This is innovative because radius expansionists have been unable heretofore to account for compressional rock phenomena during expansion.

Morton asserts that the Flood occurred at the same time that earth's radius was expanding and water was being added by outgassing of volcanos. He calculates that such volcanic water cooled as a natural consequence of increasing permittivity.

Based on the expansion model Morton predicts what he sees as the otherwise baffling outcome that most sediments settled on continental platforms rather than in ocean basins which presently are much lower. The smaller preFlood earth, argues Morton, would have had none of the present deep ocean basins when most of the sediments were being deposited—p. 93.

In a chapter on Flood geology Morton copes with numerous geological specificities rather than dealing in vague generalities. He places the “great unconformity”—Precambrian to Cambrian—at the onset of the Flood and believes that other worldwide strata like Ordovician carbonates and Silurian limestones were deposited during later stages of radius expansion.

Morton points to numerous features of the earth which he feels other creationists, like continental drifters and canopy theorists, are hard-put to explain. Evaluating several views concerning where the waters went after the Flood, he concludes that the expanding radius view is the most accommodating. All of the following are seen as having cogent explanation in the changing permittivity model: rainbows, glaciers, fossil footprints, rainprints, flight of the Pteranodons and absence of short-lived radionuclides on earth.

After dealing with radiochemical dating, Morton disavows arguments for vast ages, asserting that such estimates are unfounded. He also claims that there are absolute limits below which the earth's age cannot be collapsed. He places creation at about 125,000 years before present (BP), the Flood onset at 30,000 BP, and

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the finale of the Flood around 25,000 BP—dates which are all far larger than most young-earth catastrophists would allow.

Although Morton believes that the ark itself rested on dry land at the end of one year, he develops the idea (chapter nine) that the rest of the earth underwent thousands of years of postFlood adjustment leading to the reinundation of vast areas and causing most of the fossil record. Thus he accounts for the recurrence of puzzling fossil sequences as the postFlood reproduction and burial of succeeding plant and animal assemblages populating the earth and then succumbing to later catastrophes. He maintains that such recurrent fossil series are difficult to accommodate in terms of classic creationist arguments such as ecological zonation, migration, and hydrodynamic sorting. While relegating most of the geological record to fossilization of postFlood communities, he is not alone in such ideology as creationist writers like Bernard Northrup and Steve Austin have also assigned some fossilization to postFlood events.

The volume is neatly bound with a plastic spiral and is printed in clearly legible computer type. The author's diagrams, pictures, graphs, and tables throughout this text help portray ideas which might otherwise be difficult to appreciate.

The writer should not be wrongly dismissed as somehow believing in "theistic evolution" or even "day-age" theories of creation. He simply develops a greater than usual time schedule after creation in

deference to evidence such as the layering in varve deposits and various parameters involved in his basic assumption for an increase in the permittivity of free space.

This book is an attempt to look deeply at creationism's most pressing problems and to solve them. Morton has based his discussion on a wide survey of literature. This alone would make the book worth its price.

Most creationists who read this volume will reject the author's time scale and many will balk at Morton's idea that the Creator changed free space permittivity during and after the Flood. But in so doing let them look full face at the inconsistencies Morton exposes in most other creationist attempts to harmonize the Bible and geology, and let them not rest until a more adequate scheme of correlation is found.

The author expresses the hope that:

... even if this theory ultimately fails, that it will spur some other person to develop a theory of the Flood which explains even more than this one does. It is only by explaining how the earth got to be as it is that creationists will make progress. The theory does not represent 'truth' but only one man's view of that truth. Creationism should not become stagnant and for this reason even if this theory is accepted widely, it should only be accepted until something better comes along. p. 176

Glenn Morton deserves a careful hearing.

LETTERS TO THE EDITOR

The Firmament: A Hypothesis

Introduction

Genesis 1:6-8:

And God said, 'Let there be a firmament in the midst of the waters, and let it separate the waters from the waters.' And God made the firmament and separated the waters which were under the firmament from the waters which were above the firmament. And it was so. And God called the firmament Heaven. And there was evening and there was morning, a second day.

We see that the second day of creation was used to establish something called 'firmament' in the King James Version, 'expanse' in the New American Standard Bible and the New International Version, 'dome' in the Today's English Version, and 'vault' in the Jerusalem Bible and the New English Bible. The word 'expanse' implies a vast open area such as the present atmosphere. The other words imply something hard or firm, like the celestial vault of ancient mythology. The Hebrew word can mean either concept.

The casual reader would probably assume the firmament to be just the present atmosphere, or perhaps all that is 'up' from the earth's surface, to the edge of the universe. There are many indications, however, in this passage and throughout the Bible, that the firmament is not identical to either of these notions. If these passages can be taken as literal, scientific truth (as opposed to poetry or other language forms where spiritual truths are being taught rather than physical science), then the firmament is a very interesting structure. We shall examine several features of the

firmament as taught or implied by the Scriptures. I take the position that Scripture should be interpreted literally, unless there is an obvious spiritual truth being taught. A literal reading should not be discarded just because it is contrary to present day physics. In fact, there are a number of atmospheric phenomena that are not well explained by present day physics (lightning, ball lightning, tornados, UFOs, etc) which might be nicely explained by a proper understanding of the firmament.

Literature Background

Many people have studied and written about the firmament. A good summary has been given by Udd (1975, pp. 90-3). He discusses the meaning of the Hebrew words, concluding that the word for firmament could properly be translated atmosphere. He maintains the waters above were in liquid form, although he offers no mechanism for the atmosphere to be able to hold up such a liquid water canopy.

Dillow (1982, pp. 1-64) gives a very detailed discussion of the terms 'firmament' and 'heavens.' He prefers the translation 'expanse' rather than 'firmament' and considers it to be the atmospheric heavens. He considers the 'waters above' to be perhaps 40 feet of liquid water in vapor form.

Filby (1963, pp. 72-3) considers the firmament to be the atmosphere and the waters above to be clouds. He argues that the Hebrew word *raqia'* (firmament) is related to the idea of beating gold until it was expanded very wide and was very thin. The low density (thinness) of the upper atmosphere would follow this concept.

Peterson (1981, pp. 201-4) discusses the canopy of Venus. He considers the waters above to be in vapor form, with the canopy being emptied at the time of the Flood, refilled when the waters were evaporated from the earth, and emptied again at the time of the ice age.

Westberg (1979, pp. 182-4) suggests that the water above was in the form of ice crystals, or perhaps light pipes (like optical fibers) which were able to scatter/transmit the sun's light to the entire surface of the earth, including the polar regions. The top of the canopy could have been at 22,000 miles above the earth, based on the 40 days required for all the canopy to fall to the earth.

Kofahl (1977, pp. 202-6) points out that all

scientific models which supposedly could explain the source of flood waters, pre-flood climate, or post-flood deep-freezing and glaciation effects by natural rather than supernatural causes suffer from conflicts with established physical law or physiological limitation.

Heavens

God called the firmament Heaven (Genesis 1:8). What does this mean? The words heaven, heavens, sky, and skies are used many times in the Bible. The precise meaning is usually determined by the context. We observe three distinct meanings; the region of the atmosphere, the region of the sun, moon, and stars, and the dwelling place of God. For example, Genesis 7:11 states that 'the windows of the heavens were opened' (RSV). The context is heavy rain on the earth, hence the word 'heavens' would mean the region of the atmosphere, since rain does not come from the region of the sun, moon, and stars, or directly from the throne of God (as far as we know).

The phrase 'heaven of heavens' is used seven times in the Scriptures (Deuteronomy 10:14, I Kings 8:27, II Chronicles 2:6, 6:18, Nehemiah 9:6, Psalms 68:33, 148:4). In each case the reference is apparently to the solar system and stars (Dillow, 1979, p. 172). The context is always important, but there is a pattern which can be helpful on occasion. Heaven (the first heaven) refers to the region of the atmosphere unless the context indicates otherwise, heaven of heavens (the second heaven) refers to the region of the stars and solar system, and the third heaven (II Corinthians 12:2) refers to the dwelling place of God.

Since the purpose of the firmament was to separate the waters above from the waters below, the context indicates a location next to the earth, or a first heaven.

It may be noted that the word appears in the singular, as heaven, and sometimes in the plural, as heavens. The Hebrew word *shamayim* is an unusual plural form, rather like the English word 'sheep.' The context determines whether it should be considered singular or plural (Marsh, 1985, p. 47). Since the context is not always as clear as we might like, we will not make any effort to identify fine points about the heaven(s) by whether the translators used the singular or plural.

Height of Firmament

The firmament had to extend far enough above the earth to hold the waters above in the state of the waters their proper place. Since no distinction is made

between above and the waters below, it would appear that both were in the liquid form (Udd, 1975, p. 90). No model of the pre-flood canopy of waters above is completely satisfactory using present day physics, regardless of whether water vapor, liquid water, or ice is considered, so we shall take the literal reading of liquid water. This could have been in the form of large globules, perhaps thick, located one or two km above the earth's surface.

This liquid water would explain the rain of Noah's Flood, but would not explain the ice age which followed, with the burial of large numbers of mammoths. It has been suggested by this author (Johnson, 1986, p. 46) that the waters above were in liquid form in the lower atmosphere between perhaps 40° North and South Latitude, and were raised far above the earth (perhaps 2200 km) in a layer over each pole. At this height, the water would become very cold ice, of course. This ice would reflect sunlight onto the polar regions during the winter, keeping their climates very moderate. Between 40° North and the Arctic Circle, and similarly for the Southern Hemisphere, there would not be a canopy of either liquid water or ice.

With this hypothesis, the firmament would need to be several thousand km thick. Once a dimension this large is allowed, it seems appropriate to consider the firmament large enough to include all the earth related phenomena. In a broad sense, it can be argued that the purpose or function of the firmament was to make the earth a more livable place. It supported the waters above (perhaps some in the form of ice) to moderate the climate of the earth. Certainly the earth's magnetic field and the Van Allen belts also serve to make the earth a more livable place. If the firmament is related to these phenomena, then the firmament could extend for several earth diameters above the earth.

Ether or Vacuum

Assuming that the firmament is thousands of km thick, it is obvious that it is not identical to the atmosphere which extends upward from the earth only a few tens of km. I say rather that the atmosphere exists within the firmament. It is like saying that the earth exists within the vacuum of space, or in the language of earlier centuries, that the atmosphere exists within the ether. Both the words 'vacuum' and 'ether' have had a variety of meanings, with the 'firmament' being a related, but not identical, concept. We will compare these concepts to help clarify the notion of the firmament.

The question of what is present in the absence of matter has intrigued mankind for centuries. Man had trouble thinking of a force operating at a distance without some sort of intervening medium to transmit the force, hence postulated the ether. This was an invisible substance which penetrated all matter and was necessary to the transmission of electromagnetic waves and gravity. Literally hundreds of models were proposed for the ether, with none being totally acceptable to the scientific community. After Einstein, the notion of the ether fell out of favor. Space was considered to be a vacuum with nothing in it, neither matter nor energy. In recent years, this simple notion of a vacuum has also fallen out of favor. Space was considered to be a vacuum with nothing in it, neither matter nor energy.

In recent years, this simple notion of a vacuum has also fallen out of favor. One description is that the vacuum consists of a polarizable aggregate of virtual particles, fluctuating randomly. A very strong electric field, say near a superheavy atomic nucleus, may be strong enough to pull electrons and positrons out of the vacuum (Greenberg and Greiner, 1982, pp. 24-32). The vacuum is said to contain what is called zero-point radiation (Boyer, 1975, pp. 790-7 808). According to Dewitt:

Free fields (fields far from their sources) are modeled in a vacuum as an infinite collection of harmonic oscillators. The ground-state fluctuations of the oscillators give the vacuum field a residual energy known as the zero-point energy. Because the number of field oscillators per unit volume is infinite, the energy density of the vacuum would also seem to be infinite. (1983, pp. 115).

While these notions of a non-empty vacuum may be incomplete or incorrect, it is evident that many people over several centuries have believed that the earth exists in 'something,' that matter is permeated by a substance, and that the absence of matter does not imply an absolutely empty void. This 'something' has been called the ether, the vacuum, and now the firmament. While the firmament has similarities to the ether and vacuum models that have been proposed, there are significant differences. One is that it is of finite extent, centered on the earth. The firmament does not replace the vacuum, therefore, since the vacuum (and whatever it contains) extends throughout the universe. One might say that the firmament exists in a vacuum, and the earth exists in the firmament. I will identify other features of the firmament.

Light and Gravity

In the initial part of creation, Genesis 1:1, 2, the earth was formless and void (NAS). Light was then created as a separate step, in verse 3. Light is a form of electromagnetic energy, so it appears that electromagnetic fields, and probably even gravity were created after matter. It is difficult to visualize a collection of molecules which do not exert forces on one another at a distance, through electromagnetic fields or gravity, but surely such a collection would be formless. This would imply that matter is not just an electromagnetic phenomenon.

Since the firmament was created separately from light, the firmament is not necessary to the propagation of light (or other effects observed at a distance). This means it is not a classical ether which serves as a propagation medium for light. The same feature could be argued from the finite extent of the firmament.

The Heavens Will Burn Up

The firmament was created to separate the waters, thereby making the earth more livable, but also making the flood possible. It appears to still be operating to make the earth livable, perhaps through interaction with the atmosphere and through the earth's magnetic field. It also appears to be involved with the next cleansing of the earth, as described in II Peter 3:5-12. We see there:

by the word of God heavens existed long ago, and an earth formed out of water and by means of

water, . . . by the same word the heavens and earth that now exist have been stored up for fire, . . . the heavens will pass away with a loud noise and the elements will be dissolved with fire, and the earth and the works that are upon it will be burned up . . . the heavens will be kindled and dissolved, and the elements will melt with fire!

One clue as to what 'heavens' means is the statement that they will pass away with a loud noise. Sound waves do not propagate through vacuum. Exploding stars may be seen on earth but would not be heard. The firmament, on the other hand, is earth bound, and its burning would certainly be heard on earth. Therefore the passage is talking about the firmament and the earth.

We might ask if this burning is for purification or judgment which would leave behind a cleansed earth (the new earth), or whether it is for total destruction and annihilation, leaving behind only empty space. By analogy with the Flood, the burning would be for purification. Water purified the earth and likewise fire would purify the earth. This would also be consistent with the economy of God, by using His creation for an additional purpose and an additional period of time. The firmament would be involved twice in purifying (judging) the earth before its usefulness was finished.

The same argument could be made from our knowledge of chemistry. Burning does not annihilate the elements, but rather changes their form. Carbon in wood combines with oxygen in air to form carbon dioxide. The original elements are still present but in different form.

Another argument would be that fire is a good method of purification, but if God really wanted to annihilate the earth, He would not need fire. He would just 'uncreate' what He had created in the beginning, and then create (from nothing) a new heaven and a new earth. Since fire is specifically involved, the function is more likely purification than annihilation.

A related Scripture is Revelation 21:1, "Then I saw a new heaven and a new earth, for the first heaven and the first earth had passed away, and the sea was no more." The phrase 'passed away' might seem to indicate annihilation, except for the note that 'the sea was no more.' This note is only meaningful in the context of a purified earth. A new earth (created from nothing) would not have any past history. It may or may not have seas, but the lack of seas would have to be stated as such, without saying the sea was no more. If the first earth was annihilated, then the sea would certainly be annihilated with it and 'the sea was no more' would be redundant. It appears the phrase is a transition between the old and the new, and describes the new earth by what is different about it from the old (unpurified) earth. The purification would certainly vaporize the oceans. The new earth will have a different type of climate and a different type of atmosphere, so oceans will be unnecessary to moderate the climate. Eliminating the oceans would also provide a greater land area for man.

Where does the energy come from for this purification? Directly from the hand of God as a miracle totally outside any earthly energy source would be the obvious answer. There is a possibility, however, that the energy for this purification was stored in the

firmament, just like the water for the first purification (Noah's Flood). Creating the firmament occupied God for one day out of the six of creation. Building in the means for purifying the earth twice, as well as making it livable for man in between, was accomplished. It has a God-like simplicity and elegance. For this reason, assume that the firmament has a high energy density. The total energy stored would be enough to vaporize the oceans and melt the earth's crust to a depth of perhaps one or two km (or however deep is required to remove the evidences of sin). This would be many orders of magnitude greater than the energy stored in nuclear weapons, indicating that man is not capable of bringing about this great destruction.

Fire From Heaven

The notion that the firmament has a high energy density may have some support from the many Scriptures which speak of fire from heaven. "Then the Lord rained on Sodom and Gomorrah brimstone and fire from the Lord out of heaven." (Genesis 19:24). "And fire came out from the presence of the Lord and consumed them (Nadab and Abihu), and they died before the Lord" (Leviticus 10:2). "Fire also came forth from the Lord and consumed the 250 men who were offering the incense" (Numbers 16:35). "The fire of the Lord burned among them and consumed some of the outskirts of the camp." (Numbers 11:1). "The fire of God fell from heaven and burned up the sheep and the servants and consumed them" (Job 1:16). "Then the fire of the Lord fell, and consumed the burnt offering, and the wood, and the stones, and the dust, and licked up the water that was in the trench." (I Kings 18:38). A much more detailed discussion of fire from heaven is given by von Fange (1975, pp. 131-8).

We see that the fire from God was hotter than is possible by burning fossil fuels. Consuming stones would require something like an electric arc to produce the high temperature required. While these miracles could certainly have come directly from the finger of God, it is conceivable that God would use the energy content of the firmament to produce the fire. The precise timing and location of these incidents would certainly qualify them as miracles even if something already created was used to actually produce the fire.

Stretched Heaven

One interesting possibility for the storage mechanism of the energy in the firmament is that of tension, like a spring. There are many scriptures which refer to heaven being stretched. "[God] who alone stretches out the heavens" (Job 9:8). "Stretching out heaven like a tent curtain" (Psalm 104:2). "I, the Lord, am the maker of all things, stretching out the heavens by myself, and spreading out the earth all alone" (Isaiah 44:24). "... the sky will be rolled up like a scroll." (Isaiah 34:4). "And the sky was split apart like a scroll when it is rolled up" (Revelation 6:14).

The atmosphere cannot be stretched or rolled up since gases do not allow tension or shear. The same is true of the vacuum between planets and stars, so the second heaven cannot be stretched or rolled up either. This action must be applied to the firmament, therefore.

Most people will spiritualize these scriptures about stretching and rolling, and talk of the beauty of the sky and its great size, so that it appears to be spread out or 'stretched out.' The extensive and consistent use of the word 'stretch,' however, when words like 'make' or 'create' or 'place' would work equally well, leads this author to suspect a technical meaning. I take this as a literal statement, therefore.

Another reason for taking the literal approach is that no present day atmospheric phenomena resemble a scroll being rolled up, except perhaps for a tornado, and there is no obvious spiritual meaning to the rolling of the sky.

A scroll is a relatively thin, wide structure which will transmit shear forces. The model for the firmament which I am developing is that of a thick structure, perhaps several earth diameters in thickness. Such a thick spherical shell would not be able to roll like a scroll. This implies that the firmament may not be a homogeneous structure, but that it may be made of layers. At the time of destruction by fire, this layered structure would roll up a layer at a time. Each layer would give up its stored energy in shear and tension forces to the earth's crust and atmosphere. This might be observed as large tornado-like structures sweeping over the land, with the accompanying noise and rolling appearance. The firmament would give up its energy in a controlled fashion, so that 'burning' is a more accurate description than 'exploding.' That is, the destruction of the earth by fire will not be by nuclear explosions.

Model of the Firmament

We have seen that the scriptures describe the firmament as a very interesting structure. As a physical structure, we should be able to describe it in engineering terms and devise experiments to test its features. Many atmospheric phenomena might be better explained in terms of the firmament than in any other way. The model being presented here is very tentative and qualitative, but should serve as a starting point for more detailed research.

1. The firmament material will support tension, shear, and compression (thereby being different from a gas which supports only compression).

2. The firmament is divisible into strips which can be rolled like a scroll. To be visible to observers, the strips need to be of human dimension, perhaps a meter wide to several hundred meters wide, and thin compared to their width.

3. The strips might be made of smaller fibers or lines. Since the firmament is transparent and massless, it resembles an electromagnetic field more than other things in our experience, so perhaps firmament lines (or F-lines) would be a meaningful way of describing the fine structure of the firmament.

4. The F-lines would be without interior structure, similar to the structure of an electron. The firmament material is the same, regardless of how fine it is divided. It is not a sea of virtual photons.

5. The bottom of the firmament may be at the center of the earth. It might also be at some boundary where temperature and pressure are such that matter interacts strongly with the firmament and is able to support it. This could be the earth's mantle or some layer just a few miles within the earth.

6. The firmament is in tension in its two horizontal dimensions. The vertical dimension may be in either tension or compression depending on the support system. The individual strips are also in shear because of the tendency for the firmament to roll like a scroll.

7. The firmament is a lossless (nonabsorbing) medium, like vacuum. Energy will propagate through it with no losses.

8. The firmament is frictionless. F-lines can move along or across each other without loss.

9. The firmament is able to store large amounts of energy and can release energy to matter within the firmament when conditions are correct. This energy transfer is probably reciprocal, so that energy in other forms, like latent heat of vaporization, can be transferred into the firmament.

10. The firmament is probably compressible. As the longitudinal tension increases, the width and thickness would be expected to decrease. As the upper part of the firmament presses down on the lower part (assuming vertical compression), the lower layers of the firmament will get thinner.

11. Energy is transmitted through the firmament by longitudinal waves, that is, by tension or compression pulses traveling along the F-lines. This is different from the transverse waves which carry the energy in electromagnetic waves.

12. The firmament does not interact with electrons under normal conditions. Since virtually all electric power and communication systems use electron based generation, reception, and measurement systems, the firmament is difficult to detect with conventional instruments.

Conclusions

The Scriptures related to the firmament have been considered in some detail, with a literal reading yielding a very interesting picture of the firmament. A tentative model of the firmament has been proposed. Many questions have been left unanswered. How does the firmament interact with matter and charge? How does it interact with vector electric and magnetic fields? How does it interact with the scalar voltage potential and the vector magnetic potential? What instruments and what experiments would be necessary to prove the existence of the firmament and quantify its characteristics? Is it possible to extract energy from the firmament in a controlled and useful fashion? These questions could occupy the attention of many physicists and engineers for decades to come.

References

- Boyer, T. H. 1975. Random electrodynamics: The theory of classical electrodynamics with classical electromagnetic zero-point radiation. *Physical Review D* 11(4):790-808.
- Dewitt, B. S. 1983. Quantum gravity. *Scientific American* 249(6): 112-29.
- Dillow, J. C. 1979. Scripture does not rule out a vapor canopy. *Creation Research Society Quarterly* 16:171-5.
- Dillow, J. C. 1982. The waters above: Earth's pre-flood vapor canopy. Moody Press, Chicago.
- Filby, F. A. 1963. Creation revealed—A study of Genesis chapter one in the light of modern science. Fleming H. Revell Company, Westwood, New Jersey.
- Greenberg, J. S. and W. Greiner. 1982. Search for the sparking of the vacuum. *Physics Today*. 35(8):24-32.
- Johnson, G. L. 1986. Global heat balance with a liquid water and ice canopy. *Creation Research Society Quarterly* 23:54-61.
- Kofahl, R. E. 1977. Could the flood waters have come from a canopy or extraterrestrial source? *Creation Research Society Quarterly* 13:202-6.
- Marsh, F. L. 1985. Genesis 1. *Creation Research Society Quarterly* 22:47.
- Peterson, E. H. 1981. The necessity of the canopies. *Creation Research Society Quarterly* 17:201-4.
- Udd, S. 1975. The canopy and Gen. 1:6-8. *Creation Research Society Quarterly* 12:90-93.
- von Fange, E. A. 1975. Strange fire on the earth. *Creation Research Society Quarterly* 12:131-8.
- Westbert, V. L. 1979. Floodtime changes in the earth's heating and lighting. *Creation Research Society Quarterly* 16:182-4.

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Kofahl's Shortfall?

I read with interest Dr. Kofahl's article (*CRSQ* 23:112-4), but I find a shortfall in it. Contrary to his expressed hope, he has allowed a "trojan horse" within the walls of the city of "objectivity." That is via his statement "Science is human experience systematically extended . . ." Nowhere does he place a limit on systematic extension—it can be infinite, actually formulating universal natural law. (I say this because I detect no criticism of astronomy or cosmology; "sciences" saturated with extension—and both predating Darwin and his "evolution.")

There his position is not impregnable, as he hopes. A shrewd evolutionist can rightly ask him; "Show me where my systematic extensions contradict the accepted practices (and revealed truths) of astronomy? If you allow the methodology there, why criticize me?"

A philosophically neutral definition of science must directly address the objectivity of grandiose extrapolation. (The question is not the legitimacy of extension—but how much can be considered objective, hence *scientific*.)

Perhaps his definition could be rephrased something like: "Science is human experience systematically analyzed and of limited, tentative extension . . ."

This rephrasing certainly is critical of "evolution," but it is more general, offering wider criticism. Darwin and his systematization are derivatives, *mandated* by a "deeper," accepted science. It is not Darwin's hidden agenda that is to be faulted, but Plato's open agenda for "rational" science. That also brings up Greek concepts of the mathematical nature of reality.

Until thinking people are ready to face the broader dilemma, the works of people like Barnes, Bouw, Hansen, and Lucas will remain oddities to be gawked at by creationists, much less by evolutionists.

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Reply by Kofahl

The respondent claims that my proposed philosophically neutral definition of science allows for unlimited "extension," by which he means speculative extrapolation. The definition which he criticizes is as follows:

Science is human experience systematically extended (by intent, methodology and instrumenta-

tion) 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.

He fears that this definition allows for virtually unlimited extrapolations of the sort which characterize the secular "historical sciences." He wants science defined so as to "place a limit on systematic extension [i.e., extrapolation]" of speculative hypothesizing by scientists.

In truth the only proper limitation or control for the lack of objectivity of "grandiose extrapolation" is encompassed in our definition. It is the limitation placed on scientific hypotheses that they must be empirically testable and falsifiable. It is not extrapolation that is dangerous to scientific objectivity, but extrapolation (interpolation, too) which extends permanently beyond the region of empirical falsifiability.

He apparently wants to restrict the beliefs of Darwinists and other secularist scientists, to deny them the right to be guided in their scientific theorizing by "a 'deeper,' accepted science," or by "Plato's open agenda for 'rational' science." But what right have we to deny them these beliefs, if we insist upon the right for us to hold to our own "deeper, accepted science," i.e., our commitment by faith to the absolute authority of Jesus Christ and the Word of God over our scientific theorizing?

No, the only limits upon scientists that a definition of science should mandate are falsifiability of hypotheses, the consequent exclusion of supernatural elements from hypotheses, and peer review completely free of philosophical bias, with absolute freedom of conscience for all scientists to believe anything they please and to do science within the guidelines of their own philosophical-religious belief systems, epistemes, and conceptual frameworks. Only then can we observe the relative merits for science of these competing systems of thought.

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Correctly Defining Science

Dr. Robert Kofahl's article, *Correctly Redefining Distorted Science* (CRSQ, 23:112-14), is incomplete, and consequently contains errors. Dr. Kofahl presents only the secondary definition of science, i.e., as an activity, a "human experience systematically extended," and omits the most important primary meaning of science as knowledge. Defining science as an activity has led to the acceptance of story telling as science and pseudo-knowledge as truth.

The accurate meaning of any word is found in its origin. The word "science" comes from the Latin word "scientia" meaning knowledge. It is the purpose of scientific activity to gain knowledge, i.e., more science. The scientific method is used in scientific activity to distinguish real knowledge from what is thought to be knowledge or pseudo-science. Science is more than a method; it is knowledge. To add scientific activity or the scientific method to the definition of science destroys the power in its meaning as true knowledge.

Because of the acceptance of scientific activity as science we hear statements like: "science does not deal with absolute truths" and "science is forever uncertain." If we replace "science" with the word "knowledge" in the above statements then knowledge becomes non-knowledge, an obvious absurdity. If we replace "science" with "scientific activity," we get the firm impression that those involved in scientific activity do not know truth and could not recognize truth if they found it. Unfortunately part of the latter is true. Because of this dual meaning forced upon "science" we have confusion and absurdities. But why is this so?

One reason why science has taken on this dual meaning is because men want the prestige of "science" at the cost of fiction. Applying the full rigor of the scientific method is hard work taking enormous amounts of time, money and effort. Wanting to avoid this labor, yet still have the prestige of the word science, i.e., knowledge, investigators began to call their story telling (theories) part of science and now say such story telling is science. It may be part of their activity in pursuit of knowledge (science) but certainly neither knowledge nor science.

This difference in science as knowledge and science as story telling activity is at the heart of the creation/evolution controversy. Only by clearly distinguishing the two can we come to a mutual agreement. It is in this area where Dr. Kofahl's definition is incorrect.

Perhaps the reason why Dr. Kofahl had no difficulty in maintaining his argument among secular academics is that, under his definition they can still call their story telling science. After all story telling is a major part of evolutionist's human experience being systematically extended.

Defining science as an activity will continue to lead to the acceptance of story telling as science and pseudo-knowledge as truth. The dual meaning forced upon "science" as an activity and as knowledge results in confusion and absurdities. Only by returning to a definition of science as true knowledge can absurdities, confusion and story telling as science be eliminated.

Dr. Kofahl limits the scientific method to "the natural empirical world . . . no element of the supernatural." This is extra baggage imposed on the scientific method. If we can measure, repeat and falsify something then it is within the realm of science. Whether one calls it natural or supernatural has no bearing, but rather shows a built-in bias.

We should ask what is real, not what is natural vs. what is supernatural. Adding natural vs. supernatural baggage to the scientific method does nothing but pacify the anti-creationists and imply that a creator should never be mentioned within scientific activity. It is a legitimate part of scientific activity to postulate a creator for an arrowhead and it is equally legitimate to postulate a creator for the more complex universe about us. We need not pretend to be blind to pacify the intolerant blindness of others.

We need to identify story telling as unscientific. We need to continue scientific activity to gain more knowledge, i.e., more science. We need more rigorous application of the scientific method to distinguish real knowledge from what is thought to be knowledge or pseudo-science.

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Reply to Holt

"Science" in contemporary usage commonly means "empirical science." Holt attempts by etymology to derive the definition of "science," arriving at science as "knowledge." But there are large bodies of systematic knowledge which are not empirical, for example, theology, a subject area in which knowledge is received by divine revelation. Holt is wrong. Science is not simply knowledge. What I call "science" today was a couple of centuries ago called "natural philosophy." So the etymology of a name does not necessarily yield the correct definition of anything.

Holt is also wrong when he suggests that science is a search for "absolute truth" or that scientific knowledge is "truth." Absolute truth comes from God by divine revelation, is received by faith, and does not need to be selected by surviving empirical tests. Scientific hypotheses and theories, on the other hand, must be open to rigorous empirical testing. And regardless of how many tests a theory survives, or how many decades it has enjoyed acceptance, one more test may disprove it. Does this sound like "absolute truth"?

Holt is grossly wrong in suggesting that the scientific method can be applied to the supernatural. All supernatural entities are immaterial spirits. That which is immaterial cannot be observed, detected or measured in any way with any scientific instruments and cannot be counted on to behave in a reproducible manner. On at least these two crucial counts, then, the supernatural lies outside the domain of empirical science. Holt says that we should not distinguish between what is natural and what is supernatural, but rather that we should ask what is "real." Well, are not angels real? However no one can learn anything about angels by means of the scientific method.

Holt may be confusing the supernatural with the effects wrought in the natural world by the supernatural. This confusion could lead to the error of pantheism, but we as Christians know by faith that God's creatures are not part of God. All of His creatures that are accessible to science are natural entities, not supernatural. Yet we believe that the knowledge of them gained by the method of empirical science accords logically with the divinely revealed truth that they were created. Nevertheless, the idea that they were created by God is *not* a scientific hypothesis, for it cannot be subjected to any empirical test with the potential of falsifying it. Divine special creation is absolute truth received by faith in the absolute truthfulness of what is revealed in the Bible. Our knowledge of the fact, the truth of creation, is not scientific knowledge.

I believe that a scientist should be free to express his opinion that the creatures were created, not evolved, even though this view is not a scientific hypothesis and cannot be proved by science. He should be free to advance scientific evidence in support of his belief. However, this freedom will be restored to Christians in science only if a philosophically neutral definition of

science replaces the philosophically biased definition currently in vogue.

Holt calls the theories of evolutionary scientists "story telling." They are, indeed, not bona fide scientific theories, if they are not subject to the possibility of rejection by empirical test. Nevertheless, it is quite proper for a scientist to express his belief in evolution, even though this view is not a scientific hypothesis and cannot be proved by science.

We agree with Karl Popper (1976) that "... Darwinism is not a testable scientific theory, but a *metaphysical research program*—a possible framework for testable scientific theories." Creation, I believe, is in the same category. Let Christians get on with bona fide scientific research within the logical framework of creation, which is their metaphysical research program.

Reference

Popper, Karl, 1976. Unended quest. Open Court Publishing Company, La Salle, IL. p. 168.

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Properly Defining "Evolution": A Suggestion

The intent of Dr. John Moore's article Properly Defining "Evolution" (CRSQ 23:110-2) is good, but does not go far enough. It leaves room for error and confusion. Using micro-evolution to indicate genetic variation and macro-evolution to indicate significant vertical change in an organism is fine, but why use micro-evolution at all? Using only genetic variation and 'evolution' is much more to the point and eliminates confusion among the less informed.

If one uses the term micro-evolution the general public often, though wrongly, assumes you believe in macro-evolution. I have had people ask if I was an evolutionist since I spoke of micro-evolution occurring. After all, was not micro-evolution originally coined to convey the same intrinsic mechanism and concept as macro-evolution, i.e., new creatures without a creator via random chance mutation? Any use of micro-evolution in today's environment typically conveys the possibility of all of macro-evolution.

I suggest that using "micro-evolution" as a term to describe genetic variation be dropped. To rephrase Dr. Moore's statement, "Creationists should set the example for scientists, students and other nonscientists by differentiating 'evolution' from genetic variational change by appropriately using the terms genetic variation vs. evolution." Using only these two terms and not mixing their meanings should eliminate any and all confusion.

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Microevolution or Selection?

Dr. John Moore's concerns in his article, "Properly Defining Evolution" (CRSQ. 1986, 23:110-2) leads to an additional possibility. Perhaps we should not use the term, "microevolution" at all.

When we admit that we accept microevolution, the layperson reasons that the difference is only a matter of degree. He feels we are splitting hairs and that macro-evolution is the result of many microevolutions, as the evolutionists claim.

I would like to see our creation scientists determine more specifically if variations are a form of minor evolution. Are they de-evolution or devolution caused by the loss of characteristics from the original mix? When we breed selective types of dogs, are we not breeding out unwanted characteristics? Is a breed of dog small because we bred out the tendency to be large? If so, we do not have evolution neither macro nor micro—but rather a form of selection. Is this true of other changes?

If we could channel thought towards the difference between evolving and selecting we could clarify the argument and offer an acceptable mechanism for the obvious changes in life forms.

I dislike accepting any form of evolution as it confuses the neutral observers and raises the question of where the line is drawn. I do not accept evolution, period. I do accept devolution and one of its forms, selectivity. Am I wrong?

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Responsibility

Reason becomes unreliable precisely at that point where the will has gone astray. Illogic is not the cause but rather the effect of misbehavior. Analytic and creative powers which may perform spectacularly in other circumstances become redirected into rationalization and self justification when the need arises.

This concept ought to be familiar to parents of small children whose offspring subject them daily to examples of (often transparent) mental gymnastics differing in degree of sophistication but not in kind from those of their more mature counterparts. Neither are criminologists and trial lawyers strangers to the practice of selective recall and convincing revisionism when people are confronted with well-documented but unpleasant aspects of their past.

One whose life is disordered only in areas unrelated to a matter under discussion may do a capable job of dealing with it, given the available information and the innate capacity of his mental apparatus. On the other hand, one with enormous intellectual skills may stagger between elementary fallacies and frank dyslogic (however well disguised with suitably erudite verbiage) to consciously or unconsciously avoid exposure of a basic character flaw, improper action or ulterior motive.

An intellectually honest person needs to ask several questions to detect the potential for these pitfalls: Have I considered the possibility that I may be wrong on this point? What would it take to convince me? If the evidence were clear would I be willing to change?

Is it common to retreat from a publicly and loudly-proclaimed opinion? Would it be easy for a man to denounce an idea that formed the foundation of his entire career or reputation? Indeed is it even possible to willingly acknowledge evidence that ones entire life has been built on a lie?

I submit that some who evaluate the evidence for creation and against evolution do so with a strong aversion to the potential conclusion. Namely, they want to avoid at all cost the possibility that they may be responsible to a Creator. That prejudice makes it impossible for them to accurately assess the case.

This is not a new idea. Paul wrote it to the church in Rome over 1900 years ago but the truth is reconfirmed with each succeeding generation.

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Reply to Peterson

Peterson (CRSQ 23:129) has raised several objections to an earth expansion model of the Flood which have either been previously answered in the literature or are easily answerable from the geologic data. The first criticism is that expansion has no mechanism. I call Peterson's attention to my article "The Flood on an Expanding Earth" (CRSQ 22:171-9). A mechanism was proposed in which God was postulated to have changed the value of the permittivity of free space. In that paper I showed that such an event would account for atomic expansion and thus earth expansion. Differential expansion was also demonstrated. This would account for why the continental crust, which expands less than oceanic basalts, would separate during the expansion. Thus Peterson's second objection that the world after expansion would have the same ratio of ocean to land as it had before is wrong. He is thinking of the expansion as a uniform expansion not a differential expansion. A mechanism has been proposed. One may not like it or feel that it will accomplish what it was meant to accomplish but it seems difficult to maintain that "It has no mechanism."

Peterson states that such an expansion should predict that the crust would "crack in millions of places." I thank Peterson for pointing out this piece of supporting data for an expansion. The crust is fractured in millions of places and by far the majority of faulting is of a kind that would be expected from expansion. Oil companies search for faults in the crust, which are these cracks Peterson mentioned, in order to find oil associated with them. A survey by Bally, A. W. 1983 *Seismic expression of structural styles*, I, II, III, American Association of Petroleum Geologists, Tulsa reveals some of the thousands of faults found in the upper and lower crust. An expansion of the earth as proposed would easily account for the faulting.

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QUOTE

Not all fruits of that exposure are of course beneficial. Undue preoccupation with the quantitative, let it be scientific or technological, may atrophy man's sensitivity for qualities and values. This indeed took place in the West.

Jaki, Stanley L. 1985. The physics of impetus and the impetus of the Koran. *Modern Age*. 29:158.

SPECIAL FEATURE

RECORDED INSTANCES OF WRONG-ORDER FORMATIONS: A BIBLIOGRAPHY—PART VIII

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References

1. King, P. B. 1944. Recent studies of the structure of the folded Appalachians in Tennessee. *Transactions of the New York Academy of Science*. Series 2. 6(5):147-8.
2. Brokaw, A. L. and C. L. Jones. 1945. Structural control of bodies in Jefferson City, Tennessee. *Bulletin of the Geological Society of America*. 56:1150.
3. King, P. B., H. W. Ferguson and C. Rodgers. 1945. Geology and manganese deposits of northwestern Tennessee. Tennessee Department of Conservation, Division of Geology Bulletin No. 52.
4. Stose, G. W. and A. J. Stose. 1944. The Chilhowee group and overthrust fault series of the southern Appalachians. *American Journal of Science* 242:967-70, 401-16.
5. Cooper, B. N. 1944. Geology and mineral resources of the Burkes Garden quadrangle, Virginia. Virginia Geologic Survey Bulletin No. 60.
6. Miller, R. L. 1944. Geology and manganese deposits of the Glade mountain district. Virginia Geologic Survey Bulletin No. 61.
7. Van Houten, F. B. 1944. Stratigraphy of the Willwood and Tatmen formations in northwest Wyoming. *Bulletin of the Geological Society of America*. 55:165-210.
8. Link, T. A. 1947. Overthrust structures of the Alberta Foothills, Canada. *Oil and Gas Journal* 45(47):116.
9. Fanshaws, J. R. 1947. Tectonic development of Big Horn Basin. Guidebook of the Big Horn Basin Field Conference (August). pp. 178-81.
10. Boddley, E. R. 1947. Oak Ridge oilfields, Santa Clara Valley, Ventura County, California. American Association of Petroleum Geologists Field Trip Guidebook. (March 24-27). pp. 46-9.
11. Lammers, E. C. H. 1947. Thrust faulting in the Ventura Basin, California. *Oil and Gas Journal*. 45(47):116.
12. Stose, A. J. and G. W. Stose. 1946. Geology of Canoll and Frederick Counties, Maryland. Maryland Department of Geology, Mines and Water Resources Canoll and Frederick Counties Report. pp. 11-131.
13. Blackstone, Jr., D. L. 1947. Montana and Wyoming examples of overthrusting in relation to petroleum accumulation. *Oil and Gas Journal*. 45(47):116.
14. Chadwick, G. H. 1944. Geology of Catskill and Kaaterskill quadrangles. New York State Museum Bulletin No. 336.
15. Stose, G. W. 1946. The taconic sequence in Pennsylvania. *American Journal of Science*. 244:665-96.
16. Maxey, G. B. 1945. Geology of part of the Pavant Range, Millard County, Utah. *American Journal of Science*. 244:324-56.
17. Miller, R. L. 1947. Structures of the Cumberland overthrust block in southwestern Virginia. *Journal of the Washington, D.C. Academy of Science* 37:374.
18. Berliner, M. H. 1947. Coughlin and Galiva level zinc mines area, Lafayette County, Wisconsin. United States Bureau of Mines Report 4047 (April).
19. Bucher, W. H. 1947. Heart Mountain problem. Guidebook of Big Horn Basin Field Conference (August). pp. 189-97.
20. Baker, C. L. 1946. Geology of the northwestern Wind River, Wyoming. *Bulletin of the Geological Society of America* 57:565-96.
21. Feth, J. H. 1948. Permian stratigraphy and structure of northwest Canilo Hills, Arizona. *Bulletin of the American Association of Petroleum Geologists* 32:82-108.
22. Silver, C. 1948. Jurassic overlap in western New Mexico. *Bulletin of the American Association of Petroleum Geologists*. 32:68-81.
23. Thayer, T. P. 1948. Relation of Serpentine to upper Triassic overthrusting in northeastern Oregon. *Bulletin of the Geological Society of America* 59:1358-9.
24. Williams, J. S. 1948. Geology of the paleogaic rocks, Logan quadrangle, Utah. *Bulletin of the Geological Society of America* 59:1121-63.
25. Wiese, J. H. 1950. Structural features of western Antelope, Valley, California. *Bulletin of the American Association of Petroleum Geologists* 34:1647-58.

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QUOTE

Aristotle's universe is a *perpetuum mobile* also in the sense that it cannot be not moving; in fact it cannot be non-existing. The necessary existence of the cosmos is a basic tenet in Aristotle's thinking. His Prime Mover is not a Creator, and if it were a Creator he could not fail to create. Whatever the role of the Prime Mover in the motion of the heavens, it is a necessary and eternal role. If that role is, as Aristotle would have it, the inspiring of the motion of stars through the Prime Mover's eliciting in them a desire to move, it is still an eternal and necessary role. Unlike the Christian God, or the Jewish God or the Muslim God, who creates but is not forced to create, the God or Prime Mover of Aristotle is neither a Creator nor is He free not to play his role, let alone to play any other role.

As for any medieval Christian, for Buridan, too, the Christian God is free to create. The freedom of the Creator to create was powerfully reasserted in 1277 by the bishop of Paris in a decree concerning a long series of cosmological questions. The decree, which exerted great intellectual influence, was well known to Buridan, who in line with Christian theology saw the basis of God's freedom to create in his absolute transcendence over anything He might create. If, however, God is fully transcendent to His creation, that is, to the entire universe, there is no need for Him, unlike for Aristotle's Prime Mover, to remain in "physical" contact, however sublimated, with the universe so that its motion might go on.

Jaki, Stanley L. 1985. The physics of impetus and the impetus of the Koran. *Modern Age*. 29:154-5.

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