

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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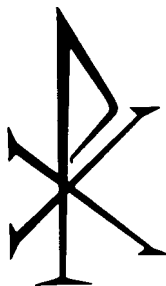
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Instructions to authors can be found in June Quarterly.

QUOTE

Systems grounded in a truncated view of God or in no god at all will inevitably truncate an essential aspect of man's being and, consequently, his life. This inevitability derives from the fact that man has been created in God's image; his full humanity, then, will only be given full justice if ordered in accord with the fullness of the being and revelation of the Cod in whose image he has been made.

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

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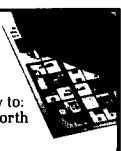
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COVER PHOTOGRAPH

The full moon with the ray system of the crater Tycho showing prominently. It has now been generally conceded by the true savants in the field that all theories of lunar origin that have been proposed to date are hopelessly inadequate —George Mulfinger

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

Statement of Belief Members of the Creation Research Society, which include research scientists representing various fields of successful scientific accomplishment, are committed to full belief in the Biblical record of creation and early history, and thus to a concept of dynamic special creation (as opposed to evolution), both of the universe and the earth with its complexity of living forms.

We propose to re-evaluate science from this viewpoint, and since 1964 have published a quarterly of research articles in this field. In 1970 the Society published a textbook, *Biology: A Search for Order in Complexity*, through Zondervan Publishing House, Grand Rapids, Michigan 49506. 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

This issue features Part II of the minisymposium on orogeny organized by George Howe, Director of the CRS Grand Canyon Experiment Station. The question and answer portions at the end of the papers are quite interesting and revealing. The final part of an extensive book review by A. W. Mehlert is also featured. This review of a typical anticreationist book exposes the poor science employed in the defense of evolution against creationist tenets. Along the same line, Paul DuBois illustrates how invalid another attack on creationists is.

Dr. John R. Meyer, Chairman of the Research Committee, starts a two-part series on his work at Shiva Temple in the Grand Canyon. The first paper deals with the historical background necessary to understand the recent CRS work. Wilbert Rusch indulges in some reflections of his part in the develop-

ment of the Society as well as a discussion of his creationist philosophy. Dr. H. S. Hamilton has written another fine article on eyes and the lack of evidence for any evolution.

Colin Brown further develops his genetics principles based on a creation model of science and Lawrence McGhee outlines some metaphysics involved in modern science. Dr. Dudley J. Benton calls much needed attention to the referencing practices of many creationist writers. Hopefully this letter will encourage more attention to detail by future authors of creationist material. I hope you will find much of interest in this issue and that you will express your opinion to me. Also your help in encouraging wide circulation of the *Quarterly*, particularly in university libraries, is needed.

Emmett L. Williams, Editor

MINISYMPOSIUM ON OROGENY—PART II

MOUNTAIN SYNTHESIS ON AN EXPANDING EARTH

GLENN R. MORTON*

Received 15 November 1986; Revised 18 May 1987

Abstract

The expanding radius model of the earth after the Flood is offered as a mechanism for orogeny. Continental uplift with ocean basin subsidence after the Flood does not seem probable. The Flood process lasted much longer than one year.

Introduction

Flood catastrophists generally assume that the pre-Flood mountains were not as tall as modern mountains and early ocean basins not quite as deep. While these workers differ regarding the role (if any) that comets and/or plate tectonics might have played in the Flood, nearly all of them assume that the waters arose over the early land mass because of a sudden and immense increase in the global water supply.

It is generally held that some of this added water came from a canopy or from deep space (the waters above the firmament), while the rest of the added water issued from below (the fountains of the great deep), possibly arising from volcanoes. Although I agree with other creationists about water being added to the earth's system by volcanic activity, I object to the canopy model as it is usually presented: see Morton (1979 and 1980a) for a critique of the usual canopy model.

How Did the Continent Reappear and Dry Out after the Flood?

(1) Continental uplift with ocean basin subsidence?

To account for drainage of waters from the continent into the ocean basins after the Flood, many creationists espouse what shall here be called the "uplift-subsidence model," by which they imagine that

the ocean basins rapidly sank and at the same time the continent(s) experienced uplift. In such a scenario mountains and other physiographic features would arise later as a result of continental rifting or other postFlood uplift changes.

The Problem of Sedimentary Distribution

I believe this uplift-subsidence model faces several critical problems, one of which centers on the distribution of sediments. Based on this view, one would predict that the newly-added canopy waters would generally wash material from the higher areas (continents) into the lower regions (oceans), thereby depositing far more sediments in the basins than on the continents—see Morton (1980b and c).

During the tremendous rain storms, materials would be largely picked up on the continents and carried downhill until the Flood waters reached the oceans. Here the velocity of waters draining off continents would decrease, allowing sedimentation to occur in the oceans or on the continental shelves. Some sedimentation would also be expected on continents, of course, but to a much lesser extent than in the oceans.

Most of the sedimentary deposits, however, are found on the continental platforms, which are topographically higher and not in the ocean depths which are topographically lower. The present ocean basins average only 300 meters of sediments while a comparable average sedimentary depth for large land areas is 3000 meters. If these deposits resulted from the

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uplift-subsidence sequence, their distribution would seem to violate the second law of thermodynamics—Morton (1980b and c). To account for this it would seem to require additional miraculous intervention.*

The Problem of What Force Might Have Caused Uplift and Subsidence

The uplift-subsidence believers face a further problem regarding what force might have caused the upward movement of the continent and downward shift of ocean basins. An examination of the physical constraints on vertical continental movement raises serious difficulties for creationists who believe in such rapid uplift and subsidence. These difficulties occur both in the mechanism which caused the movements and in the speed with which isostatic balance would be reestablished afterwards.

In terms of modern geophysics the granitic continental platforms are seen as floating in the underlying mantle. The continents as a whole are isostatically balanced, meaning that the weight of the continent is balanced by the buoyant upward forces.

In a glass of water, for example, an ice cube floats in isostatic balance when approximately nine-tenths of it is submerged and 10 percent is above the water. When one pushes the cube below the surface, the forces are no longer balanced as the upward push of buoyancy is greater than the downward force of gravity on the cube. If one then releases the ice cube, again it will rise until an equilibrium of forces is reestablished.

The continents are similar to the ice cube except that they are floating in a much thicker material than water. Like unusually thick honey or asphalt, the mantle is far too viscous to allow rapid upward or downward movements. Small areas can be uplifted by magma movement but not the exceptionally large ones posited in the uplift-subsidence view.

In water, which has a viscosity of 0.01 poise, a fishing bob can move up and down with a period of under one second—Morton (1981b). In thick honey, (viscosity 100 poise), the bob may take several minutes to move up in response to isostatic changes. But the earth's mantle has been calculated to have a viscosity of 10^{22} poise so the expected period required for the uplift of a continent through such a medium would be on the order of thousands of years—see Morton (1980b) for calculations.

There thus appears to be no way short of a series of miracles for the continents to have risen and ocean basins to have sunk in time to drain Flood waters rapidly from the land after the Flood. Creationists defending the uplift-subsidence model must face the problem of this phenomenally slow movement expected for continents.

(2) Did the Earth's Radius Expand?

Instead of an uplift-subsidence approach to ending the Flood, I believe that the waters went down as a result of the earth's radius expanding after the majority of Flood sediments had been deposited; a view which can be called the "expanding radius model"—Morton (1980b and 1983). Thus I am seriously proposing the bizarre and seemingly outrageous idea that the earth

was physically smaller before the Flood and that it began expanding near the end of the Flood.

Although there is the immediate temptation to dismiss such a concept as entirely too radical, it has had some serious and widespread discussion. Lester King's book (1983) on an expanding Earth and a defense of Earth expansion by Warren Carey (1976) are two examples. Oddly enough, Carey was also the first man to suggest continental drift in its presently accepted form long before others liked the idea. By the time everyone accepted plate tectonics, however, he had abandoned it in favor of radius expansion: the fellow's timing was poor!

Would the Present Supply of Water Cover Mountains on a Smaller Earth?

Rehwinkle (1951) developed a calculation which he thought proved the Flood could have covered the continents. I feel this is invalid but quite useful as a gauge of scale. If one were to equalize all elevations around the world and make a uniformly deep sea, the oceans on the present sized earth would be 1.7 miles deep. If, however, one took the same approach for a smaller earth, the ocean would be 6.8 miles deep. Thus the smaller pre-expansion earth would require less water to achieve an equally deep inundation regardless of pre-Flood topography. On the present sized earth, miles of additional water would not cover Mount Everest but Everest would be easily covered by the same water volume on a smaller earth.

I am not suggesting that the Flood occurred by means of the leveling of the elevations, as Rehwinkle (1951) believed. But what I do envision, however, is that the geometric relationship between the surface area of a smaller earth and the surface of the present earth actually explains how the earth could at first have been covered with the water and later dried out—see Figures 1, 2 and 3.

Radius Expansion and the Flood

Consider a smaller preFlood earth with less water than exists today. Its seas would on average be shallower than the present oceans. Evidently before the Flood the earth had an outer granitic crust covering its mantle—Figure 1. Assume then that the earth began expanding. The first thing that might be expected to happen would be for this outer granitic crust (Figure 1) to crack. Along these fractures, lava would pour out bringing with it much juvenile water in the form of steam. As the steam cooled, rain would fall, adding new water to the earth's surface. The heat given off during the condensation of this water vapor reveals a serious problem in accounting for the apparent 40 days of worldwide rainfall. I have addressed this problem elsewhere—Morton (1980a).

Whether or not the sea level would rise under such conditions would depend on whether these newly formed cracks began to fill with lava or remained as huge gashes in the earth. Assuming that they were filled with lava from below, the sea level would rise for a while. But after some time the pressure on the lava would lessen so that it would fill less and less of the gash that kept reopening during continued expansion. When this occurred, the sea level would begin to

*This additional miraculous intervention is obviously not mentioned in the Bible. (G. F. Howe)

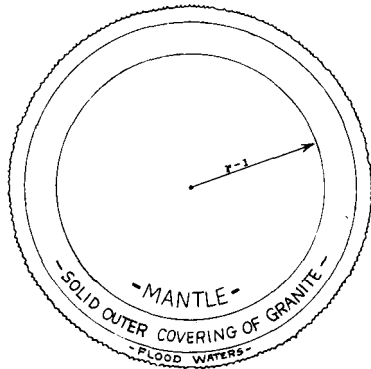


Figure 1. Early earth during the peak of the Flood. The crust of the earth at this time was solid granite. The radius of the mantle (r-1) was small so that the waters were able to cover the entire continental mass.
Drawing by Ross Marshall.

fall, exposing the highest elevations on the continents at the “end” of the Flood—see Figure 2. Note that the expanding radius view will help us understand why a rainbow would appear after the Flood whereas it did not previously—see Morton (1981a).

Evidently it was during this later period of time that Noah and the animals left the ark. Once some of the land area was permanently exposed, not to be inundated again, the ark served no further useful purpose. But I assume that the earth’s radius continued expanding over a period of at least several centuries and the waters thus moved back and forth across the lowlands, causing later fossilization for dozens and even hundreds of years after animals and plants had begun to repopulate the earth.

As illustrated in Figures 2 and 3 the expansion would cause tremendous extensional faulting of the granitic crust. As sedimentation took place, more faulting continued. The places where the granitic crust remained stable received sediments deposited horizontally. The other areas surrounding the plateaus, faulted downward and fell away from these stable areas. Thus plateaus such as the Kaibab Plateau through which the Grand Canyon was cut, were not *uplifted* as most creationists assume but are areas that have always remained relatively stable.

Evidence Supporting the Belief That the Kaibab Plateau Was Never “Uplifted”

The so-called Kaibab “uplift” in Arizona is surrounded on three sides by areas that were structurally lower. To the northwest is the Cordilleran geosyncline, to the south is the Arizona Sag, to the east is the Black Mesa Sag, and only to the north is there a structural high. Apparently the Kaibab Plateau downfaulted early from the Piute structural high to the north but then remained stable while everything south and west continued to downfault.

This Kaibab Plateau is part of the larger Colorado Plateau which has a thicker crust under it than is found either in the basin and range to the west or the Rio Grande Rift to the east. This thicker crust was harder to break than the thinner crust in surrounding areas. Thus the stresses associated with expansion were taken up by faulting in the thinner crust areas surrounding the plateau. The granitic crust produces much heat so

this fits with the fact that there is greater heat flow through the Colorado Plateau than through its surrounding areas.

As one might also expect in keeping with the expansion view, tensional structures are actually found along the plateau margins, and more volcanism occurs around the margins than on the plateaus. The plateau itself is generally lacking in volcanic deposits. As one approaches the edge of the plateau, volcanic deposits are found more often. Earthquakes also are rare on the plateaus, as are major faults. From a tectonic standpoint the plateau is boring but the edges are exciting and this is as we would expect to find it in keeping with the expanding radius model.

Does This Radius Expansion View Help Explain the Grand Canyon?

As the waters finally drained off the plateau, the rainfall continued after it was exposed, thereby cutting through the canyon itself. The “great unconformity” occurs where Precambrian beds like Shinomo quartzite, Hakatai Shale, and Dox sandstone lie at an angle of approximately 35°. They were eroded and overlain by the nearly horizontal Cambrian Tapeats Sandstone. According to my view these Precambrian beds were pre-diluvial sediments tilted and eroded during the early part of the Flood.

This unconformity and subsequent other unconformities higher up the canyon wall were caused by very minor shifts in sea level which for brief periods of time exposed these areas to erosion before they reinundated and experienced further deposition.

Evidence from Geographical Extent of Sediments Supports Expansion

Geologists have used the distribution of rocks containing marine fossils to determine where the sea was and where the land was when that particular rock was deposited—see Dott and Batten (1971) for example. Obviously this method is not foolproof but it should give a reasonable estimation of where the sea was at particular times. By using these distributions for various geologic “epochs” one can produce a series of paleogeographic maps. Such a series reveals that the sediments of the earliest geologic periods (such as the Cambrian) are the most geographically widespread—implying the greatest extent of inundation at the time they were formed. The youngest sediments, on the other hand, merely fringe present day coastlines as if the sea level were only a few tens of feet higher than at present—Dott and Batten (1971).

The Earth is Presently under Tensional Stress

Another piece of evidence which supports the expanding radius view is that the earth has been under tensional (pull-apart) stress since the Triassic, as Kent (1981) writes: “It is difficult to dismiss entirely the thesis that this very long continued tensional episode reflects global expansion . . .” p. 7.

How long did the Flood last?

Within this expanding radius model it is assumed that the entire Flood process lasted much longer than one year. The Bible teaches that Noah was on the ark

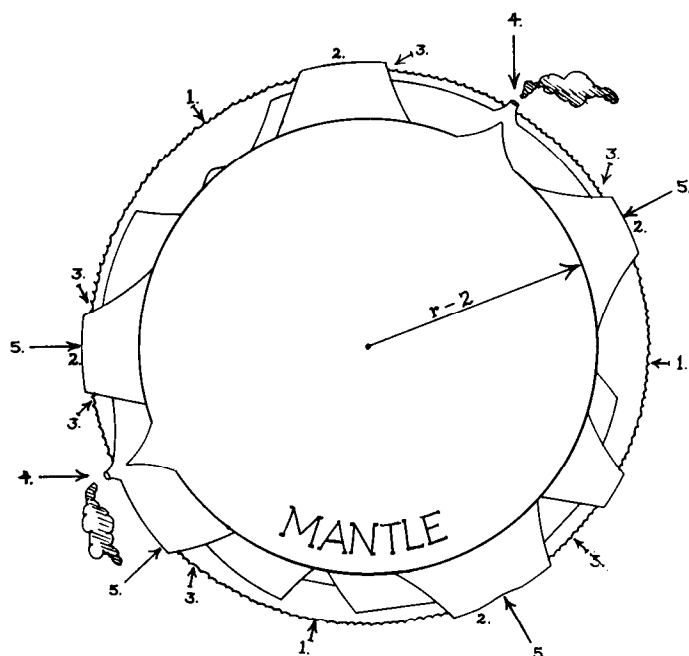


Figure 2. Intermediate earth. Here the earth is shown at the time Noah disembarked. There has been an increment of expansion so that the mantle ($r-2$) and the crust have both expanded. Note, however, that the crust has split and been broken because it is rich in silica and would thus be expected to expand considerably less than the mantle which is rich in magnesium compounds which would have expanded more. The various features of the earth at this time include the following:

1. Incipient ocean basins with ridge which is center of expansion.
2. Plateaus. Notice how everything is dropping in relation to them.
3. Cratonic Basins—like the Anadarko Basin of Oklahoma.
4. Volcanism due to cracking of outer shell from underneath. This is because the shell attempted to adjust itself to a radius of curvature much like an orange peel when one attempts to flatten it.
5. Exposed land area where animals lived after they were released from the ark.

Drawing by Ross Marshall.

for a year but it does not really designate the period of time the world was different geographically from the present world. Perhaps Noah recorded observations about only his immediate environment. Genesis 8:13-14 relates that the earth was completely dry. If one assumes that this passage is *revelation* about the entire earth to Noah or to Moses, then my interpretation must fail. But if this is the record of one of Noah's observations, then it might refer only to the area immediately surrounding the ark, since it is unlikely that Noah was recording any extensive survey of coastlines!

Currently the sea level is rising at the rate of 1.5 feet per century. In light of this, what does it mean to say that the earth is "completely dry?" When saying that the Flood lasted longer than one year, I am referring to the entire period between the Flood's onset and the time when the sea was nearly down to its present boundaries: a period of time which perhaps involved many hundreds or thousands of years. D. W. Unfred (1988) has done a thorough job of comparing my view of an expanding earth with creationist plate tectonics and then analyzing its relationship to Scripture and postFlood events.

PostFlood Fossilization and Extinction Occurred

After Noah released the animals, it would seem likely that they were on their own for survival. As they were repopulating the earth, the geologic work was continuing. Many of them were killed and fossilized in some of the more minor catastrophes. Fossilization, extinction, and continued earth expansion all occurred simultaneously in the postFlood environment.

This is the only view that seems to explain adequately why kangaroos live only in Australia and why Australia is likewise the only place where fossil kangaroos are found. Evolutionists criticize creationism on this point. If the fossils are the remains of preFlood animals, then the kangaroo must have lived in Australia before the Flood, hopped to wherever Noah built the ark, and then hopped quickly back to its former home; leaving no trace of itself anywhere else! This approach at best seems quite unlikely.

Living plants can be found as fossils in areas that they now no longer inhabit. If one continues to study older rocks, however, those fossils of living plants are found distributed even further away from their living locality. Accordingly many of the more recent fossil layers represent a record of plant and animal distribution long after the Flood—see Morton (1982b and 1984) for additional details.

By what Mechanism did the Creator Expand the Earth's Radius?

One of the major problems facing all those who have proposed views of earth expansion is that of finding a suitable mechanism. I have assumed that the Creator could have brought about earth expansion after the Flood by increasing the size of all atoms (Morton 1983). Each atom has electrons which orbit its nucleus at certain distances. This is attributable to the fact that the electrons are attracted to the nuclear protons.

But at the same time each atom repels other atoms with a certain repulsiveness which is the Pauli exclusion force, n —Morton (1983). When one atom tries to occupy the same space as another, it is prevented from doing so by this repulsion.

If the distance between the electrons and the protons in each atom were to increase, so would the value of " n " (repulsiveness) increase and each atom as well as the earth itself would expand. Furthermore, if each different type of atom (magnesium, versus silicon, for example) were to experience different amounts of expansion then there would be differential size changes in various materials—a point to which we shall return when discussing compressional features of the earth.

A mechanism for earth expansion is neither really as complex nor as hard to conceive as might appear at first. The size of the atoms is determined by the size of the electron orbits. If the force which holds the electron close to the nucleus changes such that the atom gets bigger, then the earth must expand as well. By analogy, if one were to weaken the force of gravity then the moon would move away from the earth; its orbit would be bigger. What I am suggesting is thus a change in the atomic equivalent of gravity. Only the Creator could have caused such a change so it is at this point that I propose a single point of the miraculous.*

*This is obviously a miracle not mentioned in the Bible. (G. F. Howe)

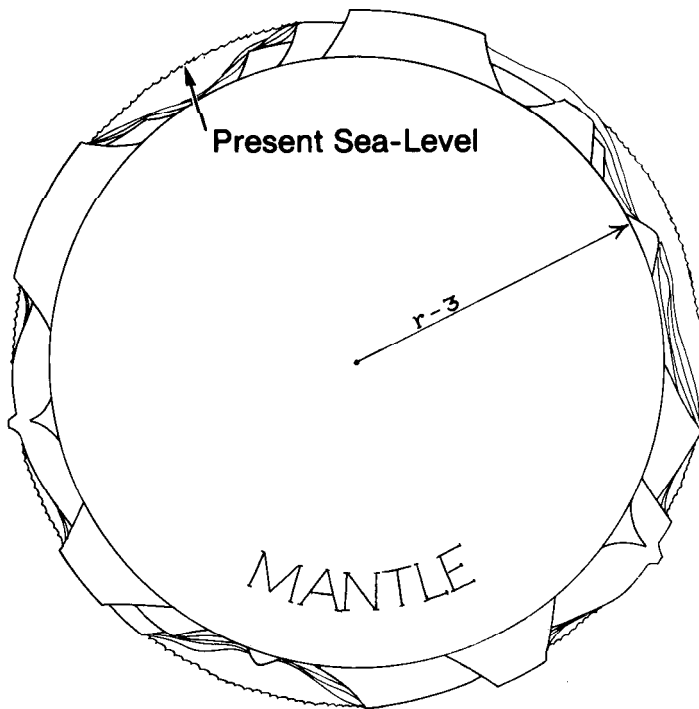


Figure 3. Present earth. For a considerable length of time after the Flood, the earth's radius continued to expand, and thus it is obvious from the figure that [4-3] (the radius of the mantle) is greater than it was even in the intermediate earth, $r-2$. The crust also expanded but to a lesser amount so that it split.

Drawing by Ross Marshall.

Please note, however, that this expansion view does not require additional "mass" as some might suggest.

How Could the Expanding Radius View Account for Compressive Forces Involved in Mountain Building?

The expanding earth model would seem to have a severe problem explaining compressive forces. And yet mountains often involve just such compressive features in their formation: places where the rocks have been pushed together in collision (rather than pulled apart.) Thus historically many geoscientists have rejected the expanding-radius model because of its apparent inability to explain and predict compression forces on an expanding earth. For example, Scheidegger (1958) stated it this way:

However, there is one fundamental difficulty. This is that in an expansion theory, it is no longer easy to account for the observed crustal shortening as there is no reason for the 'skin' of an expanding sphere to become crumpled up. It would therefore appear that all the expansion could create, is a pattern of fissures through which the liquid magma below could rise to cause mountains. There seems to be no possibility of explaining nappes and similar phenomena. pp. 204-5

More recently Skinner has summarized the problem as follows:

Evidence of vertical motions is abundant in the geological record, but it cannot explain certain features—especially the existence of mountain ranges, for which lateral forces seem to be required. p. 404

From this I surmise that the formation of mountains by lateral forces is a problem faced by all geologists, not just those who hold to earth expansion.

If atoms expanded uniformly, there would be no evidence of expansion nor would there be a basis to understand compressive changes. In fact, uniform expansion would give all the appearances of an earth that had never expanded.

I have argued instead—Morton (1983)—that different minerals expanded at different rates. Since that article was published I have been able to show that the silica rich granite of the crust (see Figures 1, 2, 3) would expand at about one-half the rate of silica poor basalt since silica has a value for "n" of about twice that of magnesium containing compounds. The granitic continental platforms would thus expand much less than the mantle of the earth because the granite contains much silica (low expansion) while the mantle is high in magnesium compounds which would have relatively high expansion. The interior of the earth would approximately double in size in relation to the outer granitic platforms.

If one were to place potassium iodide (KI) around a body of Al_2O_3 there would be compression at their interface since Al_2O_3 becomes much larger than the KI, even though both are expanding. Extending this reasoning to the crust, if one part of the crust is slightly enriched with a more expansive mineral and this region expands faster than the earth as a whole, there will be compression in that area. I believe this led to a breaking, twisting, and crumpling of the crust yielding faults and even compression mountains.

Incidentally, uniformitarians who hold to expansion will not accept this differential expansion idea of mine because changing the permittivity of free space between the atoms requires that the universe be much younger than they prefer to believe—see Morton (1982).

The new volume in the interior and elsewhere is taken up by the atoms that used to be smaller. The trenches are really incipient ridges because after the crack in the crust gets deep enough, lava will come out.

A Comparison and Contrast of the Rapid Rifting View and the Expanding Radius Model

Believers in both plate tectonics and expansion would view the ridges as places where new material has been added to the earth's surface. There is evidence for this in that pillow lavas have been observed forming along the ridges. In the expanding-radius view the ridges are the places of the initial fracture of the granitic crust which occurred at the onset of expansion. Hence there is no need to correlate each one with a subducting trench as must be done in plate tectonics. This is fortunate as there appears to be an absence of such necessary trenches in the cases of Africa and Antarctica. (See my questions to Northrup in this symposium.)

In the plate tectonics view, what goes up from the ridge must go down in some area of subduction—a trench. In the expansion view, however, the same ridges are seen as nothing more than tensional cracks. Often behind the ridges there are horsts and grabens rather than thrusts—data which affirm that trenches

are extensional features rather than the compressional ones required by continental drift. Continental drifters have coined the term "back arc spreading" to refer to this phenomenon which they would otherwise not expect to find.

The Aleutian trench retains the same morphology from one end to the other. But if drift really is occurring (as plate tectonics people say) then the eastern part of this trench must be subducting while the plate motion is actually pointed away from the western edge of the Aleutian trench—an unlikely prospect, to say the least. Going back to the tensional nature of trenches, Carey said (1976):

Commonly patterns interpreted as compressional are equally valid when the stresses are reversed, with compression replaced by tension. Thus in Scheidegger's analysis of Wilson's theory of compressional island arcs, he pointed out that the stress terms are squared, so that a tensional regime could mimic a compressional regime. p. 65

Also the sediment in the trenches is quite often horizontal and undisturbed which is at least a little more understandable with an extensional regime like the expanding radius view than in a compressional one like plate tectonics.

Summary

Although the expanding-radius view has experienced a studied neglect by most geophysicists, it deserves to be resurrected. By it one can explain how water drained from the continents after the Flood. Likewise it conforms with all the data supporting a geographic fit between modern continents to produce a single original continent. By use of my differential expansion concept whereby different kinds of atoms differed as to the amount of expansion they experienced, it is possible to understand how compressional mountains were produced in postFlood times. If we wonder how the Creator made mountains, the expanding radius model deserves our very serious consideration.

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Questions, Comments, and Replies

Comment from Waisgerber to Morton

The evidence proposed by Morton could be used just as easily to postulate an earth which was much larger in diameter before the Flood. Then the shrinking of the earth would have caused a varied topography about the earth, including such things as basins or depressions. Morton's report and this comment both fail because they deal in *theoretics* (inductive reasoning) and not in *specifics* (deductive reasoning). One must deal with all the specific strata on earth and not in generalities. In order for Morton to be convincing in geology, he must show by analysis of localized geological phenomena that such an expansion event actually occurred.

Let me state further that my experience with the use of mathematical formulae in treating geophysics leads me to the one conclusion that the earth's crust cannot be understood in terms of formulae alone. Such conception may lead to outlandish theories inconsistent with what we see. I believe that the earth was created with a diameter similar to the current one and being in its present orbit was warmed by a sun whose energy not changed materially from the time of creation. If this represents "uniformitarianism" to other creationists, then so be it.

Ever since Wegener proposed continental drift as a theory, there have been physicists and geophysicists who have concluded on the basis of mathematic formulae that continents could not drift. From the beginning such formulae were conceived in the laboratory and have never been proved in the field. Morton's formulae fit this criticism as they are based on textbooks and not in the characteristics of the actual materials that make up the earth's crust in sites.

Reply by Morton

I frankly fail to see how the evidence presented in my papers could be used to prove a *larger* earth that shrank. If one will work with the mathematics he will find that on a *larger* earth, more of the sediment would flow into the deep ocean basins thereby exasperating the problem of sediment distribution rather than solving it. Perhaps what emerges here in the differences between my views and Waisgerber's relate to the differences usually evident between geophysicists (like myself) and geologists (like Waisgerber). Being concerned with the taxonomy of strata (often in one locality such as the Los Angeles Basin), geologists are immediately suspect of the more sweeping studies of geophysicists. Generally geologists do not use or understand mathematics.

I must disagree with Waisgerber's idea that we must always argue from the specific to the general. Really, both inductive and deductive logic must go hand in hand. One cannot analyze how a certain rock layer

was deposited without some type of general framework within which to interpret those data. The facts do not “speak for themselves” but must be interpreted. The best way to attack the problem of how mountains were formed, as far as I am concerned, is to start with a general view and allow the facts to change the model as needed.

One must not forget that the use of mathematics in science is what has made progress possible. In medieval and ancient times science consisted mainly of verbiage with little or no mathematics. Science advanced only when Renaissance man put mathematics with his explanations.

It is of some interest to add that to date, no experimentally determined or observed movement of the continents has been reported. This applies especially to the plate tectonics in which such movement is expected now. How can we be so sure that the continents are presently moving or have moved in the past if we can not observe such movement directly? There are only two avenues open to solve that problem. First we can look at geologic evidence. It is, to me, conclusive that the continents have split apart. Secondly, we can use mathematics to model the earth with the point of either proving it possible or impossible, and the mathematics will then point us along certain prescribed paths of research.

Comment by Waisgerber for Morton

I assume that soft, watery strata of Kaibab Plateau were uplifted to thousands of feet above sea level after the Flood. These relatively unconsolidated strata were then eroded very rapidly and deeply until the time when they became “dewatered” and hardened, after which erosion still proceeded but at a less rapid pace. Thus I hold that the Grand Canyon was “cut” when the rocks were still much softer.

Reply by Morton

Contrary to what most creationists (including Waisgerber) say, we cannot conclude that all rocks were soft and pliable and thus more prone to erosion when they were deposited. Clastic rocks such as sand and shale were soft and pliable when deposited but precipitated rocks like many limestones, anhydrites, salt gypsum, and such were not more soft and pliable earlier than they are today. In fact, one of the toughest rocks from which to attempt to get samples is newly deposited reef rock.

Knowing what I do about limestone, I assume that every limestone at the Grand Canyon has ledges around the mesas. Carbonate cemented sandstone should also produce small ledges. This is because limestone is less erodable than the shales. In the case of sand with lime cement (which is really quite common) the limestone must be dissolved before the quartz grains are free to be eroded. The method by which most rocks “harden up” is by dissolved lime from some higher limestone percolating down through the rocks and depositing limestone between the rock grains.

Thus the cutting of the Grand Canyon is not simply a matter of assuming that soft postFlood rocks could be easily eroded.

Comment from Howe to Morton

Is it not possible that the Creator miraculously caused continental uplift and ocean floor subsidence at the end of the Flood? Would not this allow the uplift subsidence view to stand against your criticism of it?

Reply by Morton

I am not suggesting that the uplift subsidence model of postFlood activity has been completely disproved nor that it should be entirely neglected. I *am* showing that it has serious scientific and Biblical problems, however. For example, it would be strange for the Creator to use the technique of uplift and subsidence at the *end* of the Flood since this would seem to make the adding of water at the Flood onset unnecessary. Thus if the Creator was given to miraculously moving continents or ocean basins up or down, He could have simply lowered the continents *before* the Flood and raised them later without there being any seeming need for recourse to added water at all. It appears from the Bible narrative, however, that the adding of water was absolutely essential to the Creator's process of flooding the land.

Question from Patten to Morton

Within the framework of the expanding radius view, how do you propose to explain the fact that mountain ranges, merging into orogenic belts or cycles, exist in the pattern of a great circle? Why are individual mountain ranges often uplifted in the form of an arc with a radius of from 300 to 1200 miles—e.g. the Himalayas, Trans Himalayas, Kun Luns, Tien Shans, Alps, Sierra Nevadas (of Spain), Taurus (of Turkey), Elburz (of Persia or Iran), and the Hindu Kush (of Afghanistan)? Why are orogenic belts highest and widest in the center such as in the Tibetan Plateau and the Bolivian Plateau each of which has surrounding arcuate ranges?

Reply by Morton

You ask how (other than by a Mars flyby) the mountain ranges would be expected to occur in a circle. I do not know. But the arc-like nature of mountain ranges is very simple to explain. Stresses which must be relieved along a straight line on a flat surface will be relieved along an arc on the surface of a sphere. In other words, on a spherical surface, the arc is the mathematical equivalent of the line on a flat surface.

Comment from Patten to Morton

Morton indicates that in his opinion mountain ranges are largely compressive by nature, like two automobiles after a head-on collision. I disagree with this and see mountain formation mainly as an upthrust. Even as high tides are followed at 6.25 hour intervals by low tides, so in the crust high tides (upthrust) can be followed by low crustal tides (compressive force). But the upthrust precedes the compression and is of greater significance—see my paper in this symposium.

Reply by Morton

The magnitude of the differential force due to tides of a Mars-sized planet at the Roche limit, on two nearby points on the earth's surface is far too small to

produce the large overthrusts seen in many mountain ranges. In this scenario the majority of the damage would be to Mars not to the earth since at the Roche limit it is Mars which would break-up not the earth. Seismic data shows that the formation of many mountain ranges were produced by the horizontal overthrusting of huge blocks of rock. This can be seen in seismic data shown in A. W. Bally. 1983. *Seismic Expression of Structural Styles*, 3, *Studies in Geology* #15. American Association of Petroleum Geology. Tulsa. These are permanent compressions of the rocks to produce mountains. In a tidal view, even assuming that a large enough tide could be created, what is compressed this moment will be extended 6.25 hours later thus undoing the previous compression.

Question from Woodmorappe to Morton

I wonder how Morton can maintain that most sediment eroded off the continents during the Flood would have ended up in deep ocean basins on a non-expanding earth. I have pointed out (Woodmorappe, J. 1983a, A letter to the editor Concerning Several Matters, *CRSQ* 20:53-6) that most of the sediment eroded off continents does not have sufficient flow energy (in terms of the water carrying it) to be deposited much beyond a few hundred miles from the continent. Furthermore, tectonics places a major constraint upon sedimentation in that basins, geosynclines, and such prevent most sediment from even being available to reach the oceans.

Although one can point to ocean sediments as such, these are mostly a few hundred miles or less from shore. Thus fluvial discharges into oceans do not cause most of the sediment to end up in deep-ocean basins. Thus most sediment coming off the continent does not go into deep ocean basins but gets deposited within a few hundred miles from shore. It would seem unreasonable to say that there should be any more sediment from the Flood on the ocean floor than on continents.

This point is confirmed by a study on global fluvial discharges as described by Milliman, J. D. and R. A. Meade. 1983. World-wide delivery of river sediment to the oceans. *Journal of Geology* 91:19.

Although most summaries of world-wide sediment discharges, including this one, claim to be reporting the discharge to the oceans, *relatively little river sediment appears to escape the present-day continental shelf*. As mentioned previously, much of the sediment probably accumulates on the subaerial parts of subsiding deltas, never really reaching salt water . . . Everywhere rivers debouch onto continental shelves, much of the sediment accumulates on large deltas (Yellow, Mississippi, Niger) or along the adjacent coastline (Yangtze and Amazon). *Only a small portion of the modern river sediment brought to the coastlines of the world accumulates on the floor of the deep sea.* (Emphasis added.)

Thus even the Amazon Cone which extends 2/3 of the way to the mid-Atlantic Ridge, can now be seen (in the light of Milliman and Meade) to contain only a small portion of the Amazon River discharge.

One should not expect more sediment to be in deep ocean basins than on land; and so there is no need for

an expanding earth to account for what is actually found. The distance of discharge is at least a second power function so that even if the Flood-recessional currents were much faster than current river discharges, this still would not enable most sediment eroded off the continents to be deposited much more than a few hundred miles from the nearest shore—let alone in great thicknesses at the deepest ocean basins.

Reply by Morton

While it is true that relatively little river sediment is deposited in the oceans (only 14 percent according to Milliman and Meade) one cannot conclude therefore that little of the sediments in the deep sea fans are from the rivers. Milliman and Meade only point out that a relatively small percentage of the sediments brought to the coastlines leave the continental shelf and go into the deep water. The implications of this are that it took longer for the fan to grow to the present size than would be the case if most of the riverine sediments found their way into the abyss. Most of the material in the fans must be from the associated rivers as noted below.

The plain fact is that the largest fans are found off the mouths of rivers carrying the largest sediment loads. The Bengal fan is the world's largest fan, 2000 miles long and 600 miles wide. It is found just off the continental shelf from the Ganges/Brahmaputra Rivers. According to Milliman and Meade these rivers carry more sediment to the sea than any other system. The Yellow River in China is the second most sediment laden river. There is no fan associated with this river but there is also no deep water within 1000 miles of the mouth. The second largest fan (440 miles long; 240 miles wide) is associated with the Amazon River which is the third most sediment laden river. The Mississippi River is the fourth in sediment load and third in fan size (200 miles long; 400 miles wide). If we are to believe that the sediments found in the deep sea fans do not come from the rivers with which they are associated, then we must also believe that the association of fan size and sediment load noted above is nothing but pure coincidence. That seems unlikely.

The processes by which material deposited onto the shelf find their way into the deep water are outlined in Reineck and Singh, *Depositional Sedimentary Environments*, Springer Verlag, New York, 1980, pp. 463-4. Long shore currents slowly push the sand and clay along the shelf until the particles' path crosses the head of a submarine canyon. At that point, the particles' fate lies down the canyon and not further along the shelf. On the east coast of the United States this long shore current is known as the Gulf Stream.

Apart from this it seems rather strange to compare the geologic erosion of Noah's Flood with that of a river today. Milliman and Meade point out that their average measurements of where sediments are deposited and the amount of material carried by rivers ignore catastrophic events. They note that the Santa Clara River in Southern California has an average suspended-sediment discharge of 69,000 tons per year but during a 1969 flood it carried 50 million tons, 22 million tons in a single day (p. 4). Thus one can see that the sedimentation accomplished by an average river in average times is much different during catastrophic

times as would occur during the Flood. To assume that Noah's Flood which was strong enough to produce 617 million cubic kilometers of sediment by erosion of the pre-existing topography was no more powerful in its depositional effects than an average modern river seems contradictory at best.

Comment from Nash to Morton

I wholeheartedly agree that one of the most difficult things to understand about the Flood is how the repopulation of the human and animal world as we see it today could have developed from the eight humans and load of animals preserved on the ark in a relatively short period of time.

If every atom increased in size, I assume this goes for all the living organisms also. That means that every living thing was originally much smaller, but had the same mass. How much smaller would a human being have been in this scenario? Also, if different atoms expanded by a different amount, would not the human body, which contains many mineral compounds, suffer the same problem as the earth's crust?

Do you conceive of the expansion just limited to those atoms on/near the earth or would it also involve the entire solar system? galaxy? the Universe?

Reply by Morton

I would readily agree that the expansion proposed by this author in order to account for the geologic data presents a severe problem when one considers the effects on living organisms. However, I do not believe that the problem is quite of the nature suggested by Nash. I envision that the alteration in the size of atomic radii occurred over many, many generations so that the effects were never evidenced within a single individual. During an individual life span the atomic size would not change significantly. Over many generations the effect would become noticeable. Each succeeding generation would have lived in a slightly different environment from that of his parents. Thus overthrusting or the splitting of an individual would not occur. Any slight structural damage occurring during an individual's lifetime would probably be corrected by the organism's ability to heal itself.

In order to be logically consistent, I would have to say that all animals were indeed smaller than modern representatives, since they lived during a time that the

electric force was changing over the entire universe. However, we might not notice too much difference between the size of the fossil specimens and modern representatives because even after they died, their bones would expand making the fossils appear larger than they were in life.

What is the most difficult dilemma posed by this hypothesis when it is applied to life? I believe it is in the question of whether the enzymatic systems would still work after such change. The shape of a given molecule is determined by the interaction of the individual electrical charges of each atom in the molecule. If the electrical forces change, as I suggest, then the shapes of the molecules would also change. If they changed by too much, then biological activity would not be possible.

On the other hand, consider what might be the case if the molecular shapes were altered only slightly. It is entirely possible (albeit mere speculation) that the molecules in an enzymatic system might actually end up being more efficient than the systems we are blessed (or cursed) with today. If the system were more efficient, it could account for the apparently greater viability of the pre-diluvial beings. I would suggest that this could be an alternative explanation to how the patriarchs lived so long.

Another effect of only a slight alteration in the molecules making up life is that the morphology of the individual organism would be different from that of the same organism growing under today's environment. Thus a human under the older environment would not look quite the same as humans today. Much of the morphological change seen in the fossil record would not be due to genetic change but due to environmental change. We have only these two mechanisms by which to explain why all the fossils found in the fossil record are different morphologically from those seen today. Genetic change would seem to take longer than most creationists want to allow. That leaves only environmental change as a possible agent of morphological change.

My theory is designed to account for the geological difficulties that I have encountered in 14 years in the oil industry. I will let others deal with the problems it may produce in the living world if it appears to solve problems in orogeny and to stand the test of time and experimentation.

MOUNTAINS—A TIDAL (ASTRONOMICAL FLYBY) PHENOMENON

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Abstract

The Earth and four other planets (Mars, Jupiter, Saturn and Uranus) give evidence of having been hit by fragments of bodies and/or capturing fragments in ring systems such as the icy rings of Saturn. In the case of Mars, 91 percent of its craters, including all of the largest, are on one side of the planet. This suggests that (a) 82 percent of its craters occurred on one day, and (b) those fragments which missed Mars became the asteroids. But, paying attention to the perihelions of the 15 largest asteroids, whose average is 239,000,000 miles from the Sun, the implication is that the fragmentation occurred when Mars was in another orbit. The flybys of Mars caused mountain uplifts on the earth.

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Close Flybys Occurred between Earth and Mars

Based on further analysis, the orbits of Mars and the Earth are, and presumably were, coplanar. Observing such issues as angular momentum, kinetic energy and orbit resonances, I am led to conclude Mars' former orbit had an aphelion of 218,000,000 miles and a perihelion of 75,000,000 miles, well inside Earth's orbit. And being coplanar, the two planets could, and I propose did, make close flybys periodically and cyclically. The closest and most intense was about 2500 B.C. during the lifetime of Noah. On this occasion, I believe Mars passed within about 15,000 miles (core to core) of the Earth, just brushing Roche's Limit of the Earth within about 4,000 miles.

Tidal forces, including crustal tides, as it turns out, vary with the mass and for distance with the inverse of the cube, not the inverse of the square. Thus I can calculate crustal tides for various Martian flybys as follows:

- a. At 240,000 miles 3.3 feet (10 X the Moon)
- b. At 120,000 miles 26.4 feet
- c. At 60,000 miles 211 feet
- d. At 30,000 miles 1,690 feet
- e. At 15,000 miles 13,500 feet
- f. At 10,500 miles Approaches infinity:
Roche's Limit

During the closest flyby of circa 2500 B.C., on Earth there is evidence of a watery catastrophe. In Mars geography, there are 30 or 40 river systems, with tributaries, lake beds and distributaries, all bone dry. On a planet with 1/3 the gravitational strength of the Earth at surface level, one would suppose such rivers would meander: in fact they gushed and rushed torrentially as judged by the river bed geography. Since Mars cannot retain water vapor in its atmosphere, it is judged that these rivers on Mars were a once and only once forever phenomenon. Mars too has had a flood, and of an astronomical origin. The ice chunks hit Mars, their energies were converted into heat upon impact, and the rivers flowed suddenly, rapidly, and without later replenishment.

Evidences of Mars-Earth Flybys

If Mars made a close flyby of the Earth, as close as 15,000 to 20,000 miles, the following phenomena would occur, and I propose did occur:

1. A gyroscopic precession of the Earth's spin axis.
2. Earth's crust precessing independently of the mantle, and approximately 90° to the mantle.
3. Earth's outer core precession independently of, and approximately 90° to the mantle.
4. A polar relocation, of the magnitude of 3000 miles.
5. A new spin axis tilt.
6. Electron-stripping between the crust and the mantle.
7. A recharging of the Earth's geomagnetic field. (I can establish that tides, not interior convection currents, are the cause for the planetary magnetic fields of all planets.)
8. A polarity reversal of the Earth's geomagnetic field.
9. Crustal tides of 13,500 feet with Mars at 15,000 miles.
10. Crustal tides exhibiting a "flyby" or great circle pattern.

11. Crustal tides exhibiting belts, wide in the middle and narrow and lower at the two extremities, both the length extremities and the width extremities.
12. Crustal extreme distress, or diastrophism, for a period of six or seven hours, prime flyby time (not millions of mythical, Lyellian years).

It is to be noted in passing that there would be substantial oceanic tides simultaneously. Furthermore it is to be noted that the greatest of the mountain cycles is the Alpine-Himalayan cycle, which cycle contains Mt. Ararat where the Noachian vessel is reported to have become stranded, not unlike a piece of driftwood at or near high tide. And furthermore still, it is to be noted that the location of the grounded ark, in a mountainous region, is remote from all oceans, in a continental heartland location.

This study shall concentrate on the orogenetic concerns of diastrophism, uplifting, compression, trenches, tension, shearing, etc. All of these features must be considered in a matrix, and a good explanation must allow for more than just one or two kinds of crustal deformation.

Scriptural Evidence for Crustal Deformation

In Genesis, it is to be noted that, at the onset of the Flood, the "fountains of the great deep (were) broken up." This suggests a tidal phenomenon, which is an astronomical event, as does the Talmud, which says that two stars approached the Earth at the same time.

In Job is recorded the following bearing on crustal deformation and God's great power:

Which removeth the mountains, and they know not:
which overturneth them in his anger.
Which shaketh the earth out of her place,
and the pillars thereof tremble.
Which commandeth the Sun, and it riseth not;
and sealeth up the stars.
Which alone spreadeth out the heavens,
and treadeth upon the waves of the sea.
Which maketh Arcturus, Orion, and Pleiades,
and the chambers of the south.
Which doeth great things past finding out;
yea, and wonders without number. Job 9:5-10

As a catastrophist, an earth historian, and a creation scientist, along with the other four on this panel, I address myself to this issue of understanding "great things past finding out" in the context of crustal, and astronomical distress.

Within this brief but pregnant section of Scripture we find the following themes:

- | | |
|----------------------------|--------------------------------------|
| a. Crustal deformation | (which removeth mountains) |
| b. Oceanic distress | (treading on the sea waves) |
| c. Spin axis precession I | (the pillars thereof tremble) |
| d. Orbital perturbation | (shaketh the earth out of her place) |
| e. Spin axis precession II | (irregularity of sun and stars) |
| f. A significant Arcturus | (not a constellation) |
| g. A significant Orion | (again not a constellation) |
| h. A significant Pleiades | (again not a constellation) |

It so happens that, in Hebrew, "Arcturus" is Ayish (usually preceded by the adjective "Ma"), "Orion" is Khecil, and Pleiades is Khima. Ma-Ayish is Mars, phonetically related to the Greek Ares, and the Hebrew month "Marchesvan" is from Ma-Ayish. Khecil is

Jupiter, and the Hebrew month Chislev is from Khecil. Khima happens to be Saturn. We also note that God in his "anger" or "power" not only removes mountains, but also overturns them. If this is literal or semi-literal, as I suspect, the Bible is giving us a good clue about mountain uplifting or upthrusting, plus tension, shearing, compression, and other orogenic concerns.

The Bible views and presents God as the author of events in the heavens as well as the author of events on the Earth. The heavens include the astronomical heavens, as well as the spiritual heavenly places.

Since there were approximately 170 geomagnetic polarity reversals, this is a clue as to the duration of the Mars-Earth wars. If it can be demonstrated, from the Bible, that these ancient flyby events were in 54-year cycles, we have about 9200 years of potential crustal distress, with Mars close at hand somewhere between 15,000 and 150,000 miles, on each of those 170 occasions. Our concern is that occasion when it was 15,000 miles distant, the closest occasion, and the one which brought the most diastrophism and sedimentary strata to our planet as it now exists.

One Flyby was Closer than all Others and caused Mountain Uplift

It appears that God, in his power, wisdom and unfathomable planning, caused Mars to come within 15,000 miles of the Earth on one occasion, circa 2500 B.C. and within 17,000 miles on another occasion. The results were the Alpine-Himalayan cycle of orogeny on the closer occasion, and the southern part of the Circum-Pacific cycle of orogeny on the other, possibly 5,000 to 6,000 B.C. The closer flyby includes the Himalayan group, the Pamir Knot, the Armenian Knot and the Alps; the second closest flyby includes the Peruvian Andes, the Chilean Andes, and Bolivian Knot and certain ranges in Antarctica and Central America—see Patten (1966).

Tides on spherical bodies are governed by the inverse of the cube for distance, not the more common inverse of the square. Such crustal tides occurred in great circle patterns, causing upthrust, bending and breaking of the Earth's crust in ranges, in arcuate ranges in the majority of cases. The source of power was the most common one in the solar system, or in the universe, simple gravity. It was the gravity of Mars, which is approximately 1/10th as massive as the Earth, pulling in a flyby (great circle) pattern, for a time duration of approximately 400 minutes.

Flybys Caused Spin Axis Shifting

Because the Earth is a gyroscope, as is Mars and most planets, it behaved like a gyroscope. A torque was put on the Earth and the Earth's spin axis precessed. However, it was not as a simple gyroscope, a top or a flywheel, welded into one unit. It was a four tiered gyroscope, with the crust precessing in 90° angular direction to the mantle, the mantle precessing on the outer core, and that precessing on the inner core. We see in the Scriptures similar spin axis precessions in the Long Day of Joshua, and in the Long Night of Sennacherib in Isaiah 37-38. On both of these later, and less intense occasions, the Earth's spin axis shifted somewhat in location, and in tilt, and in directions which can be deduced. I personally believe that

before these two later catastrophes, Palestine had a latitude of about 42° N., and a shift of about five to six degrees to the south occurred on each of these later spin axis events. If so, before 1500 B.C., Palestine would have been the land of grass and flowers (like Western Oregon), of cows and bees, and of milk and honey. This phrase in the Scripture, in the light of spin axis precessions, is to be considered literally, or semi-literally in my view.

If one can demonstrate a spin axis precession on these later catastrophes, surely a more intense one occurred on the occasion of the closest flyby. One aspect of a spin axis precession is a polar relocation, and hence an equatorial shift on our planet. Is there a way to deduce where earlier polar locations were? I believe so, and details in my forthcoming work will indicate before the Flood, in the region of the Azores for the North Pole of the spin axis, and in mid Africa, perhaps Nigeria, in the era before the Antarctic-Andes cycle of uplifting. If I am correct, the North Pole, and the Equatorial Zone, shifted about 3000 miles during the Flood Catastrophe. Alaska formerly had a latitude comparable to Oklahoma . . . or the La Brea Tarpits of California.

Aftereffects of a Flyby Caused Mid-Atlantic Rift

This same flyby caused a new equatorial zone some 4500 years ago. Since the Earth's diameter is about 26 or 27 miles greater on its equatorial diameter versus its polar diameter, some significant, long-term isostasy must have ensued. The Arctic Region, including the nearby Finno-Scandinavian Shield dropped as did the bedrock of Antarctica while the equatorial zone in its new location, expanded, perhaps a half-dozen vertical miles. Of course in the aftermath there would be numerous earthquakes, declining exponentially as the new bulge zone was achieved. And there might even be a couple of splits . . . rifts . . . in the Earth's crust, particularly if they would occur perpendicularly to the equator, allowing some expansion. The African Rift Valley and the Mid-Atlantic Rift Zone are to be noted.

When I proposed (Patten, 1966) that an icy satellite of the intruding planet now identified as Mars, fragmented on Roche's Limit, circa 11,000 miles from the Earth's core, that concept was considered obscure by certain creationists. That it was considered obscure was not because it was in fact obscure, but because these creationists misunderstood astronomical evidence including Roche's well established principle. This fragmentation, I believe to have been the genesis of (1) the Earth's ice age, (2) the sudden atmospheric rain, a hot rain if we are to believe Judeaica, (3) the now dry river beds on Mars. Both Mars and the Earth were sprayed with ice, and even the Moon received a trace.

Other Scriptures Speak of Crustal Deformation

In Psalm 114 it is said that the sea fled or was driven back, the Earth trembled, and the mountains skipped like rams and lambs. Psalm 114 refers to the Exodus scene, at which time it must be noted, Moses reorganized the Hebrew calendar for some reason, likely an astronomical reason. Although the flyby was on the sunward side, and it was during the night time for the Middle East, nevertheless there are numerous indications of great crustal upheavals. One is that the Mount

of Lawgiving was a new volcano. Another is the genesis of the term "passover". Yet another is the Mosaic reorganization of the civil calendar. Marchesvan was shifted from the second to the eighth month, while in ancient Italy March continued to be both the first month, and Mars' month.

During the Exodus catastrophe, it is really very simple concerning orogeny. If the Mars flyby was 30,000 miles, the crustal tide was 1500 or 1600 feet. If the Mars flyby was 40,000 miles, the crustal tide was about 900 feet, and if the flyby was 50,000 miles, the crustal tide was about 400 feet. Those who might suggest that this is poetry or mythology just happen to not understand the times or the power of God.

Another flyby occasion was the year 756 B. C., in October, or Marchesvan. Amos foresaw it and prophesied the falling of celestial fire, possibly interplanetary lightning. Joel described it in terms of fire and brimstone. Zechariah looked back 200 years to it and described the heaving of the crust in the locale of Jerusalem; this is also described in Josephus, where landslides of greater than 100 yards are mentioned. Jonah announced to Nineveh that God's celestial wrath was about to fall on that wicked city. That it did not was a great disappointment to Jonah. But, had Jonah been able to foresee the cosmic discharge on Sennacherib's well-armored army, just 54 years later, and the accompanying blow to Assyrian power in that time, his soul would have been satisfied.

Later in the Book of Job we find the following:

He stretcheth out the north over the empty space, and hangeth the Earth upon nothing . . .
The pillars of heaven tremble and are astonished at his reproof.
He divideth the sea with his POWER, . . .
By his spirit he hath garnished the heavens;
his hand hath formed the crooked serpent
but the thunder of his power who can understand.
Job 36:7-14, portions.

Such, like the earlier speech, was Job's. And note, Bildad, Eliphaz, Zophar and Elihu did not dispute with Job on astronomy or earth history issues: other kinds of issues concerned them. Thus tacit agreement is inferred. But in Chapter 38, it is God's speech, and it is a revelation of Creation far broader and more majestic than any that was recorded by Moses.

Saturn and Jupiter were also in Orbital Resonance

For reasons not presented here, I believe that Saturn, Jupiter and Mars were in orbital resonance with the Earth at that time. Those orbital resonances happened to have been 30:1, 12:1 and 2:1 respectively. In Job 38, God in his speech draws attention to Mars, Jupiter and Saturn. Translators have misunderstood and assigned these as constellations such as Arcturus, Pleiades and Orion but these later translators lived in later uniformitarian times and had no picture of what was happening. I believe that Mazzaroth, the icy comet and Arcturus are one and the same. After the ice dump and riverine outflow on Mars, the resultant lakes evaporated, giving Mars an ancient, hoary comet-like tail. Mazzaroth is the bearded star; Arcturus is Ma Ayish.

Gods challenge to Job in Chapter 38, among other things, is to possibly understand the comings and

goings of "Arcturus" with his sons. The ancient Greeks claimed they saw Ares with two sons, who had names, Deimos (panic) and Phobos (fear). Were the Greeks describing the same scene in their way, that God herein is describing to Job? Notice it is (a) the guidance and (b) the timing of the approaches of Arcturus/Mazzaroth which God refers to in his questions. Note, those questions are followed by such a question as "Knowest thou the ordinances of heaven? Canst thou set the dominion thereof in the Earth?" And later, verse 38, He asks such a question as who can stop or retard the planets in their heavenly progressions.

Flybys also Explain Geomagnetic Reversals

I believe that, today, not only is the geomagnetic field decaying, but it was recharged by the Flood flyby. I believe that on this, and about 169 other flyby occasions, the geomagnetic field was reversed. I believe that today, 99 percent of the Earth's geomagnetic field strength is due to the ancient Mars-Earth wars, and only one percent (ongoing and not decaying) is caused by the Moon and Sun combination. I believe further that tides are the causes of the magnetic field of Mercury (.003 gauss), Jupiter (4.2 gauss), Saturn (.2 gauss), Uranus (circa .9 gauss) and Neptune will be found to have a remarkable strong magnetic field of 2.0 to 2.5 gauss. This will be due to the massive size and close proximity of Triton.

I likewise believe that an equation can be developed illustrating and identifying the factors which cause the magnetic field of any planet. I suspect that such an equation will be a large stride toward arriving at the mysterious unified field theory.

All of this does relate to the Mars-Earth wars in general if those wars induced 99 percent of the Earth's current, albeit a declining or decaying current. And the greatest occasion of induction, or recharging, was the Noachian Flood flyby, at which time the Earth must have had a field strength of 2.5 gauss $\pm$ 10 percent.

In God's speech in Job 38, a majestic revelation indeed, He directs attention to the Ma Ayish . . . the heavenly body which I am convinced is Mars. It is the phonetic equivalent of the Egyptian Horus and the Greek Ares. This is the celestial planet that the Romans considered the champion of celestial warfare, and which they feared and worshiped to excess. They named their first month after this planet-deity, and associated two steeds or sons (Deimos and Phobos) with him, as did the Greeks.

Seven Otherwise Puzzling Phenomena Fit with the Mars Flyby Model

(1) Mars has a rotation rate of 24 hours 37 minutes. The Earth's is 24 hours, or 23 hours 56 minutes depending on how one calculates. The uniformitarian's question is, "My, is not that an interesting coincidence?" The catastrophist's question should be, "Did the Earth's crust, apart from its underlying mantle, in some way "lock on" to Mars during the close flyby occasions for a brief two to four hours?"

(2) Mars has an axial tilt of 23.98° compared to the Earth's tilt of 23.44°. The uniformitarian's question is, "My, is not that another astounding and interesting coincidence?" The catastrophist's question should be, "In flyby interaction, including tidal stress and spin

axis torsion, did these two planets somehow or in some way work on each other reciprocally?"

(3) Judging by the laminated plates formed by carbon dioxide ice in the polar regions of Mars, Mars seems to have had 25 or 30 different polar locations. The uniformitarian's question is, "My, is not that amazing?" The catastrophist's question may be, "How many close flybys were there, close enough to cause a spin axis torque on Mars, among the series of 170 or so?"

(4) Judging by the crater count on the hemisphere centered on 45° S. latitude and 320° W. longitude, Mars has 91 percent of its craters in one heavily-blasted hemisphere, and its opposite hemisphere is serene compared to the surface of Mercury or the Moon. The uniformitarian's question is, "My, how many craters Mars must have acquired over the last 4.5 billions of years." The catastrophist's question may be, "Were not those fragments which missed Mars the genesis of the asteroids rather than some nebular cosmology some four billions of years ago? And how recent was it in terms of thousands, not billions of years?"

(5) Judging by the sizes of the craters on Mars, they happen to be commensurate with the sizes of the asteroids, when an adjustment is made for the size of the craters being somewhat larger than the projectile causing them. The uniformitarian's question about this has yet to be recorded; the significance therein has yet to be perceived. The catastrophist's question is, "Since the largest asteroids have an average perihelion of 239,000,000 miles, does not this fragmentative, genesis event indicate or suggest Mars formerly had a different orbit, part of which was in the 200,000,000 to 215,000,000 mile zone from the Sun?"

(6) Judging by the gushing, rushing nature of the dry river beds on Mars, and the modest mass of Mars, it is apparent that Mars once had oceans, if not atmospheres. The uniformitarian's question is, "My, these rivers must have been formed by subsurface ice which melted 3,000,000,000 years ago or more." They tend to be oblivious to the obvious, that the Martian crust is very dry as it is very cold by Earthian standards. The catastrophist's question is, "Does this indicate three icy fragmentations in the history of the solar system (for Saturn, Mars and Earth), or just two, one for Saturn and another icy spray spraying both Mars and Earth during a close flyby?"

Judging by the hundreds of pitlets or craterlets on tiny Deimos and on tiny Phobos, there is no recorded uniformitarian question as of this date. But there is another related question, pertaining to the existence of Deimos and Phobos. The traditional uniformitarian question is, "My, how could little Mars, 1/3000th the mass of Jupiter, capture TWO, not just one tiny asteroid on the fly when Jupiter, so massive, has captured only a dozen or two?" The catastrophist's question can be, "When this smaller, Pluto-sized, sub-Moon-sized planet fragmented, and splatted on one side of Mars, and created the asteroids orbiting around the Sun, did a small percentage stick around Mars, and orbit around Mars in an ancient ring?"

The next question for the catastrophists should have to do with such aberrant asteroids as Apollo (1862), Amor (1221), Eros (433) and Icarus (1566). The uniformitarian's question is "My, has not Jupiter had some weird effects on certain asteroids?" The catastrophist's

question can be, (1) "Are these asteroids former brothers of Deimos and Phobos?" (2) "Were Icarus and Apollo separated from the ancient Martian rings during a March flyby?" (3) "Were Eros and Amor separated from the ancient Martian rings during a close October flyby?" (4) "Was Deimos almost ripped off also?" (5) "Are Deimos and Phobos survivors from an ancient ring, as evidenced by their craterlets, or are they chance grabs of asteroids on the fly by Mars?" (6) Judging by the chaotic terrain of the Valles Marineris in Mars' equatorial zone, and by the sizes of the craters Hellas, Isidis and Argyre, to name but three, the uniformitarian's question is, "My, what remarkable graben features formed some three billion years ago, somewhat like certain fault basins, blocks fault troughs on the Earth?" The catastrophist's question should be (1) "Does this suggest that Mars absorbed the Hellas Fragment, the Argyre Fragment, the Isidis Fragment, the Darwin Fragment, the Kepler Fragment, the Pickering Fragment, etc. and increase its mass about three percent?" (2) "Did this accretion or infusion of mass increase the Martian diameter about 20 miles?" (3) "Did the rifting and graben-like terrain, wild and forbidding, come as an aftermath of its ingestion of these thousands of fragments?" (4) "Did Mars have indigestion, and have to relieve itself in the form of (a) volcanism with many examples, (b) bulges such as the Tharsis and Elysian bulges, and (c) rifting such as the Valles Marineris?" (5) "Is there evidence that this astronomical catastrophe just preceded the onset of the Mars-Earth wars?"

A Flyby Model of Orogeny Explains All These Criteria

To understand the mountain uplift ranges, and patterns, and locations, and arcuate character in many cases, and the many kinds of faulting, upthrusting, shearing and compressing, a credible mechanism must address all of these and the following:

1. The hazardous nature of the ancient Earth orbit. It was far from a serene situation, which all Lyellians mistakenly assume.
2. The great circle pattern of part of the Circum-Pacific zone of uplifting possibly circa 6000 B.C.
3. The great circle pattern of the Alpine-Himalayan cycle of deformation, circa 4500 years ago.
4. The great circle pattern of the Appalachian-Herzian-Caledonian cycle of deformation possibly circa 8500 B.C.
5. The source of the power, which we adjudge to be the gravity of Mars.
6. The related and, I believe, coinciding condition of a reversal of polarity of the geomagnetic field.
7. The related and coinciding condition of a recharging of the geomagnetic field.
8. The related and, I believe, coinciding effect of massive tides and tidal waves in the oceanic reservoirs, rinsing the continents on the worst of the flybys.
9. Concomitantly a credible mechanism and timing for the glacial age.
10. The integrating of gyroscopic torsion and spin axis precession during flyby scenarios wherein mountain ranges were uplifted.

11. The concern of the ancient Romans of Mars and the ancient Greeks of Ares, also Apollo which is a Hellenized form of the Phoenician Baal.
12. Harmonize these complex and highly inter-related events with Biblical source material such as Job 9:5-10, Job 38:30-37, Psalms 114.
13. Harmonize these also with comparable and parallel texts in Judaica and especially Josephus.
14. The latent cyclicism which I believe can be detected by careful study of the Biblically recorded catastrophes.
15. The arcuate pattern of so many of the mountain ranges.

Conclusion

My insight is that the major, and most of the lesser mountain ranges of the Earth were uplifted by gravity (by a gravity about 10 percent as massive as Earth's.) It required about 22,000 seconds, not 220,000,000 years for an entire cycle of mountain systems to be uplifted. Geomagnetic and gyroscopic issues must be considered in concord and not in isolation to mountain uplifts, and diastrophism. My further insight is that academicians of the early 19th century, led by Lyell, dismissed catastrophism for religious reasons based on Masonic (gnostic) doctrine, a holdover from the French Revolution, as well as emotion, guilt and moral compromise, and not on objective reasons based on geological or ancient historical data. I judge that not only is the history of the Earth one of recent catastrophism, but so is that of Mars, and their twin spin axis tilts and rotation rates should serve as an ample hint.

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Questions, Comments and Replies:

Question from Waisgerber to Patten:

Why was it Mars and not some other planet that came close to Earth in this flyby? What scientific basis is there for Mars to leave its orbit so as to flyby Earth and then return to orbit? Where were the two moons for Mars during the flyby?

Reply by Patten:

Mr. Waisgerber assumes, and attributes to a needed explanation, why Mars left its ancient orbit, went into a conflicting orbit with the Earth, and then had to return. His use of the term "return" sounds a bit uniformitarian to me.

I believe or suspect the following. Sometime around 10,000 B.C., or 12,000 B.P., Mars had an orbit which included passing through space some 205,000,000 miles from the Sun. There, in a certain sector, it encountered a small rocky planet with a diameter of between 1300 and 1700 miles. I am taking the liberty of naming this planet Astra since I am the pioneer of this concept.

Astra fragmented, and created (1) well over 90 percent of the asteroids, fragments which missed Mars, (2) about 2700 craters on Mars, all of which exceed 20 miles in diameter plus thousands of lesser craters, (3) the bulges opposite to Hellas and Isidis and (4) ancient rocky ring system of which Deimos, Phobos, Amor, Icarus, Eros and Apollo were components.

During this encounter, Mars was hit, hard, especially by the core of Astra (Hellas). Mars was past aphelion, approaching perihelion I conclude. Mars was about 205,000,000 miles from the Sun. It lost a significant amount of energy in this shattering, blasting encounter. This lost energy took the form of a new orbit. I will refer to its pre-Astra orbit, which I think of as pre-12,000 B.P., as "Orbit 1." After the Astra encounter, Mars, losing energy, fell into "Orbit 2." Orbit 2 is described as follows:

- | | |
|-----------------|---------------------------------------|
| a. Perihelion | 75,000,000 miles |
| b. Aphelion | 218,000,000 miles |
| c. Eccentricity | .48 to .50 |
| d. Apsides | Perpendicular to Jupiter's Apsides |
| e. Apsides | Parallel to Earth's Ancient Apsides |
| f. Apsides | 2° or 3° from Earth's Current Apsides |
| g. Resonance | 1:2 with Earth's Ancient Orbit |
| | 6:1 with Jupiter's Orbit |
| | 15:1 with Saturn's Orbit |
| | 1:24 with Moon's Ancient Orbit |

In Orbit 2, I believe that Mars threatened to assault the Earth during the era 9900 B.C. to 701 B.C. I believe that it had a close flyby (within 90,000 miles) once every 54 years, alternating from March to October and back to March and so forth. The Noachian Flood was an October event, as was the Davidic Holocaust of 972 B.C., the Long Day of Joshua of 1404 B.C., and the Amos-Joel-Jonah Catastrophe of 756 B.C.

In the month of March 701 B.C., Mars made an abnormal outside (note - night side) flyby, and simultaneously it was an abnormally close flyby, with reversed perturbations. The resonance system broke down on this occasion, and Mars moved into its current orbit, as its apsides rotated, between 701 B.C. and 670 B.C.

In this last encounter of 701 B.C., Mars again lost some more energy, and moved down about 4.5 to 5 percent in its orbital period, from an ancient 720 to its current 687 days. Simultaneously the Earth gained energy, and moved from an ancient 360 day orbit to the current 365.26 day orbit. This is reflected in dozens of ways in ancient Earth calendars and other observations.

There are two examples of what happens when a body goes out of resonance in our solar system. One is with asteroids and the Kirkwood Gaps. The other is with ice particles circling Saturn, and the Cassini Gap. In both cases, when particles or asteroids went out of resonance and lost energy, they piled up about 4.5 to 5 percent down from their previous orbit. Note that the Martian orbit is 95.4 percent of what I believe to be its ancient orbit in terms of orbital period.

The Earth's day count per year, in, 701 B.C., expanded from the previous 360 or 360.5 to the new 365.26, partly due to spin axis spin rate increase, but mostly due to an expansion of the Earth's orbit from an ancient 92,300,000 miles to the current 93,000,000 miles. Understanding resonances and familiarity with Kep-

ler's law helps. The present Martian Orbit I would call "Orbit 3." You assume orbits 1 and 3 were identical but there is no reason to do this and every reason not to do it. Orbit 1 had an unknown eccentricity; Orbit 2 had an eccentricity of around .5 and Orbit 3 an eccentricity of .093. Incidentally, Orbits 2 and 3 sweep out about the same amount of space. I think my text answers your other questions about the two satellites of Mars.

Question from Waisgerber to Patten:

You have suggested that the Alpine-Himalayan cycle of mountain uplifts took place because of a Mars flyby. However, mountainous structures can be seen under the Pacific Ocean. What caused mountain uplift under the Pacific Ocean?

Reply by Patten:

Concerning mountainous structures under the Pacific Ocean, my opinion is that the Tonga-Kermadec Ridge is a drowned mountain range caused by a flyby previous to the time of Adam, and previous to the southern half of the Circum-Pacific flyby. That flyby could well have been in the 25,000 to 20,000 mile range. There were only a half dozen that close or closer. The uplifts on the North and South Islands of New Zealand are due to this cycle of uplift also.

Question from Waisgerber to Patten:

You mention that bulge relocation and mountain building caused isostatic changes some of which are yet going on today at a much slower rate on an extended decay curve. How would you explain, for example, that according to the U. S. Coast and Geodetic Survey, the San Gabriel Mountains of Southern California are known to be rising today? One should expect flyby-induced mountains to react to gravity after the flyby so as to subside rapidly initially, and then subside at a slower rate, the longer the time interval from the initial flyby. Why are the San Gabriel Mountains rising if post-flyby gravity ought to be causing mountains to subside nowadays?

Reply by Patten:

Concerning the local topography and geology of the San Gabriel Mountains, I am not specifically familiar. But it is clear to me that the San Gabriel Mountains are a part of a far larger cycle of mountain uplifts including the Rockies, the Cascades, the Sierra Nevadas, the Coast Ranges, the Sierra Madre Occidental, the Sierra Madre Oriental and others including on Baja California.

One must keep in mind that during any tidal condition, whether lunar or Mars-induced, the Earth becomes oblate with a double bulge, like an egg. One bulge faces the astronomical body; a second bulge is smaller and is opposite the astronomical body.

During a flyby scenario many things are going on simultaneously. Some are gravitational and tidal, both crustal and oceanic. Some are gyroscopic, both polar relocation and retilting. Some are electrical, both recharging and polar reversals. Polar relocation obviously implies equatorial bulge relocation.

Realizing that the San Gabriel Mountains are part of a greater cycle of mountain uplifting, it would be helpful to know how thick the local or regional crust is compared to the thickness in other related regions and

other orogenitically unrelated regions. In general, I view these movements as the crust of the Earth yet attempting to achieve its new equilibrium. The last intense catastrophe (circa 15,000 miles) I believe to have been 4500 B.P. But there were several in the 30,000 to 40,000 mile range subsequently, wherein some additional polar relocation occurred. I have mentioned my suspicion that the latitude of Palestine was higher, and the climate cooler and more humid before the precessions of 1404 B.C. and 756 B.C. These subsequent polar shifts, and probably spin axis tilt shifts are a factor for consideration. Such a change in Palestine's latitude would concomitantly suggest that perhaps in one post-Flood era, the North Pole location was in the Barents Sea region. I cannot answer your specific question about the San Gabriel Mountains, but I can point toward areas for new consideration, and that is my best response in this case.

Comments by Waisgerber:

You imply that people who hold other creationist views than yours have a difficult time to explain why there are belts or cycles of mountain building or why such mountain cycles lie in a great circle. I cannot answer for all creationists but I can offer what 19th and early 20th century geologists believed. First, many would have held that the mountain uplifts formed two circles one in the northern hemisphere and one in the southern hemisphere. These circles made more sense geologically in that within the center (bull's eye) of each circle there was a Precambrian shield area. Then along the mid-part of each circle there were cratonic areas where undeformed Paleozoic, Mesozoic and some Cenozoic strata existed. Finally along and near the periphery of each circle there were rocks which were lifted upwards to become mountains.

Thus the so-called Circum-Pacific belt of tectonic activity is more likely to be a coming together of parts of the two hemispherical rings. In the center of each of the two rings, the Precambrian shield was covered with ice to great heights. The consequences of such conditions were (1) a pressing downwards of the ice upon the Precambrian shield and (2) a pushing outward and upward of the periphery of both hemispherical rings. Such activity resulted in the development of mountains along that perimeter of the hemispherical rings.

Based on the geologists' beliefs above (whether true or not) this would indicate, for example, that the Andes Mountains of South America could not be part of the same flyby with the Rocky Mountains of North America. Instead the northerly part of the Andes Mountains turns easterly towards the Caribbean and then continues essentially easterly across the spreading Atlantic Ocean to reach northern Africa's Atlas Mountains. Then this Southern Hemisphere's ring continues easterly through India, then southerly through the East Indies, along the eastern coast of Australia, then around Antarctica and finally northerly to Chile's Andes Mountains, to complete the southern hemisphere's ring.

The Andes Mountains appear not to be related to the Rocky Mountains because of a single flyby. A single flyby presumes similar gravitational circumstances for South America and North America. Yet the Andes Mountains are higher than the Rockies. Also the Andes

Mountains exhibit a much narrower east to west width than does the Rocky Mountain system. Finally, between the northerly end of the Andes and the southerly end of the Rockies, there is Central America with its volcanic peaks and suggested west to east trends of crustal structures.

Reply by Patten:

Your question about the Andes and the Rockies not being part of the same flyby is perceptive, and correct in my judgment. Your apparent respect for the Lyellian, uniformitarian approach to geology I do not share. I believe geology took a wrong turn in the 1830's when Lyell, an astute academic politician with little or no astronomical, historical or geological perception, with help from various geological periodical editors, succeeded in foisting his silly system on a largely depraved and welcoming intelligentsia. Better it would have been had geology heeded Whewell, Agassiz and other catastrophists. Geology should have listened to Price in the early 20th century also, but would not, to their loss.

Comment from Waisgerber to Patten:

I would tend to agree with Patten that whatever happened in the past appears to have happened quickly. Thus Patten tries for a mechanism to explain rapid mountain building and a rapid build-up of an Ice Age. There are other explanations. These include geological evidence that there was a so-called Ice Age existing prior to the advent of the Flood. The ice covered those areas which were identified earlier to be Precambrian shields. The belief that an Ice Age occurred only after the Flood because mammoths eating buttercups were frozen does not negate the proposition that Ice Age conditions could have existed elsewhere on earth prior to the Flood. The existence of palm trees and dinosaurs within the north pole area must be weighed against the distribution of so-called Ice Age deposits about Precambrian shields now existing in equatorial regions, Canopy-Flood explanations to the contrary notwithstanding.

Reply by Patten:

I fail to see a question in this paragraph, but I do think that you have given insufficient attention to the evidence and indications of an ancient, pre-Noachian greenhouse effect. I have written about my perception of preFlood climatology in *CRSQ* 19:40-52. In this essay, I pointed out the critical attention which needs to be given to atmospheric CO₂ in both past, present and future assessments of Earth climatology. But this is not an answer to a question because, as previously mentioned, in your statement there is no question.

Question from Waisgerber to Patten:

If the Rocky Mountains were raised by a Mars flyby then why do mountain structures vary so within one range such as the Rockies? For example, in Nevada the existing mountains are a part of the Basin and Range province. Such mountains differ considerably in their lithology and structure from the granitics of the Sierra Nevada batholith and from the volcanics of the Cascade ranges of the northwest. Also why does the Grand Canyon area exhibit so little tectonic activity?

Strata there (as well as in Bryce Canyon) continue to be flatlying. These strata appear never to have been subjected to deformation by a flyby. Such evidence tends to indicate that the existence of an undeformed Grand Canyon area in the midst of the Rocky Mountains is the result of *localized* influences causing uplift, rather than a one-time astronomical flyby.

Reply by Patten:

Mountain structures within one flyby cycle vary greatly because the circumstances of their uplift vary greatly. Some of these variable factors are:

1. The distance of Mars
2. The trajectory of Mars
3. The longitude of the local region to the flyby
4. The latitude of the local region in that era
5. Was the flyby occasion in March or October?
6. What was the angle of the Earth's tilt?
7. What was the angle of the Martian approach?
8. What was the duration of the flyby?
9. What was the positioning of one particular mountain uplift or range in relation to the balance of the cycle?
10. What was the thickness of the crust in that, and presumably the present time?
11. What was the resilience of the crust in that particular region?
12. The Earth's natural rotation on the uplift day
13. The Earth's induced precession on the uplift day
14. The distance, if any, of polar relocation during uplift
15. The change, if any, of spin axis tilt during uplift
16. Other regional uplifts, and their role in release of local stress caused by mantle tides
17. The apparent tendency of the crust to slide on the mantle and rupture the Mohorovicic Discontinuity
18. The apparent tendency of the crust to fix on Mars. (This I suspect along with a colleague, Ron Hatch whose insights are much greater than mine.)
19. The location of a mountain range with respect to long term equatorial bulge relocation
20. The location of a mountain range with respect to long term polar flattening relocation

Question from Morton to Patten:

The Roche limit is the point at which the eccentricity of a planetoid under tidal stress goes to infinity or the planet breaks up. However, the important point in these equations is that only the *smaller*, less massive planet will break up. In a moon-earth Roche limit encounter, the earth would not be seriously stretched at all. The moon, however, will break up if it gets within 2.97 earth radii or approximately 12,000 miles. The tides on the earth under such an encounter would be tremendous. The earth tides are 60 percent of the oceanic tides which would leave tides of several thousand feet going around the earth. The figure of the earth would only be elongated, I must emphasize elastically, by nine out of 6400 kilometers. The eccentricity of the geoid at the equator would only be .08 compared to 1.676 for the moon. In the case of Mars, the Roche limit is 2.98 earth radii and the eccentricity of the earth's geoid would be stretched a little more and would have an eccentricity of .089. In order for the Roche limit of the earth to be "tweaked" as Patten

argues it must encounter a similar sized planet. As long as the passing planet is smaller than the earth, the earth will not come near to the break up point (Roche Limit) before the smaller planet breaks up first. Once the smaller planet breaks up the earth could not possibly be broken.

Reply by Patten:

In this I detect no question, but I do detect some misconception. One misconception is your statement that in a close Mars-Earth encounter, the Earth would be not seriously stretched at all. This is ridiculous because uplift zones could occur, and did occur of the dimension of three miles high, and 1100 miles wide in the case of the Tibetan Plateau, surrounded by the Tien Shans, Nan Sham, Himalayas, Trans-Himalayas, Kun Luns. etc.

Question from Morton to Patten:

How can we account for mountains by uplift resulting from a Mars flyby when in fact the majority of mountain ranges are compressive in nature? The rocks have been shoved over on top of each other and otherwise smashed into each other. The rocks look like two automobiles after a head-on collision. Now, if the mountains were pulled up by tides, then one must admit that they are being pulled up to an elevation which is farther from the earth's center. Any surface at this new elevation contains more square feet than the older, lower surface. Thus when these pulled up mountains try to settle into and onto their new surface, each fault block will find a slight amount of extra room between it and its neighbors. Thus the effect would not be compressional (e.g. every fault block finding less room between themselves and their neighbors) but extensional. The observational evidence requires that the rocks in the areas of the mountain ranges occupy less space than they used to just like the automobiles are shorter after the collision than before. Thus I wonder how Patten deals with this evidence for compression in orogeny.

Reply by Patten:

You assume that the majority of mountain ranges "are compressive in nature" but this is a misconception. Compression is one of many kinds of forces which have produced mountain cycles. But the primary force must be viewed as (1) upthrust caused by the gravity of Mars, and (2) upthrust caused by upwelling tides within the mantle, acting on the Mohorovicic Discontinuity zone, the underside of the Earth's crust. This is essentially vertical whereas your idea seems to be essentially horizontal. Basically we seem to be talking different, if related languages like German to French and we do not understand each other very well.

Question from Morton to Patten:

If you assume that the multigyroscope model is the means by which the earth's equatorial bulge is relocated (in your model) then how could friction be overcome so that all these motions you discuss would occur?

If each layer rubs against its neighbors then given the pressure at which they must rub, the friction would

be tremendous. Friction increases with an increase in pressure. You can see this on your dining room table. Lightly push your thumb along the table. It moves rather easily. Now press down with a lot of force and your thumb will not move so quickly or easily. The same on a more magnified scale would occur. These shells that you postulate are not frictionless.

Reply by Patten:

In part, friction is overcome by the stripping of electrons and those merging into a recharged geomagnetic field. Heat is of course involved also. The nub of your question is answered by the fact that the Earth has a vastly excessive geomagnetic field if tides indeed are the cause of all planetary magnetic fields. Had Mars been a permanent satellite at 20,000 miles, I believe the Earth would have had a permanent geomagnetic field of around 300 Gauss. Had the Earth never had an encounter with Mars, I believe the Earth's field strength would be around .01 Gauss, of which two-thirds would be due to the Moon and the balance due to the Sun. Had the Earth had no rotation rate, the Earth's geomagnetic field would approach zero like that of Venus and the Moon.

Comment from Morton to Patten:

As to Psalms 114, I have a great deal of theological trouble getting my scientific facts from the pages of poetry, divinely inspired poetry or not. If we had a clear account of mountains skipping in Exodus, I would say we have to account for it. In Psalms I do not find the same necessity. Are we to believe that God is a chicken based on Psalms 17:8 I have heard some argue from Psalms that the earth must be flat.

Reply by Patten:

Your view of Psalms 114 and mine are radically different. Your view of the 15th century B.C., including the Exodus catastrophe and the Long Day of Joshua, are radically different and I think your view is wrong. For example, the opening pages of Homer's *Iliad* portray a scene of Earth catastrophism in a marine environment. The *Iliad* happens to be poetry, but like Longfellow's *Evangeline*, poetry based on a historical event, a cosmic assault, which occurred probably in the year 809 B.C. and was precisely 108 years earlier than the Long Night of Isaiah if I understand the cyclicism of ancient catastrophism correctly.

There is an underlying difference between us here. I consider Psalms 114 in the same general light as Joshua 10 or Joel 1 or 2 or Amos 1. Ancient catastrophism in all of its gravitational, gyroscopic and geomagnetic force was avidly feared by all ancients, in Palestine or elsewhere. The blind Homer understood it fairly well, as did such prophets as Gad, Amos, Isaiah, and Moses. These texts have an abundant historical content, and that includes the Book of Job. You categorize some of these as theological poetry which means that you understand neither their times nor their concerns. For instance, why did the Jews bother to build a sun dial, whose shadow shortened some 10 spans after the Isaiahic flyby? However much of this great history you may choose to call poetry of course is your affair, but your understanding is seriously short, whatever the quality of your motivation may be.

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REFLECTIONS IN MY FINAL YEAR AS PRESIDENT OF THE SOCIETY

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Abstract

Biology textbooks for classroom use are discussed. A history of the Creation Research Society (CRS) and an evaluation of its work as seen by an old warrior is presented.

Origins and Textbooks

As part of the experience of my final year as CRS President, I have engaged in a certain amount of introspection as well as retrospection on my whole tour of duty with the Society. However, my thoughts took a new turn. I received a telephone call from a San Antonio newspaper. It seems that some of the staff wanted to arrange an interview over the telephone with me, that would take place about an hour later. The subject of this discussion had to do with the current Texas textbook adoption controversy. A hearing was to take place shortly regarding the recom-

mended adoptions for a new set of science high school textbooks in the public schools of Texas. The controversy was over the fact (as I understood it) that there was a total lack of any reference to macroevolution in the recommended books proposed for adoption. Various members of the scientific community in Texas were understandably upset of this adoption.

Naturally with only at best an hour's notice, I was not about to get involved in that sort of situation. It was unsatisfactory in terms of a lack of sufficient time for preparation, e.g. collecting references, doing the requisite preliminary reading, ascertaining all of the facts in the story, as well as all the other aspects of a proper preparation. So I declined.

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However, the main point in the matter was that I was not sure that I was not in sympathy with the Texas scientists. After all I have always felt that there were inherent serious problems with either of these two extreme sides; either a text with an entire utterly biased macroevolutionary stance, or a text with an entire creation stance. In any case it certainly should be clear by now that producing the latter situation would never survive a court challenge.

Thinking back through my own career, I have taught courses in biology and as well as in geology for over 30 years in a number of church colleges as well as in an occasional public secular school. Naturally the subject of 'origins' always appeared in the subject matter. Macroevolution was discussed in my classes many times. No proper teacher could escape the matter. So what would be the point or need in insisting that there be no discussion of macroevolution in the text? Of course in my case, I have always had the opportunity to contribute the creation side of the argument.

Among the courses I taught in my final years of active teaching was one entitled 'Evolution.' In that particular course I had no compunctions in using as a text William D. Stansfield's *The Science of Evolution* (1977). I chose this book because it was the one text of which I was aware that recognized the existence of creation as an alternative proposal. Of course, Stansfield, being a macroevolutionist, presented the theory of evolution, as he saw it, at every turn of the road. Although he presented it at times as theory, usually at the beginning of a new section, shortly he would slip into discussing macroevolution as if it were factual.

But Stansfield was always fair enough that somewhere he also presented some of the creation side. For example, he did include some 36 points that had been raised by Norman Macbeth in his work, *Darwin Retried* (1971) as difficulties to the theory (pp. 573-79). To my surprise he also presented a number of points that Macbeth raised showing the religious devotion toward the theory found among many macroevolutionists (p. 577-8). In addition, he also presented a discussion of the criticisms presented in Moorhead, P. S. and M. M. Kaplan, editors. 1967. *Mathematical Challenges to the Neo-Darwinian Theory*. The Wistar Institute Press. Philadelphia (pp. 571-3).*

To the best of my knowledge, Stansfield's text was the only one on the subject of macroevolution in the United States that seemed to make at least an attempt at presenting both sides of the matter of origins.

As documentation of his approach, I would present two quotes from Stansfield (1977):

It would be quite wrong for the student of evolution to obtain the impression from reading this or any other text on evolution that adequate answers have now been found to all the problems in this field. Nothing could be farther from the truth! Many of the questions that troubled Darwin are still being raised today. (p. 571)

And again:

It is not within the scope of this or any other textbook to attempt to answer, one by one, all of the criticisms that have been leveled at the theory

of evolution. This would indeed be a herculean task. Darwin did an admirable job for his time, in anticipating the jabs of his critics. More recent publications by other evolutionists have usually been lax by comparison in this regard. Several current publications are written for the express purpose of criticizing evolutionary theory, rather than explaining its basic principles. This is a healthy situation, for these authors bring to light many of the unresolved problems that are a source of embarrassment to evolutionists. (p. 574)

And finally:

These are indeed danger signs, for scientists cannot allow themselves the privilege of irrevocable commitment to any one idea, theory, or model. Their minds must ever remain open to the possibilities in alternative conceptual schemes. Bigotry in other areas of human endeavor can sometimes be excused on the basis that no methodological framework is available to prohibit same. But scientists cannot use this excuse; bigotry has no place in science. (p. 588)

So without apology or opposition I used Stansfield's book as the text in my course. In addition, I also had the opportunity to demonstrate via Stansfield the bias among macroevolutionists in favor of the theory. For example, despite the many disclaimers found among embryologists today, Stansfield nevertheless included the well-known series of drawings that originated with Haeckel, with the caption 'Comparison of Vertebrate Embryos at Three Different Stages of Embryonic Development.' This naturally gave me a beautiful opportunity to bring my article (1969) into play, in which I had demonstrated the fraudulent nature of Haeckel's work. I will leave to your imagination how effective that situation was in at least raising some doubts about the validity of, as well as the methods used in supporting macroevolution. So I allowed the use of evolutionary texts and discussion about the various aspects of evolutionary thought in my classroom. Naturally, I was using every opportunity of selling the creationist point of view.

If we return for a moment to Stansfield's remarks about the scientist remaining completely free of bias, I fear that is an unattainable goal. No matter how much any scientist claims that he is utterly free of bias, or completely isolated in his scientific reasoning from any effect of his personal philosophy or beliefs, I am afraid that I would simply doubt his position. I am reminded of an essay by James B. Conant (1964) where he pointed out the following:

There is a fairly common fallacy that if you are dealing with scientific and technical matters, judgment of values rarely, if ever, enters in. Facts speak for themselves in science we are often told. Anyone who is familiar with the course of scientific research and development knows this is nonsense . . . The notion that a scientist is a cool, impartial, and detached individual is, of course, absurd. Their vehemence of conviction, the pride of authorship, burn as fiercely among scientists as among any creative workers (p. 221)

Another noted evolutionist has frankly admitted that he has a bias towards punctuated equilibrium because

*A detailed book review of this symposium is as follows: Williams, Emmett L. 1968. *CRSQ*. 5:123-6.

of his predilection towards Marxism.

Obviously in teaching biology, one cannot omit the subject of macroevolution, particularly since it is necessary to point out the differences in the two concepts; microevolution and macroevolution. Much of the whole argument for creation hinges on this point (See Howe, 1981). Actually, what I am really working for is the end of that situation which seems to be prevalent in many regions, where the theory of evolution is presented as being utterly and without doubt factual. In addition, any student wishing to hold to his belief in creation is often ridiculed or discriminated against because of his belief. This situation must not be allowed to continue.

A more honest and scientific approach is demonstrated in the following: In 1981, the Natural History Museum in South Kensington, England opened a new exhibition on Darwinism. The first thing a visitor sees is a notice:

Have you ever wondered why there are so many different kinds of living things?

One idea is that all the living things we see today have EVOLVED from a distant ancestor by a process of gradual change.

How could evolution have occurred? How could one species change into another?

The exhibition in this hall looks at one possible explanation—the explanation first thought of by Charles Darwin.

A little further down the hall a poster actually admits:

Another view is that God created all living things, perfect and unchanging.

The journal *Nature* made reply to such open-mindedness in an editorial headed 'Darwin's Death in South Kensington.' It quotes a phrase from the Museum's latest brochure; "If the theory of evolution is true . . ." as evidence of the "rot at the Museum." The editorial went on to say (Anon., 1981):

The new exhibition policy, the Museum's chief interaction with the outside world, is being developed in some degree of isolation from the museum's staff of distinguished biologists, most of whom would rather lose their right hands than begin a sentence with the phrase "If the theory of evolution is true . . ." (p. 735)

The editor of *Nature* subsequently published a letter (Ball, et al., 1981) signed by 22 of the museum's staff of distinguished biologists:

Sir—As working biologists at the British Museum we were astonished to read your editorial "Darwin's Death in South Kensington" (*Nature* 26 February, p. 735). How is it that a journal such as yours that is devoted to science and its practice can advocate that a theory be presented as fact? This is the stuff of prejudice, not science, and as scientists our basic concern is to keep an open mind on the unknowable. Surely it should not be otherwise?

You suggest that most of us would rather lose our right hands than begin a sentence with the phrase "If the theory of evolution is true . . ." Are we to take it that evolution is a fact, proven to the limits of scientific rigor? If that is the inference then we

disagree most strongly. We have no absolute proof of the theory of evolution. What we do have is overwhelming circumstantial evidence in favor of it and as yet no better alternative. But the theory of evolution would be abandoned tomorrow if a better theory appeared. (p. 82)

The question also might be asked why orthodox Darwinians are so sure of their conclusions, yet ready to admit that the evidence is woefully incomplete. The simple answer could well be that evolution has really become a faith. See Midgeley (1986) and Macbeth (1971).

A possible desirable end would be the appearance of a textbook on the subject of origins, written by a pair of authors, one a creationist and the other an evolutionist. But the evolutionist would have to be one who is not afraid to present the utterly theoretical nature of macroevolution. It is the one-sided, biased, and at times outright misrepresentational approach used in most texts today, that I find so offensive.

I probably would even settle for a text that presents the evolutionary side, but is honest in admitting and presenting the difficulties of macroevolution. To my knowledge, Stansfield (1977) is the only one that comes even close to this requirement.

But this is far different from requiring a text that does not even mention the theory of macroevolution. Feeling as I do on this matter, you can see how I would have been uncomfortable in the requested interview, and therefore not a desirable representative for the Texas school of thought. So in addition to the short notice, I fear that I would not have been a good witness of the status quo; hence I had a further reason for declining the invitation.

Creation Research Society

This whole episode for some reason brought me back to other thoughts. Recently I was sitting in my study preparatory to working on a possible paper. In a moment of relaxation, I began to reflect on the change in the situation in our country with regards to this whole matter of origins. As I contemplated the size of the mailing which we had just sent out, and as I looked at the quality of the current *Creation Research Society Quarterly*, and finally thought of our developing research program and facilities, I had to recognize again how God has blessed this project we call the Creation Research Society. I compared this picture with the time of our first mailing in July of 1964. What a difference! No pictures whatever, a far thinner journal, a membership of several hundred at most, etc.

As one of the 10 individuals who started this venture on its way I never dreamed of the possibility of the degree of success we have had in the course of these more than 20 years. I often have wondered if we had known the future, what would we have done differently? What would our fate have been had we organized on simply a scientific basis, without any religious references in our statement of belief? Would the Indiana adoption under those conditions have held up? How would this have affected the outcome of the Arkansas trial, to say nothing of our whole future?

I remember that we were optimistic about the future beyond what we had any right to expect. In those days, creationism apparently was of no account

or interest except to the faithful in conservative churches and schools, along with their pastors and faculties. The science personnel of that day did not even see fit to consider the subject of creation, much less pay any attention to us. I do not remember seeing the subject of creation even mentioned in any text on either high school or college level. Now hardly a day goes by without the appearance of some new item on the subject of creationism vs macroevolution appearing in some paper. The subject, as evident by my telephone call, is NEWS.

Creationist and Evolutionist Books

Probably the times were right in those days for our particular stone to ripple the waters. Four years before our appearance, the Darwin Centennial had been celebrated. The papers were published under the editorship of Sol Tax in a three volume work. As an answer to this event, a book, *Darwin, Evolution and Creation*, edited by Paul A. Zimmerman (1959), with John Klotz, Ray Surburg and myself as contributors, made its appearance. Generally the reviews by the liberal church press were unfavorable. Scientific journals ignored it in their book reviews, as did the secular press. However, it was praised by the few conservative reviewers. Today, although out of print, it still would seem to have a market. It is listed in the bibliography of a number of secular texts, even Stansfield (1977) p. 588.

In some of these bibliographies it is also joined by *The Genesis Flood*, by Morris and Whitcomb. This latter book, although appearing some years later, generally had the same reception, with the exception of the reviewers from the discipline of geology. Attacking as it did the basic assumptions of historical geology, this book caused workers in this field to immediately react in an exceptionally hostile and virulent fashion. However, the book still stands as a creationist landmark work in the area of geology.

Finally, there was the appearance of the BSCS (Biological Sciences Curriculum Study) texts. The utterly uncompromising macroevolutionary basis of these texts caused many Christian parents to become greatly exercised. Rightly they feared the resulting brainwashing of their children by the macroevolutionary doctrine promulgated, leaving them helpless to intervene. Protests were organized on larger and larger scales. The most effective was when two Orange County housewives, Jean Sumrall and Nell Seagraves took on the California State Board of Education. It was into this turmoil that the *Creation Research Society Quarterly* arrived. The first issue appeared in July 1964 as a small journal without any photographs (we could not afford them). But it did contain some good solid, meaty articles, representing in a scholarly manner the minority viewpoint on origins. Since then, the battle has intensified. Today I do not think any knowledgeable individual in the field of macroevolution or creation has not heard of our journal. Our membership still stands at near 2,000, and is now worldwide. We even have a slight penetration behind the iron curtain!

Then, although the Creation Science Movement, formerly known as the Evolution Protest Movement, was still functioning in England, in the U.S., the CRS

practically stood alone. Today, however, we now find over 59 creationist organizations all over the world. Likewise there are also in this day many creationist orientated journals, tapes, seminars, conferences flourishing as the green bay tree. Some, like Loma Linda's journal *Origins*, are excellent and definitely can be classed as scholarly efforts.

Conclusions

In reflecting on what we really have accomplished through these more than 20 years, I feel that it has been the steady devotion to what we had in mind in the beginning; that being to acquaint our fellow Christians in the field with the numerous evidences that indicate there is no necessity to surrender to the forces of macroevolution. Also that in this way we reinforce their decision to remain faithful to God the Creator. Further, that aim is to enable them to share with still others the information we have unearthed.

Personally, I have felt this responsibility very deeply. Believing as I do, I have held that we who work in the area of origins are to exist for the CRS, not that the CRS is to exist for our aggrandizement. Again, this also lays on us, as authors, reviewers, and editors some very great responsibilities as we produce our journal with the above ends in mind. The most important of these responsibilities would be:

- a) that we always be careful to accurately document our work to the fullest extent possible;
- b) that we always be careful not to quote out of context;
- c) that we always be careful not to misrepresent those whom we quote;
- d) that we are rigorous in our reasoning; and finally
- e) that we refrain from being moved by wishful thinking.

Under c), we might further realize that we always be careful that we become aware of a possible change in the position of the person whom we quote, so that during the interim when he wrote the words quoted and the time we are writing, under such circumstances, if we become aware of such changes, we duly note the same.

I have served in various positions in the CRS from 1963 to the present. I have felt that one of the great benefits I have received during my tenure have been the countless blessings called down on my head by my many correspondents. These largely have been by creationists, who found themselves perplexed by some problems. They were in danger of capitulating to the concepts of macroevolution. Then if it has been given me to clarify such problems, and enable them to reaffirm their faith, they express their appreciation for the enlightenment I have provided. It has made all the work, sweat and sacrifices on my part through more than 20 years all worth while. I hear these voices saying to all of us: Praise the Lord and continue to pass us the ammunition!

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THE LAW OF SYMMETRIC VARIATION AND THE GENE-THEME MODEL

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Abstract

Organisms remain within their respective Genesis kinds since they obey the Law of Symmetric Variation. This is the fourth in a series of biological laws suggested by Brown (1982a) and it will be explained fully, along with the term Gene-Theme Model. The evidence for the latter will be discussed in conjunction with the fossil record.

The Operation of Symmetric Variation

A chain of limiting factors serves to keep organisms within their respective Genesis kinds. First, most amino acids have more than one codon coding for them. For example, alanine has four codons, namely GCU, GCC, GCA and GCG. Arginine has six codons, AGA, AGG, CGU, CGC, CGA and CGG.

With such an arrangement, we have a form of symmetry which protects against major changes. For example, in the case of arginine, a change from one of its codons (say AGA) to another in the group (CCC), will still code for arginine. This is rather like rearranging many of the individual squares on a chessboard; although some changes would produce a different pattern, many recombinations would produce a seemingly unaltered board. For example, exchange squares A1, A3, A5, with D2, D4, D6 and a seemingly unaltered board is the result.

Secondly, depending on their molecular structure every amino acid belongs to one chemical group or another. Changes from one amino acid to another of the same group will, as a rule, produce only minor changes in protein. Changes from one group to another, in which two groups do not differ too sharply from one another will, as a rule, be more readily acceptable.

Changes from one group to another vastly different group can cause harmful or lethal results. There may be times when the change from one group to another would appear likely to cause harmful or lethal results but, in fact, does not upset the balanced mechanism of embryonic development. Under such circumstances the change would cause only modification within the kind and nothing more, because the plan of that organism's Genesis kind in its embryonic development dictates everything, in the sense that any change has to conform to that plan.

Therefore, the smaller the effect of any change, the better the prospect of its spreading through the popu-

lation, because there would be less chance of the change unbalancing embryonic development (Abercrombie, Hickman and Johnson, 1974. p. 186).

Most point mutations will cause either no change in the amino acids or only minor changes in protein, hence the term 'symmetric variation.' Useful mutations, when they do arise, will affect amino acid selection as mentioned earlier.

In recent work carried out on mouse cells, biologists damaged the DNA of the cells by exposing them to ultraviolet radiation. Within 24 hours, 85 percent of them were returned to the normal state. In similar work carried out on bacteria, all were returned to normal over a very short period (Holliday, 1979. pp. 598-600).

Of the changes that remain uncorrected, a percentage would be of a type not far removed chemically from the original and, under the right conditions, would be allowed to remain. A smaller amount of a wider differing group may, again under the right circumstances, be allowed in only because it did not upset the balanced mechanism of embryonic development, but conformed to the Law of Symmetric Variation. The remaining types would cause harmful or lethal results, therefore would be selected against. All of this would be heavily in favor of keeping organisms within their respective Genesis kinds.

I must emphasize that mutations are a rare event and would not, as a rule, occur on a scale noted in Holliday, 1979. pp. 598-600. Therefore, the Law of Symmetric Variation, together with organisms' repair systems would, as a rule, eradicate the vast majority of mutations that may arise.

Strong support for this concept can be seen in a paper by Graur (1985), in which he recognizes that similar amino acids are more easily interchangeable than dissimilar ones, due to the structure of the genetic code together with the selecting out of anything harmful. Likewise, Dolittle (1985) also recognizes this very significant fact.

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An example of maintaining symmetry can be seen from the case of bacteria which were fed on a 'foreign' material. The gene involved in breaking down this material duplicated in order to cope with it, thus maintaining symmetry (Calder, 1973. pp. 54-5). Should one of these copies become a variant form, symmetric variation is maintained from duplication. Should the original gene become damaged, one of the copies may assume the function of the original, again keeping the organism within its kind, because of the symmetry of the replacement gene and its function.

Most of the variation from one generation to the next is provided by recombination of already existing genes. This helps further to continue symmetric variation and keep the organism within its kind. A single gene may influence many characters; conversely, a single character may be the product of the influence of many genes. Consider the case of a gene that was involved in coding for the eye in experiments carried out on fruit flies (de Beer 1971. p. 15). The gene in question became damaged and would no longer code for the eye, resulting in a re-shuffle of some of the genes until one was found that was compatible with the arrangement of other genes to produce the eye. This is another means by which an organism can maintain normal functions.

Just how often this type action occurs is not known, but the main genetic set-up would still remain the same by means of symmetric variation; the ratio of mutations and make-up of codons for the amino acids, plus the arrangement of genes would guarantee this occurrence.

Messenger RNA plays an important role in early development. This is seen in many experiments, where the nucleus is removed from the egg-cell and, after suitable stimulation (in many cases), a blastula will be formed. This is achieved by regulating the translation of information stored in the egg cytoplasm at the time of its formation (Head 1968, p. 8-12; Lewis and John 1971). Another example of the importance of RNA is seen in the fruit fly. The maternal messenger RNA stored in the egg specifies dorso-ventral polarity. The maternal genes undoubtedly code for other important beginnings in the early development of organisms (Gehring, 1985). After this time, the DNA swings into action. In such organisms as the fruit fly, genes that cause segmentation may in turn stimulate other genes to do the same. Stimulation plays a major role in the cytoplasm. The components of the cytoplasm are stimulated into action by a number of factors such as pH, temperature, ions and ion gradients.

The cell membrane contains the means by which these types of temperature and ion gradients pass through the cell. The membrane contains various proteins, which give each kind of membrane its distinctive identity. By means of cell membrane proteins these gradients enter or leave the cell. [Unwin and Henderson (1984); Bretscher (1985)].

This permeability of the membrane by means of the proteins varies in different parts of the organism, at varying stages of development, thus creating gradients which help to guide development.

The membrane proteins are coded for by material originating in the nucleus. Their chemical arrangement of amino acids is subject to the same Law of Sym-

metric Variation as any other protein; therefore, by definition, they will maintain growth and development within the kind rather than leading to changes beyond the boundaries of a kind.

The components in the cytoplasm that respond to the gradients are, to name a few, microtubules and microfilaments, polysomes (clusters of ribosomes) and regulatory proteins. Microtubules serve as guides for where the microfilaments should be set up. They are the 'scaffolding' of the cell, which can quickly be set up or dismantled. The tubules are affected by pH, temperature and substances such as calcium. A calcium-dependent regulatory protein by the name of calmodulin seems to be involved in the assembly and disassembly of the microtubules in dividing cells. Tubules consist of proteins called alpha and beta tubulin which along with microfilaments help form and maintain the cell shape. These filaments are also made of protein, called actin. These are also coded for in the nucleus as are the regulatory proteins, such as calcium-activated enzymes which are involved in some of the interactions in the assembly of microtubules and microfilaments (Osborn and Weber, 1985). So the types of cell membrane proteins, together with their pattern of assembly in the membrane, help in orienting the components into their positions.

Cell-adhesion molecules, also coded for by genes made from nuclear material, are to be found at the cell surface. These molecules bring cells together, generally before cell differentiation, thereby helping the formation of organs and of the embryo itself (Edelman, 1984). Calcium atoms and ions have a specific effect on many of these molecules. Any large changes affecting these molecules would doubtless cause lethal results; only changes within the kind are permitted. Only within the limits of Symmetric Variation can new species arise within the kind or modification of existing or originally created species occur.

Symmetric Variation applies to tubules, filaments, cell membrane proteins and cell-adhesion molecules. So, the pattern of growth and embryonic development would be governed by this postulated principle permitting only changes within the kinds.

Brief Examination of the Fossil Record for Evidence for the Gene-Theme Model

Amphibians were at first thought to have developed from lungfish. This idea prevailed until the 1950's, when the notion was discarded for several reasons. One reason was that the Lower Devonian lungfish lacked an upper jaw bone and lacked teeth, having instead oddly shaped chewing plates, whereas amphibians have a great number of sharp conical teeth. The nasal region is entirely different in the two groups, a major difference being that the lungfish lack an internal nasal opening. There are also basic differences in skull structure, as regards the mosaic skull roof bones. The lungfish also lacked a mobile skull. These and other features indicate a distinct difference between the lungfish and tetrapods (Grzimek 1974). The choice of contenders for the role of ancestor then shifted to the *Rhipidistian* fish such as *Eusthenopteron* and *Elpistostege*.

The skull bones of the earliest known amphibian, *Ichthyostega*, show all of the characteristic amphibian

features. Claims have been made that some of the skull bones of *Eusthenopteron* are similar to those of *Ichthyostega*, also that some of the skull bones of *Elpistostege* are intermediate between the two. Even if this is so, in appearance, it is meaningless; for the *Elpistostege* were fish belonging to the *Rhipidistians* known as the *Panderichthids*. It seems likely that *Ichthyostega* lived a largely aquatic existence; a number of pits on top of the skull of this creature are found only in aquatic amphibians.

Similar tooth patterns are found between *Ichthyostega* and some fish. Also, the brain capsule of *Ichthyostega* is similar to that of some fish in that it is in two parts. However, no known fish, including all fossil types, are viewed to be on a direct line to the amphibians. There are two reasons for this. Most of the likeliest candidates lived after the appearance of the first amphibians; those that preceded, or at least seemingly preceded the amphibians show no sign whatsoever of having developed the limbs of any amphibians (Stahl, 1974). Fossilized larvae of amphibians of the past show all of the characteristics of typical amphibians and nothing else (Charig 1979, p. 83).

Structures found in the fins of the fish mentioned above vary distinctly from pectoral to pelvic and do not show a correct arrangement for the prospect of becoming limbs. The strikingly similar structures of fore and hind limbs of amphibians would have to have been developed from structures of differing arrangement, if the fish mentioned had been ancestral to them.

The arrangement of vertebrae of these supposed ancestral fish and of *Ichthyostega* is of much interest. Both types of known Coelacanth, the modern and the fossil known as *Holophagus*, have a totally unsuitable arrangement of vertebrae to connect them to any line of descent to amphibians. This is also the case in the lungfish *Fleurantia* and *Conchopoma* (Stahl, 1974, p. 134).

Likewise, the arrangement of vertebrae in *Eusthenopteron* is not the necessary one. Also, this fish has no extra bones for a fin-type structure on the dorsal surface of the tail end of the backbone, whereas *Ichthyostega* most certainly does: These structures are also possessed by amphibians such as *Anthraosaurus* and *Eogyrines*, both aquatic types, found in the Carboniferous period. These fin-type structures are similar to those found on the male of the European great crested newt, *Triturus cristatus*, but differ in that they possess bone. So, *Ichthyostega* did not get its crest or tail fin from supposed ancestral fish such as *Eusthenopteron*, which had no such structure in that position to produce the amphibian tail.

The Gene-Theme Model is the hypothesis that God has carried over a theme in which certain creatures of one kind have a number of similar features to those of another Genesis kind. It must be borne in mind, however, that the creatures in question need not bear a strong general resemblance to one another, merely that they possess a number of features not normally found among members of the various present day classes.

The genes involved could be the same or similar but, because one gene can affect more than one function,

the different organisms need not possess the same genes to code for their similar features. The permutations of what may be permitted to develop under this system are thus very wide.

A prime example can be seen in the monotremes, where certain cells and their arrangement are the same or similar to those found in the Diploglossian reptiles, of which the Monitor lizard is a typical example. There is no real reptile cell structure, or even smaller reptile components making the cells that way. They are the animals' own tissue, forming structures similar to those found in reptiles (Brown, 1982b).

Also, in the ear of the monotremes is an organ called the lagenar macula, a special organ found in the reptilian cochlea, but not in the mammalian. Yet again, the electrophysiological properties of the monotreme cochlea are mammalian in nature, as are the ear ossicles. Here is living proof that features of one class can exist in an entirely different class, yet not be made up of the same components. This demonstration that any organism can have a number of features typical of another creature and yet still belong firmly to its own original kind and class, is clear proof of the Gene-Theme Model.

Should any genes be shared between two or more classes, then we can have a number of permutations. For example, the cell membrane may be patterned out somewhat similarly, causing the rough pattern of the cell to be similar. Or, the cell adhesion molecules may be similar in one or several organs, even though the rest of the genetics may differ widely.

Within the Gene-Theme Model, a wide choice of possibilities exist in carrying certain features over from one class to another. They range, from zero similarity between forms to varying amounts of similarity in forms which are otherwise vastly different.

People need re-educating with regard to how the Creator really worked. Last century, the view was that species were the Genesis kinds; as soon as a new species was seen to arise, Creation was looked upon as a false doctrine. The Bible, however, does not state that the differences of the Genesis kinds are to be found at species level. Likewise, the idea that God could not have taken a theme and built upon it to produce the next organism is just as false an assumption.

Gene-Theme "Links" can be demonstrated between reptiles and early birds, also between mammal-like reptiles and mammals such as Morganucodon and to varying extents between man and non-human primates. One may ask why both birds and some mammals should be constructed on the theme, in some respects, as are certain reptiles. The answer is that neither fish nor amphibian would be a good model for mammals or birds; neither would a bird be a good model for a mammal, or indeed a mammal for a bird. Reptiles would be a better choice on which to model both birds and mammals.

Slightly later in time there was another set of amphibians with a different vertebral pattern than the ones already discussed. Some of these types form snake-like bodies, while others are fully limbed. The limbless types would seem to be getting rid of their limbs just as fast as the fish were supposedly gaining limbs, thus changing the vertebral arrangement at least

twice and their complete type once in the process. The vertebrae they had are of the form viewed to be more primitive than those of *Ichthyostega* and the *Crossopterygians*. Modern amphibians also have the more primitive or husk type vertebrae and not the more complex or arch type. These amphibians, according to evolutionists, must have a history going back further, lessening the valuable time needed by those fish to give rise to the amphibians, backing their theory into a very tight corner indeed.

In recent years, fossil footprints of a type of amphibian have been found in Australia in Frasnian strata, close to the Frasnian-Famennian boundary. Closer still to the boundary other trackways have been found, plus the jaw of an *Ichthyostegian* type of amphibian (Wakefield and Warren, 1972; Bell and Campbell, 1977).

The boundary is dated at 350 million years, marking the middle of late Devonian. *Elpistostege* and *Eusthenopteron* are both dated at 360 million years in early Frasnian. Some species of *Eusthenopteron* extend up into the Famennian and so have a range of 360-345 million years. We can safely say, therefore, that to find a true amphibian anywhere from 354 to 358 would militate against the fish to amphibian evolutionary idea.

Amphibians cannot precede all fish, for, according to the Genesis record, they were created after the fish; although they can, of course, come before various species of a particular type of fish. There must be a limit, therefore, as to how far back in the fossil record we would expect to find amphibians. *Eusthenopteron* is not now viewed to be on the direct line of any amphibians, leaving the evolutionists to find such a fish, let alone any intermediate types.

Consider the case of the *Archaeopteryx*, which evolutionists have frequently maintained to be the missing link between reptiles and birds. They argue, for instance, that the low nasal opening supposedly demonstrates a link with reptiles (Stahl, 1974, p. 263). However, in the Brachiosaurs, Mesosaurs, the flying reptiles Rhamphorhynchus and Pteranodon, together with three marine reptiles, Ichthyosaurs, Pleiosaurs and Kromosaurs, we find that the nasal openings are elevated. On the other hand, some modern birds, such as the Dominican gull, brown skua, common gull, white-fronted goose and grey-lag goose, have their nasal openings positioned half-way down the beak. The Southern and Northern giant petrels, kiwi, great skua and owls have their nasal openings positioned three-quarters downward or at the very tip. Of the British swans, some have them elevated while one species has them half-way down the beak. Therefore, the position of nasal openings proves meaningless (Brown, 1986).

Evolutionists have maintained that *Archaeopteryx* had solid bones, as most reptiles do. However, the bones have been shown to have been hollow, like those of most birds, although so far no air sacs have been found (Milner, 1986). Not all birds have hollow bones; the kiwi, swallow and swift are, for the most part, solid-boned. Hornbills, on the other hand, are the most extensively hollow boned of all birds, yet they are very poor fliers. Large birds, such as *Archaeopteryx*, need hollow bones to enable them to get air-

borne, whereas smaller birds, even the best fliers such as the swift, do not.

The feathers of *Archaeopteryx* were the same in number as found in modern birds. The numbers of both primary and secondary feathers are typical of those of modern birds, where there is a slight variation in these numbers.

The structure of the flight feathers is of an asymmetrical design, with the quill being arched towards the leading edge of the feather, which also possesses barbs and barbules (locking devices which hold the feathers and their constituent parts together to form an airtight or semi-air-tight area of wing, enabling powerful downstrokes which create a vacuum, in flight, above the bird, giving 'lift' to sustain flight). This design is typical of flying birds; non-fliers have feathers with a centrally-positioned quill (Akridge, 1979). As an example of the asymmetrical design examine and compare the feathers of a budgerigar or other cage-bird, noting the difference in the position of the quill in the feathers from the front of the wing as compared to feathers from the tail or breast. The quill of the flight feathers from the wing is decidedly curved and closer to the front edge of the feather.

Another feature which supposedly connects *Archaeopteryx* with reptiles is the type of teeth. The crowns of the teeth, however, were unserrated, the waist present, the root expanded and tooth replacement resorption pit oval to circular. In the reptiles *Pseudosuchia* and *Coelurosauria*, the crowns were serrated, the waist absent, the root straight and unexpanded and tooth replacement resorption pit elongate (Martin, Stewart and Whetstone, 1980). So, *Archaeopteryx* did not possess the same type teeth as the reptiles from which they are supposed to have evolved.

The brain-case of *Archaeopteryx* resembles that of divers, grebes, cranes and rails. It is said to resemble that of the crocodile to a certain extent, although not that of any of the other 6000 reptile species. The claws on the wings of *Archaeopteryx* are of interest here. We already know that they are found on the young of the hoatzin of South America, the young ostrich, hens, game birds and birds of prey, plus the young touraco of North Africa.

From the study of embryonic development of birds, it seems that they have digits 2, 3 and 4 in their wings; this is also true of *Archaeopteryx*. The *Coelurosaurian* reptiles appear to have had digits 2 and 3 only. Originally, it was viewed that birds had digits 1, 2 and 3 but either way, the reptiles in question could not have passed on to their supposed descendants something which they did not possess, namely the correct digit in the correct ordered place. (Duffett, 1983, p. 20; Hecht and Tarsitano, 1980).

The lower legs of birds have, on the bone three articulating surfaces for the toes, a feature absent in mammals and most, if not all, reptiles; it is present in *Archaeopteryx*. The metatarsals are indeed fused, although the structures between the individual elements are visible (Brown, 1983). Much more of the anatomy of *Archaeopteryx* could be discussed, but there is surely enough presented here to show that the creature was a true bird and not some kind of intermediate stage between reptiles and birds. The next birds along the time-scale from *Archaeopteryx* carry a number of

features similar to this bird, but also show many marked differences. At least one species possessed teeth like those of *Archaeopteryx*.

The reptiles which are held as being contenders for the role as ancestors to *Archaeopteryx* either came later in the fossil record or were contemporary with the creature, hence have to be ruled out (Milner, 1986). The types that preceded it, in Upper Triassic, are completely different in features from the bird. However, in Lower Jurassic, there have been two separate finds of limb bones which could be those of birds, although this is not yet clear (Milner, 1986). Again this would place evolutionary theory in a very tight corner.

Consider the mammal-like reptiles and mammals such as *Morganucodon*. There is so much anatomical detail involved in this subject, together with the names of the many anatomical parts, that in order to save space, I have limited the account to a mere summary of the position.

Typical reptiles have a number of bones in the jaw and only one in the ear, known as the stapes. The jaw joint is formed by the quadrate and articular bones. The teeth are replaced throughout the creatures' life, as they continually grow. The mode of replacement is by erupting between older teeth. This is known as alternate replacement, as every alternate tooth gets replaced.

In typical (placental) mammals, there is one bone in the jaw, known as the dentary bone and three bones in the ear. The jaw joint is formed by the squamosal and dentary. Most placental mammals have one set of milk teeth, followed by one set of permanent teeth.

The main mammal-like reptiles that we will cover are the *Cynodonts*. In all forms of these creatures the tooth replacement was as that found in typical reptiles. Even in the fossilized young *Diademodon*, the same mode is to be seen. The jaw of the *Cynodonts* was made up mainly of the dentary bone, with bones like quadrate and articular forming the jaw joint. One bone is found in the ear, the stapes. Hence it appears truly reptilian and not mammalian.

Mammals such as *Morganucodon* had typical mammalian teeth with typical tooth replacement. The jaw joint was seemingly a double one. It had the squamosal dentary jaw joint and the quadrate and articular bones. However, the quadrate, articular and stapes all interconnect and, in turn, they are very close to the tympanum and tympanic of the ear. Undoubtedly, they all served as part of the sound conducting system in these mammals.

Much of the skull and post-cranial skeleton was that of a typical mammal, with some reptile-like features found in both areas. As far as brain comparisons are concerned, the brain of the *Cynodonts* showed many reptilian features, while some mammal-like features were seemingly present. In *Morganucodon*, the braincase was without doubt that of a mammal, being beyond that of any *Cynodonts*.

The fossil record of these creatures is of interest. Evolutionists favor the fossil *Chiniquodontitidae* found in South America to have given rise to *Morganucodon*. However, this is where the trouble lies. The former are found in South America only, while the latter are found worldwide, except for South America! See Kemp, 1982.

The skeleton of the mammal-like reptiles is reptilian in most of its nature and mammal-like in some of it, fitting the gene-theme concept assuming that the Creator assigned similar components to forms that were unrelated.

Another fossil mammal-like reptile viewed at one time to have evolved into *Morganucodon* is the *Tritylodontia olygokyphus*. Even this is found worldwide, yet no connection with mammals is ever seen. *Morganucodon* contains features which are found in primitive mammal-like reptiles, absent in "advanced" forms. This would mean, in evolutionary terms, that a once-possession structure in primitive *Cynodonts*, would have been lost in advanced *Cynodonts*, then re-evolved by their descendant *Morganucodon* — Kermack, Mussett and Rigney (1981).

If *Morganucodon* came from any of the primitive types, then these would have had to become relatively complex in order to be able to evolve into *Morganucodon*. This, of course, would be seen in the fossil record if any of those types were making such steps towards that goal; no such steps are to be found.

Many of the features of *Morganucodon* are shared by, or are at least similar to, the Monotremes. It should be noted that at sub-placental level such as the Monotremes and mammals of the past, liberties can be taken with design as regards to introducing various details of structure; yet they remain very firmly rooted within their own Genesis kinds. It takes more than one organ to take one kind over the boundary to another. In the Monotremes, it takes more than a number of features to make any impression.

Crocodiles have a secondary palate and a diaphragm and the oldest known crocodile stood more mammal-like than present day types, yet crocodiles have always remained reptiles. The fact that there are 'living fossils' among us today, shows that the same genetic system has always been in operation, demonstrating that the Law of Symmetric Variation applies along with the Gene Theme concept.

Summary and Conclusion

The mathematical permutations of the amino acid mutations lead very strongly to the major part of them being either symmetric or varying within the family group of amino acids. Also, organisms' repair systems will repair almost all of the changes outside the close family group, thus returning them to their original formations. Any changes that are allowed will fit into one of the two types. Either they do not upset the balanced mechanism of embryonic development, therefore are part of the broader variation of the Law of Symmetric Variation of the organisms' make-up, or they are harmful, possibly lethal in effect, causing elimination of the organism because of competition with its own or other types of its life form. They may die at or soon after birth.

Various other types of mutations also provide support for the law of Symmetric Variation. The various types of gene duplication, for instance, which either take over from a damaged parent gene, back up a parent gene or produce variant forms of themselves. These either maintain what is already there or produce variant forms of what is already there, maintaining the

Law of Symmetric Variation, keeping organisms within their respective Genesis kinds.

Because of this, together with the fact that one gene may have more than one function, the Gene-Theme Model applies on two possible levels. The first is having different genes producing similar effects, functions and features in two distinctly separate kinds. The second is having some measure of similar genes to produce these effects, functions and features. Under these conditions, the Law of Symmetric Variation, as described, will not allow anything else apart from the permitted range of Symmetric Variation within the organisms' own respective Genesis kinds.

Although certain kinds share certain features, they are not the exact image of one another. The positioning of the various fossils in the fossil record verifies the Gene-Theme Model.

For example, positioning the amphibians backwards in the fossil record into the fish realm, especially considering the latest finds of trackways and jaws in Australia, is narrowing the time gap, making for a rather hurried sequence of events to produce the first amphibian. These footprints and jaws would more than likely belong to creatures which had a history of pure amphibian species, thus giving a more uncomfortably short geological time scale for the necessary events to take place.

In the case of *Archaeopteryx* and the various reptiles supposedly involved in its ancestry, some lived contemporarily with it, thus ruling them out as ancestors; others came later in time. This, plus the uncertainty of possible bird bones in Lower Jurassic, tells against the evolution model and concurs with the creation model.

Considering the mammal-like reptiles, together with various early mammals like *Morganucodon*, it is found that these mammals are located in many places throughout the earth; as are many of the advanced mammal-like reptiles, whereas the ones viewed to have changed into them are only found in South America. Also, certain features in the brain-case are not found in the advanced mammal-like reptiles, but are present in primitive forms and *Morganucodon*. This would necessitate a loss and regaining of these features. The majority of the mammal-like reptiles were at least dog and cat size, while the early mammals were shrew and rat sized. This yields a clear picture of considerable change, all within a very short geological time scale. The known early mammals very likely had a history of mammalian stock, shortening the time-scale further.

This makes the Law of Symmetric Variation and the Gene-Theme Model a good basis for postulating why

organisms remain within their Genesis kinds, showing that certain members of different kinds share certain features. These are the two most important principles in biology.

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PANORAMA OF SCIENCE

Archaeopteryx and *Protoavis*

Fossils are the remains, impressions or traces of a plant or animal structure or organism of a former period of history. They may be firmly established as an archeological fact, but their interpretation is open to highly variable human understanding. As reported in *Scientific American* (Anon., 1986), a new find and a reinterpretation of an old one have caused evolution-

ists to again reconsider an important aspect of their model of origins.

This finding of fossilized bones from at least two crow-sized animals in a mudstone quarry near Post, Texas, southeast of Lubbock are forcing evolutionists to reassess whether the alleged transitional evolutionary organism, *Archaeopteryx*, is really a transitional form between reptiles and birds. These newly discovered

remains of a bird-like creature, whose hind legs and tail suggest a reptile-type organism and whose forward parts suggest a bird-like organism, is being advanced by evolutionists as evidence for the theory that birds evolved from dinosaurs, according to Dr. Sankar Chatterjie of Texas Tech University. He has named the fossil remains *Protoavis* (first bird) and has speculated it lived about 225 million years ago.

This ancient creature appears to have had strong, dense hind legs, a bony tail and a pelvis adapted for running. These are dinosaur traits and at first Chatterjie speculated that he had found the remains of an early meat-eating dinosaur. After studying the forward bones, he changed his mind. *Protoavis* appears to have the following traits of birds: elongated forelimbs, temporal fossae confluent with the orbit (eye socket), a furcula bone (wishbone), a plate-like sternum (breastbone), with a small keel, a quadrate bone, a cnemial (shin-like) crest on the tibia bone and areas on the humerus that could serve as attachments for flight muscles. Although there were no feather impressions, Chatterjie speculated that there are quill nodes (swellings or protuberances) on the ulna and hand bones.

Protoavis appears to have some reptilian traits: four teeth on the forward jawbone, a tail and clawed fingers.

The discovery of *Protoavis* raises some pertinent questions:

1. Was *Protoavis* a reptile or a bird?
2. Was it an intermediate form between reptile and bird?
3. Did birds descend from dinosaurs?
4. Quo vadis *Archaeopteryx*?

As to question 1, both evolutionists and creationists would say it was not a reptile. Creationists would say it was a bird since it has predominantly bird traits. To question 2, most evolutionists would say *Protoavis* was an intermediate form between reptile and bird. To question 3, Dr. John Ostrom, a paleontologist at Yale, claims that birds are descended from dinosaurs (Beardsley, 1986). Even though the remains of *Protoavis* are very fragmentary, the quill feather sites are poorly preserved and the forelimbs are barely elongated, Ostrom proposes that *Protoavis* is not an intermediary form but should be classified as a bird. As for *Archaeopteryx*, it is now being relegated to the back burner of this issue. Aside from the fact that three reputable scientists, Fred Hoyle, Chandra Wickramasinghe and Lee Spetner, claim that *Archaeopteryx* "is a fake—a work of man, not nature" (Pearcy, 1985), some evolutionists will try to still hold to the position that it was a real intermediary form between reptile and bird. Of course, a pressing problem exists for evolutionists. Is a fossil specimen proof of being "an ancestor, or simply a cousin of a currently-living creature" (Bartz, 1986b)? If a given fossil is an ancestor, it can only indicate evidence for the history of that current-living animal family. If it is an evolutionary cousin (dead-end), it provides no evidence for the evolutionary history of the animal family. Any honest scientist will admit that there is no accurate way to differentiate an ancestor from an extinct cousin. There are cases where fossils of extinct species were once labeled as ancestors. Bartz (1986a) reports that Chatterjie now

suggests that *Archaeopteryx* was a dead-end having no relationship to the evolution of birds.

Both *Archaeopteryx* and *Protoavis* had teeth. Creationists would argue that most major animal families have both toothed and untoothed varieties (Bartz, 1986a).

Is Evolution Being Defossilized?

Ronald West (1986), a paleontologist at Kansas State University, stated:

Contrary to what most scientists write, the fossil record does not support the Darwinian theory of evolution, because it is this theory (there are several) which we use to interpret the fossil record. By doing so, we are guilty of circular reasoning if we say the fossil record supports this theory.

If evolution is really substantiated by the fossil record, intermediate fossil forms would be found in "massive numbers." But this is not the case. It is a "trade secret" of paleontology that the many, many transitional forms are nowhere to be found. Dr. David Pilbeam of Yale University has stated:

I know that at least in paleoanthropology, data are still so sparse that theories heavily influence interpretations. Theories have, in the past, clearly reflected our current ideologies instead of actual data (1978).

In another article, Pilbeam (1974) stated: "Human paleontology shares a peculiar trait with such disparate subjects as theology and extraterrestrial biology; it contains more practitioners than objects for study." It is possible that Dr. Pilbeam meant this statement as an insult to theology by associating it with extraterrestrial biology, but in reality, he has let the "cat (truth) out of the bag" by linking human paleontology with such "disparate subjects" by admitting the empirical data of fossils for scientifically proving evolution simply do not exist.

Mark Ridley (1981), a zoologist at Oxford University, summarized the situation by stating: "no real evolutionist, whether gradualist or punctuationalist, uses the fossil record as evidence in favor of the theory of evolution as opposed to special creation."

Now that the idea that *Archaeopteryx* was an intermediate form between reptile and birds is fading into scientific oblivion, does *Protoavis* fill the void? This writer concludes: not at all. Its evidence is weak and fragmentary. It will just occupy the void for a short time. Creationists have to agree with Lyall Watson (1982), who said it so decisively:

The fossils that decorate our family tree are so scarce that there are still more scientists than specimens. The remarkable fact is that all the physical evidence we have for human evolution can still be placed, with room to spare, inside a single coffin.

The fossil revisionism that evolutionists are performing is really a retreat from attempting to prove evolution from the fossil record.

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CONVERGENT EVOLUTION— DO THE OCTOPUS AND HUMAN EYES QUALIFY?

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Abstract

The eyes of the higher Cephalopods particularly those of the octopus, are compared with the human eye to try to determine whether they are legitimate examples of that rather vague, innocuous evolutionary principle of convergence. Some similarities and differences are explored with the conclusion that in the created order we observe similar over-all blue prints being used for similar purposes, with the necessary modifications for special conditions and/or environments, the eye of the octopus and that of man being one example.

Convergent Evolution

One of the directions of the postulated organic evolutionary process is what is termed convergent evolution. In general this can be defined as a process by which nature achieves comparable results by travelling along entirely different routes. Stated more specifically, organisms that are not related, or only distantly so, living in similar environments, eventually develop similarities in certain of their organs or bodily structure. Dobzhansky (p. 744) defines convergent evolution as follows: "Convergence is the evolution from different ancestors of organisms similar in appearance and in ways of life."

One of the classic examples of this concept, often appearing in evolutionary literature, is the comparison of the eye of one of the higher invertebrate Cephalopods, usually the octopus, with the vertebrate human eye. Two illustrative quotes are as follows, the first being from a recent issue of *Creation/Evolution*.

Biologists can cite many instances of parallel evolution (should be convergent evolution, HSH) in which forms that are only distantly related have developed similarities in structure—for example the almost identical structures of human and octopus eyes. (Albert, p. 28)

Cousteau and Diole (p. 88) contribute the following: "The eyes of Cephalopods are almost the equal of those of men. Their eyes like vertebrates have lids, irises, crystalline lenses and retinas."

Patterns of Animal Vision

Vision in the animal kingdom is probably its most valued sense, even if a variety of species depends to a greater extent upon others, such as smell and hearing. See Hamilton, 1985. Vision, of course, is mediated by the eye in association with the central nervous system,

both of which are found in nature varying from the very simple to structures of extreme complexity and organization, as in the higher vertebrates. The eye, with its almost infinite variations in design, particularly in the invertebrates, has always presented a grave problem to the evolutionist in his attempt to forge an evolutionary series where none exists as pointed out by Duke-Elder: "The curious thing, however, is that in their distribution the eyes of invertebrates form no series of contiguity and succession." (p. 178). Any positive evidence of evolution of the vertebrate eye from the invertebrate is totally lacking as well.

The most efficient kind of vision is attained when external objects can be imaged on the retina of the eye in such a way that they can be accurately interpreted by the central nervous system of the organism. Two effective methods of doing this are found in nature. One classification is the compound eye of insects which is made up of many small units (ommatidia), each one contributing a small section of the visual field. The other classification is termed the simple eye, the gamut of which ranges from a simple surface "eyespots" to an organ where light is received into the more or less rounded cavity of the eyeball, and, in its most advanced state, brought to a focus on the light-sensitive retinal layer which lines about 2/3 to 3/4 of its posterior surface, thus resembling, in principle, a camera. In the invertebrates the most highly developed such organ is found in squids and octopi among the Cephalopods. Since in most of the literature the higher Cephalopods are usually represented by the octopi, this discussion will be limited to them.

The eyes of vertebrates with very few exceptions are modeled on the second type, as above, in its complex form. There are many variations in the vertebrate model in size, shape, mode of focusing (accommodation), retinal structure and other details, but the basic principle is almost universally followed. A minor exception, the Apoda, constitute a small

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group exhibiting rudimentary and degenerative eyes. Man, with his vertebrate type of eye and associated three pound brain, which has been described as the most highly organized moiety of matter in the universe, stands at the apex of the total visual faculty.

Invertebrate Eyes

Two main types of eyes are found in invertebrates, simple and compound. The latter are peculiar to the Arthropods and do not concern us here. The simple eye varies from an eyespot on the surface epithelium in unicellular organisms to those of the multicellular Cephalopods, with eye of the *Ottopus vulgaris* being representative of the highest development. Intermediate forms consist of a group of associated light-sensitive cells on the flat surface, then a dimpling of these cells, which in higher forms appears as a definite cup with a small hole, as in the Cephalopod Mollusc, Nautilus, thus acting like a pinhole camera. A further differentiation occurs when the hole closes, thus separating and isolating the cavity from the surface. The cells lining it are of two types, one being secretory and filling the cavity with a clear material, with the other, being light-sensitive, forming a primitive retina. Such an arrangement, of course, is non-image forming and is seen in Gastropods. Finally, the necessary mechanisms to produce images are found in the higher Cephalopods, consisting of the addition of a lens and a method of accommodation to produce an adequate image on the light-sensitive cells lining the posterior of the cavity.

It will be noted that all these variations in form originate by an invagination of the surface epithelium. A succession of organisms can thus be posed that exhibits these different styles of the simple eye, but such a series in no way confirms that a more complex form evolved from a less complex one. Each organism appears to have been endowed with visual abilities in accordance with its basic requirements, but a few appear to possess visual competence beyond obvious needs. Since the octopus is an active creature, inhabiting the rock crevices and swimming with considerable speed, its eyes would, of necessity, have to be capable of a considerable degree of visual discernment. Such would require an image-producing eye of some complexity with a lens and an accommodative mechanism. It therefore has an eye designed to satisfy these needs.

Vanadis

As an interesting sidelight to this discussion, the lowly deep sea worm, *Vanadis*, also has an eye with a lens and probably some accommodative abilities but the detailed physiology has not been completely worked out. It has an accessory retina far forward, almost alongside the circular lens, discrete from the main retina, which latter, as is the rule in invertebrates, is verted in type (Figure 1). Interestingly enough, an accessory retina also occurs in the tubular eyes of some deep sea fish and deep sea Cephalopods. Here it is the continuation far forward of the normal retina from the latter's usual termination and is not a separate part as in *Vanadis*. The octopus does not have an accessory retina. Wald and Rayport (p. 1439) conducted electro-retinogram studies on *Vanadis* eyes which revealed that the retinas were most sensitive to the wavelengths

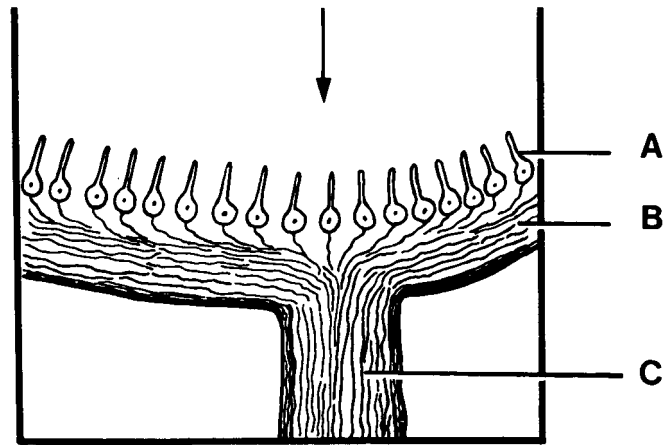


Figure 1. Invertebrate Retina (Verted). Arrow indicates direction of light. A: Light sensitive cells. B: Nerve cell fibre layer. C: Optic nerve.

of light which penetrate to the depths of the worm's habitat.

Octopus Versus Human

When considering the evolutionary concept of convergence with regard to the eyes of octopi and humans it would be of interest to point out just how much similarity there is as well as some of the major differences between them. It is not possible in a short article to mention many of the finer details but only those which are the most obvious. As stated previously the simple eye of invertebrates, with few exceptions, is derived from the surface epithelium, whereas in vertebrates the tissue of origin is the neural ectoderm. Thus the eyes of vertebrates and invertebrates originate from different sources (Duke-Elder, p. 115). We would therefore expect to find differences in structure and function.

The only similarities between the two eyes are that they are both image-producing, thus requiring a cornea, iris, lens and retina, but here the similarities end, as the individual structures differ quite markedly, both anatomically and physiologically. As mentioned previously the worm, *Vanadis*, also has these same components, but, like the octopus, its counterparts little resemble those of the human.

The octopus eye is enclosed in a fibrous and cartilaginous casing whereas the human eye lies in a bony socket. Four extra-ocular muscles move the octopus eye whereas the human has six. Due to the configuration of the head and position of the eyes in the octopus there is very little overlapping of the visual fields, resulting in the head being tilted sideways as it uses one eye in approaching an object (Wells, p. 258). Humans, of course, have binocular vision, a necessary requirement in the execution of fine hand movements and other activities. The preponderance of evidence suggests that octopi lack color vision. (Wells, p. 209).

Cornea

In the Cephalopods the state of the "cornea" is variable in that in some species a hole is present enabling seawater to circulate in the anterior chamber (Figure 2). In others there is no hole. Duke-Elder (p. 144) describes it this way:

. . . the transparent surface epithelium forms a "cornea," sometimes in *Myposidae*, forming a continuous layer in which the cul-de-sac (the "anterior chamber") is filled with an "aqueous humour" (cuttlefish, *Sepia*; squid, *Loligo*), sometimes in *Oegopsidae*, perforated by a hole so the cavity is flushed with seawater (Octopus),

Any perforation of the human cornea from whatever cause can, of course, be disastrous. In contradistinction to the human, the cornea of the octopus, being a sea dweller, takes no part in the refractive process which is done entirely by its lens.

Iris

There are differences in the irides of the octopus and man. That of the octopus, unlike man, is covered by a silvery membrane which glitters and shines like mother-of-pearl (Duke-Elder, p. 145). The pupillary aperture in man is round whereas in the octopus it is more or less rectangular, and, in contraction, forms a narrow horizontal slit. Such a contracted pupil presents problems with astigmatism, which is not the case with a round pupil. In the human a circular muscle embedded in the iris at the pupillary margin contracts it, while radiating fibres therein cause dilation. Both pupils react in unison whereas in the octopus no dilator muscle has been definitely demonstrated, and the irides are not under unified control but can function independently (Wells, p. 152).

Lens

As shown in Figure 2, the lenses of the cephalods are composite, being formed partly from vesicular epithelium and partly from surface epithelium, as compared with a homogeneous lens in man. In vertebrates and man the origin of the lens is not definitely known and is disputed (Duke-Elder, p. 246). In the octopus the lens is round and firm whereas in the human it is oval and pliable up to about the middle teens at which time it slowly begins to stiffen, and is entirely so at about 55-60 years of age.

Accommodation

The processes of accommodation (focusing) in the octopus and man are entirely different. In man the corneal curvature is a factor in refraction whereas it is not so in the octopus. In man the alteration of the lens curvature by the action of the ciliary muscle, and the inherent elasticity of the lens itself, together with the refractive influence of the corneal curvature direct light from near and far to a focus on the retina.

Since the rigid lens of the octopus cannot change its shape in order to focus light on the retina, its position in the eye has to be altered. This is accomplished by the contraction of the ciliary muscle which displaces the lens backward. Movement in the opposite direction is attained by the squeezing action of muscles exterior to the sclera increasing the intra-ocular pressure which pushes the lens forward. Wells (p. 151) states that this double focusing system has no parallel among vertebrates. While not exactly the same, the eye of the snake, which is unique among vertebrates (Hamilton, 1987) in possessing a brille or spectacle, has a lens which is displaced forward in accommodation

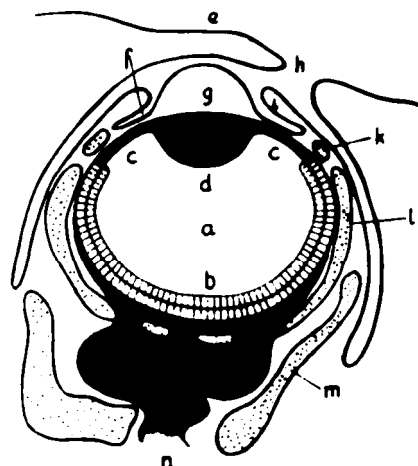


Figure 2. The eye of a typical cephalopod. Invaginated epithelium forms the optic vesicle (a) lined by the retina (b), the posterior layer of the "ciliary body" (c), and the posterior part of the lens (d). The surface epithelium forms the cornea (e), the anterior part of the ciliary body (f), the iris (i), and the anterior part of the lens (g), a hole (h), being left at the point of invagination. The eye is surrounded by a cartilaginous orbit, formed by an anterior cartilage (k), an equatorial cartilage (l), and an orbital cartilage (m). n is the optic nerve. Reproduced by permission from Duke-Elder, Sir Stewart 1958. *The eye in evolution in System of Ophthalmology*, Volume 1. C. V. Mosby Co., St. Louis. (1986).

by a similar increase in intra-ocular pressure (Duke-Elder, p. 596). Some fish also focus by lens displacement, but in these cases movement forward and backward is accomplished by small muscles attached directly to the lenses themselves.

Retina

The major anatomical difference between the octopus and human eye lies in the retina, that of the former being very simple compared to the latter. The octopus retina has but one layer composed of essentially identical light-sensitive retinula cells which differ markedly from human rods and cones (Wells, p. 142).

In the human retina the sentient rods and cones anastomose with the middle layer bipolar cells, which in turn connect with the ganglion cells, interspersed with laterally oriented amacrine cells, the whole forming a virtually indescribable maze of links, junctions and relays. The afferent fibers from the ganglion cells come together in the eye to form the exiting optic nerve which, in conjunction with the optic radiation, leads to the visual cortex of the brain where interpretation takes place.

Lying behind the octopus eyeball, and separate from it, is the optic lobe, which contains two relays, somewhat comparable to the bipolar and ganglion cells in the human retina, leading to the cerebral ganglion of the nervous system, Figure 3. Wells states (p. 156) that there is no direct evidence about the function of any of the anatomically distinguishable cell types in the optic lobes, but their arrangement may have something to do with the analysis of visual images. The light-sensitive retinula cells of the octopus are verted as is the rule in invertebrates whereas the rods and cones in the human eye are inverted following the established major positional difference between the light-sensitive cells of invertebrates and vertebrates. (Figures 1 and 4). The octopus lacks a

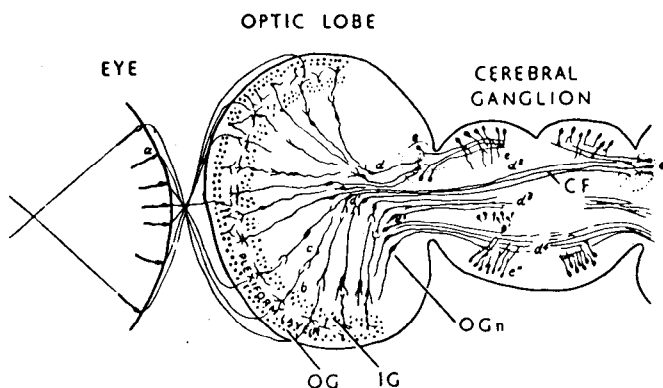


Figure 3. Diagrammatic scheme of the visual paths and their central connections in the cephalopod (after Kappers). Axons from the visual cells in the compound eye, *a*, decussate to form a chiasma and enter the optic lobe, terminating in the plexiform layer between the inner, IG, and outer granular layers, OG. The pathway is continued by axons of the granular cells, *b*, sometimes with an intercalated neurone, *c*, to the central and pedunculate nuclei of the optic ganglion, OGn. Thence a further relay, *d* to *d'*, continues the pathway to the cerebral ganglia to terminate in association areas, *e*, and, by means of commissural fibres, CF, in the contralateral optic lobe. Reproduced by permission from Duke-Elder, Sir Stewart. 1958. The eye in evolution in *System of Ophthalmology*, Volume 1. C. V. Mosby Co., St. Louis. (1986).

specialized area such as the fovea centralis which subserves acute central vision in the human.

Conclusion

The observation that there are certain similarities between the eye of the octopus and the human eye, but totally disregarding the many differences in individual structures, is said to be an illustration of the principle of evolutionary convergence.

Taking into consideration the activities and habits of the octopus, its needs for visual discrimination and perception would be best realized by an eye constructed on the principle of the camera. It is entirely appropriate therefore that *Octopus vulgaris* has been endowed with an eye of this nature designed to function in a watery environment.

Since there is no real evidence of ocular evolution among the invertebrates or evolution of the vertebrate eye from that of any invertebrate, it would be entirely reasonable and justifiable to conclude that each of these eyes under consideration was designed by some overarching Intelligence to satisfy its specific visual needs including the differing structural details necessitated by the two differing environments.

It seems incomprehensible to conceive that a non-teleological, chance process such as natural selection

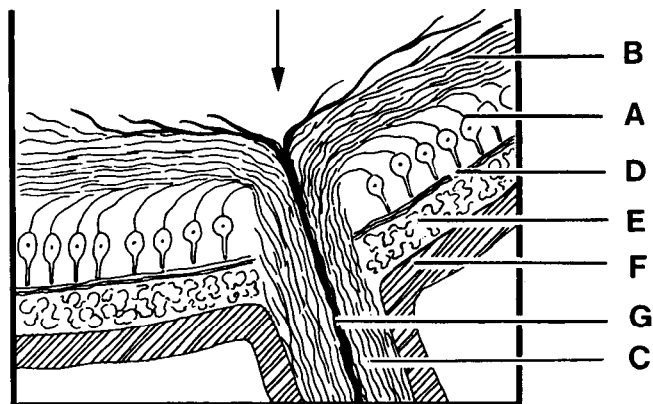


Figure 4. Vertebrate Retina (Inverted). Arrow indicates direction of light. A: Light sensitive cells. B: Nerve cell fibre layer. C: Optic nerve. D: Pigment cell layer. E: Vascular choroid. F: Sclera. G: Central retinal artery.

acting on almost totally regressive mutations could initiate the genetic information and direction necessary to fashion an image-producing eye in all its complexity even once, let alone twice, from different tissues, and in two models differing in physiological and anatomical detail, one in a water-dwelling invertebrate and the other in a vertebrate functioning in air.

From the anatomical and physiological evidence presented concerning octopus and human eyes it would appear that organic evolution would have to surreptitiously smuggle in a "watchmaker" as tacitly implied by Robert Ardrey and quoted by Macbeth (p. 132) in order for the concept of convergence to have any real significance.

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QUOTE

Computerized knowledge already may have begun to choke the springs of imagination. Of course it is not merely the device called the computer that works this mischief: rather, it is the mentality of the dominant Knowledge Class, one of whose instruments the computer is. Damage to the imagination—whether we call that mysterious faculty serendipity or intuition or the illative sense—may extend to many other fields than radio astronomy. It may extend to attempts at renewal of the person and of the Republic—to the life spiritual and the life temporal. If so, the wicked things written on the sky may be graven upon tablets of stone and set amongst us for our obedience to the commandments of the Savage God.

Kirk, Russell. 1985. The wise men know what wicked things are written on the sky. *Modern Age* 29:116.

ARTICLE REVIEW

The evolution of sexual differences in insects by R. Thornhill and D. T. Gwynne. 1986. *American Scientist* 74:382-9.

Reviewed by Stephen M. Butt*

A major problem for evolutionists has been attempting to explain the development of sexual differences and behavior among organisms. Williams (1966) rejects the idea that the gene was synthesized accidentally in the original organic soup, with subsequent mutation because the extreme specialization of the DNA molecule renders this impossible. He also views as impossible that DNA could have evolved simultaneously in separate phylogenies, because of the improbability of identical adaptations such as DNA evolving independently. He is forced to propose that heredity developed when certain organic molecules began to aid in the synthesis of metabolically effective molecules. Wilder-Smith (1970) and others have demonstrated the improbability of this occurring from the standpoint of artificial intelligence. The chemical process would have to be intelligently governed at all points to guard against entropic reversal of complexity gained.

The author under review assumes abiogenesis while discussing the reproductive strategies of several insects, assuming they are a key to understanding the evolution of life. He notes that male animals are generally more sexually competitive than females, because male gametes are generally smaller and less costly than female gametes to produce. The female, investing more material into the reproductive process, tends to be choosy in mate selection, selecting strong, competitive males, thus increasing reproductive success.

He cites examples showing that this behavior can be modified or reversed. Males can contribute materials or energy which increase reproductive success. These include courtship feedings by birds and insects, direct parental care by giant water bugs, and production of katydid spermatophores, portions of which are eaten by females to aid in egg production.

Reversal of traditional sex roles occurs in these katydids and some crickets which produce spermatophores ranging from 3 to 25 percent of male body weight. The females eat the spermatophylax portion of these to gain much needed nutrients. This large contribution on the part of the males causes them to be choosy in mate selection, preferring females which are larger, and thus more fecund. This reversal was more pronounced in areas of high population densities where food became a limiting factor in spermatophore production.

Work has also been done with scorpionflies, showing that experimental manipulation of the ability of males

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to contribute changed the degree of female competition. Male scorpionflies compete for carrion which they ingest to help produce a nutritious salivary mass for courtship feedings. They may also present the female with gifts of dead insects. Equal numbers of male and female scorpionflies were placed in three enclosures which contained 2, 4, and 6 crickets as a carrion resource for the males. Sexual selection based on male mating success was greatest in the enclosure containing only two crickets. Females selected males which produced gifts of large, dead arthropods over males which produced only salivary masses.

The author concludes that sexual selection is very important in the evolution of life, apparently effecting changes in behavior and morphology. These, however, are difficult to account for with the evolutionary model. Indeed, the evolution of insect life is not corroborated by the fossil record (Sanders and Howe 1986).

The presence of nuptial feeding and resultant sexual selection is a testimony to God's creative genius rather than evolution. The trial and error necessary to produce this behavior would put males at a disadvantage because they would deprive themselves of nutrition to feed the female. The behavior would afford no advantage until the timing of the feeding and the female response were already established. It is difficult to explain from an evolutionary point of view the risky steps to a sexual role reversal when traditional sex roles are serving most species quite well. Why should a male insect invest such a great amount of energy in producing a large spermatophore, when most other insect species reproduce successfully in spite of minimal contribution of materials by the male? Why should the male giant water bug hinder its own locomotion by caring for eggs glued to its back by the female when other insects are reproductively successful even when the female abandons her eggs?

It is axiomatic that most natural selection is stabilizing selection, serving to preserve a specific kind of organism by eliminating harmful behavior or mutations from the gene pool. The existence of these widely differing strategies is testimony to the diversity of God's creative genius. The Bible tells us that the creeping things were created to reproduce after their kind. I believe this includes the wondrous array of plans to insure reproductive success.

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QUOTE

(Robert) Frost perceived that the common denominator which linked the political Left with the modernist literary elite was their claim to being "intellectuals," which ultimately rested upon their faith in modern science to every branch of humanistic knowledge, including politics and the arts. (parenthesis added)

Stanlis, P. J. 1985. Rehabilitating Robert Frost: the unity of his literary, cultural, and political thought. *The Intercollegiate Review* 21(1):35.

BOOK REVIEWS

The Ultimate Reality by Hugh Mason Woodman. 1985. Vantage Press, Inc., New York. 149 pages. \$10.95.

Reviewed by Robert L. Goette*

On the dust cover the publisher has this to say of the book:

An open invitation to an inquiry into the ultimate meaning of life is issued here by author Hugh Mason Woodman, who seeks not so much to provide the final answer as to inspire independent thinking by the reader. In so doing, he lays before us the various approaches to the subject of afterlife, whether or not there is life after death. Psychologists, philosophers, and prophets are called upon as expert witnesses, as are historians, theologians, and those with knowledge of the occult.

The Ultimate Reality, by Hugh Mason Woodman, does present evidence in favor of the idea of a life beyond the grave, especially for those who have given the idea little thought, as well as for those who suspect that life may continue in some form after death. Chapters are included on evolution, the psychology of faith, the conflict between Judaism and the Roman emperors, the conflicts among the early Christian sects culminating in the Council of Nicaea, and the chain of Christian belief, from then until now.

While the author presents some interesting material, indicating considerable research, in some chapters, to this reader, there did not seem to be a firm link connecting the presentations made in each chapter. Perhaps the author anticipated this reviewer's reaction to the book for on p. 129 of the last chapter he says:

Those who may find the perusal of the foregoing pages tedious, or, as often happens among readers of tales of fiction, may turn to this last chapter to discover what is going to be the writer's conclusion . . . will be disappointed.

Mr. Woodman seems to have a rather low view of the inspiration of Scripture. For example, on pp. 126 and 127 he states:

Turning to the Genesis story of man's Creation, which has found its way into the canon of the Old Testament, it is thought by many scholars, that this was conceived during the captivity of the Jews after the Babylonian conquest, and that they brought it with them on their return to Palestine, and, since the Babylonians themselves were polytheists, it was probable that the legend was propounded by a Jew while undergoing his captivity.

One can believe in God and in evolution as well. The Genesis six-day account, if not legendary, was never in any case intended to be taken literally.

The author displays his prejudice in the following statement found on p. 124:

It is taken for granted that Darwinism and the belief in the evolution of all forms of life is now an accepted biological fact by all scientists, with the few exceptions of such names as that of Professor

E. H. Andrews, whose letter appeared in the *Daily Telegraph* of 17.2.77, and the few whose fundamentalist religious views deny them an open mind on the subject of the evidences of science.

He then proceeds to cite several dating methods without mentioning any of the unprovable assumptions on which those methods are based. There does not seem to be an attempt on the part of the author to examine the scientific evidence for creation, presented by numerous authors with advanced degrees in science.

If the reader is short of reading material then he might want to purchase this book, but otherwise, he might do well to seek other titles of greater value. The book seems overrated by the publisher in his promotional comment quoted in the first paragraph of this review.

The Early Earth, Revised Edition, by John C. Whitcomb. 1986 Baker Book House, Grand Rapids, MI. 174 pages. \$8.95.

Reviewed by Emmett L. Williams*

The author employs the second law of thermodynamics in the Preface as a springboard to discuss Biblical creationism. He then combines Scriptural exegesis and scientific information developing a compelling discussion of the creation week and its ramifications on the present evolution/creation controversy. The text is rendered more interesting by the interspersing of illustrations with detailed captions that reinforce the creation viewpoint.

Whitcomb notes that creation had to be instantaneous and supernatural. The instant miracles performed by the Lord are used as an analogy to the instant creation concept. Natural processes cannot account for the origin of the physical world. Evidences for a literal seven-day creation week are presented. A chart for the events of the seven days is given for easy visualization. The superficial appearance of history or age of a created entity is discussed. The extreme views of Philip Henry Gosse so often used by anticreationists to smear creationists are mentioned and refuted.

In the chapter on the creation of the universe, the author states that whatever a person believes about origins must be accepted by faith. Many arguments for design are given. Defects in some naturalistic hypotheses of the origin of the solar system are outlined. Whitcomb carefully discusses the events given in Genesis One and Two in relation to the unusual twistings of the account by theistic evolutionists. He explores the theological naivete of Howard J. Van Till, a theistic evolutionist. The reader may also be interested in an article (Barnes 1986) published in *CRSQ* refuting an attack of Van Till on creationists. The author ends the chapter with a discussion of the purpose of stellar creation.

One of the strong points of the book is that Whitcomb refutes many compromises of the creation viewpoint, i.e. theistic evolution, double revelation theory, day-age theory and the ruin-reconstruction theory (gap theory). Also an article (Whitcomb 1965) in *CRSQ*

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covers the latter subject. The author points out that even though the emphasis of this book is on the creation miracles, the Christian should never minimize the providential works of God in human history.

The chapter on the creation of plants and animals entails such topics as a refutation of evolution origins by probability arguments, the weaknesses in chemical evolutionary scenarios, genetics and the limits of the biological variation, Mendel's work and the size of the ark.

The creation of mankind centers on the direct creation of Adam. The subjects of ape-man and cave man and the antiquity of man from the recent creation perspective are presented. A chart of the lineage of Man from the Fall to the Flood is given for easy reference. Whitcomb supports a recent creation concept.

If you know someone who is tottering between views such as literal creation and theistic evolution or the day-age theory, give them a copy of this book. A complete chapter on the gap theory makes it an excellent selection for someone who believes in this compromise. The book is a good presentation of Biblical creationism and related natural facts to strengthen the faith of any Christian.

References

CRSQ—*Creation Research Society Quarterly*

Barnes, Thomas G. 1987. The dilemma of a theistic evolutionist: an answer to Howard Van Till. *CRSQ*. 23:167-71.

Whitcomb, Jr. John C. 1965. The ruin-reconstruction theory of Genesis 1:2. *CRSQ*. 2(1):306.

Creation Resource Packet, Origins Research and Information Service, 137 Oak Crest Drive, Lafayette, LA 70503. \$1.00 (five or more, 0.50 each).

Reviewed by Emmett L. Williams

This packet was developed by Origins Research and Information Service (ORIS) to acquaint Christians with creation-science organizations and their publications. Available in the packet are membership applications, book, journal and audio/visual aid order forms and sample publications from creationist organizations around the world.

ORIS offers a rapid method to become familiar with creationist resource material by selling this packet. It is reasonably priced as a selected "catalog" of organizations, books and films.

*Emmett L. Williams, Ph.D., is editor of the *Creation Research Society Quarterly*.

The Nemesis Affair: A Story of the Death of Dinosaurs and the Ways of Science by David M. Raup, 1986. W. W. Norton & Company, New York. 220 pages. \$14.95.

Reviewed by Clifford L. Lillo*

As a tutorial on the methods of science, this book is a success. As a believable theory, *Nemesis* is a dismal disappointment. The theory involves the collision of a star called *Nemesis* (never seen by any astronomer) with the Oort Cloud of cometary material (also never seen) every 26 million years, resulting in comets striking the earth and destroying major families of plants

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and animals, the most sensational being the dinosaurs.

In June 1980, according to Raup:

The journal *Science* published an article entitled "Extraterrestrial Cause for the Cretaceous-Tertiary Extinction," by Luis Alvarez, Walter Alvarez, Frank Asaro, and Helen Michel (all of the University of California at Berkeley). This was the first general announcement of the extraterrestrial-impact hypothesis of dinosaur extinctions based on a finding of anomalously high concentrations of the element iridium at the geological boundary between the Cretaceous and Tertiary periods (the so-called K-T boundary). (p. 24)

From that time until the present, several groups:

... continued to explore the Alvarez hypothesis of large-body impact as a cause of mass extinction. Many more iridium anomalies were found worldwide, as well as evidence of other extraterrestrial signatures at the K-T boundary. (p. 24)

Jack Sepkoski, a paleontologist, compiled data on the fossil record of life. In 1982, he published *A Compendium of Fossil Marine Animals*, containing the first and last known occurrences of 3500 separate taxa. Later Sepkoski and Raup analyzed the *Compendium* data and discovered a 26-million-year periodicity of extinctions (based upon the geologic time scale). Raup says:

Each major pulse of extinction from the Permian onward could thus be placed on a time line. The terminal Cretaceous mass extinction was one point, the late Permian another, and so on. In the initial analysis we identified twelve extinction events. (p. 116)

Event number one on the time line was placed at about the 10 million-year-before-present position. Raup explains that:

To make this periodicity work, one must postulate that two events, numbered 5 and 7, are missing from the record: either they did not occur or they have not been found. The most recent four events ... are the best dated and fit the hypothesis of periodicity almost perfectly. The K-T event of dinosaur fame is the third one back ... (p. 120)

He also says, "... one of the predicted events, number 10, may be double." (p. 119)

With respect to the high concentration of iridium at the K-T boundary, Raup confesses:

The iridium enrichment in the K-T boundary clay could be of biological origin. After all, many organisms concentrate certain elements to an extent that, historically, some elements were discovered in marine animals before they were found in sea water itself. The Alvarez paper says nothing about this possibility.

Rocks have been analyzed for iridium only close to the K-T boundary. Until we have sampled the entire geologic column, we will not know whether iridium anomalies are unusual. The whole extinction interpretation rests on an assumption of the rarity of the anomaly. (p. 70)

Even more damaging to the Alvarez thesis was the discovery that in eastern Montana there are three meters (about ten feet) of sediment between the

youngest dinosaur fossil and the iridium anomaly. Raup says, "To Bill Clemens and many other paleontologists, the three-meter gap was decisive evidence that the dinosaurs were dead and gone well before a meteorite hit . . ." (p. 76)

Raup admits that not much has been done to date to prove periodicity of iridium deposits. A number of people have started programs to analyze for iridium in other parts of the geologic column since the K-T boundary anomaly would have significance only if iridium were concentrated there. But:

Chemical analysis for iridium is time-consuming and costly, and this greatly limits the number of samples that can be processed. As a result, most of the analyses have come from points in the geologic column where mass extinctions are known to occur. This is not the best science, but scientists are human and compromises have to be made. (p. 94)

In a review of Raup's book in the *Los Angeles Times*, Lee Dembart made the following comment:

. . . reason is the tool we rely on in many areas of human affairs, science paramount among them. In recent years, the world has discovered that even science — the paradigm of reason — contains a healthy dollop of belief, prejudice and emotion . . . He [Raup] wonders how much belief is essential to accepting a new idea, and he demonstrates that science rests as much on belief as any religion does. (1986, part V, p. 1)

Evolutionists have frequently criticised creationist scientists for not having an open mind, thereby deciding before their experiments what the results will show and thus negating the usefulness of the experiments. Raup has shown that a theory was conceived by evolutionists that did not fit the facts. To make it plausible, some data were ignored and some were manipulated.

Readers of the *Creation Research Society Quarterly* should read Raup's book to get the full story. Raup presents all sides of the controversy but says in the epilogue that:

The story is not yet over. Nemesis has not been found and much controversy rages over whether there is even any need for Nemesis . . . That is, the claim of periodicity in extinction, on which Nemesis is based, is still being debated and new lines of evidence are being sought. . . . (p. 209)

What will happen if all the Nemesis and related theories turn out to be wrong? This is, of course, possible. And some of the more speculative theories I have described have a pretty good chance of being wrong. (p. 210)

Also, regardless of the outcome, so much will have been learned about the facts of extinction that the groundwork will have been laid for an understanding of the history of life that might have eluded us otherwise. So, in my view, only good can come from the Nemesis Affair. (p. 211)

It is refreshing to read a book about a scientific idea in which the author admits that it may be wrong but that much has been learned as a result of having conducted research on it.

Reference

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.

Evolution: A Theory in Crisis, by Michael Denton. 1986. Harper & Row. Scranton, PA. 368 pages. \$19.95.

Reviewed by Wayne Frair*

Written by an Australian doctor and scientist, this book promotes the downfall of an institution—Darwinism. For a nontheistic work the approach is radical but compelling. In chapter after chapter Denton presses his point that "the Darwinian theory of evolution is no more nor less than the great cosmogenic myth of the 20th century." (p. 358)

The first of the two introductory chapters, "Genesis Rejected," begins in 1831 with Darwin's five-year voyage on the Beagle and his thinking based upon his experiences. In the next chapter on "The Theory of Evolution" we hear more of Darwin, particularly against the backdrop of historical ideas starting with the Greeks. Even though Darwin lacked an empirical basis for his macroevolutionary claims, his evolutionary theory had a profound and fundamental impact which "broke man's link with God and set him adrift in a cosmos without purpose or end." (p. 67) It becomes increasingly clear that Denton opposes Darwinism, but he recognizes the power of the army which he is engaging; and he evidences due respect toward the man who gave the great company of Darwinists their marching orders in 1859. Darwin, a sensitive man, possessed common sense, avoided dogmatism and fanaticism, and was very aware of "the highly speculative nature of his evolutionary model." (p. 65)

Chapter 3, "From Darwin to Dogma," is a short but crucial chapter which brings the reader into the latter 20th century scientific marketplace where, following the lead of Julian Huxley in 1959, purveyors of "scientific" information are proclaiming that evolution "is no longer a theory *but a fact*" (p. 75), to be doubted no more than that the earth rotates around the sun. Denton exposes this "mirage," saying:

The overriding supremacy of the myth has created a widespread illusion that the theory of evolution was all but proved one hundred years ago and that all subsequent biological research—paleontological, zoological and in the newer branches of genetics and molecular biology—has provided ever-increasing evidence for Darwinian ideas. Nothing could be further from the truth. The fact is that the evidence was so patchy one hundred years ago that even Darwin himself had increasing doubts as to the validity of his views, and the only aspect of his theory which has received any support over the past century is where it applies to microevolutionary phenomena. His general theory, that all life on earth had originated and evolved by a gradual successive accumulation of fortuitous mutations, is still, as it was in Darwin's time, a highly speculative hypothesis entirely without direct actual support and very far from that self-

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evident axiom some of its more aggressive advocates would have us believe. (p. 77)

In Chapter 4 entitled "A Partial Truth" distinction is made between microevolution, which is established, and macroevolution which is not. Examples of the former are changes which have occurred in chains of intergrading subspecies as well as in the fruitflies (*Drosophila*) and honeycreeper birds of Hawaii. Natural selection may work only for "micro" changes.

There is a substantial development of information for about the first third of the book through Chapter Five where we learn of "The Typological Perception of Nature."

Agassiz, in common with the great majority of leading biologists in the nineteenth century, adhered to a philosophy of nature referred to as typological which was completely antithetical to the concept of organic evolution and which denied absolutely the existence of any sort of sequential order to the pattern of nature.

According to the typological model of nature all the variation exhibited by the individual members of a particular class was merely variation on an underlying theme or design which was fundamentally invariant and immutable. Each individual member of a class conformed absolutely in all essential details to the theme or archetype of its class. . . . In typological theory the term archetype referred to a purely hypothetical entity, an abstract and highly generalized representative of its class. (p. 94)

Many of the comparative morphologists who were founders of modern biology believed that nature consisted of these separate types not connected by bridges. These pre-evolutionary biologists, after 1859, at times were accused by evolutionists of basing their conclusions not on facts from nature but rather on religious preconceptions and this myth has persisted into the twentieth century. Denton holds that the typological model "holds almost universally" (p. 105) only above the level of species.

So the lack of transitional forms (gaps) between groups as observed in the nineteenth century is the best model of nature today. Some of the classical intermediate types, such as the lungfish and *Peripatus*, rather than being intermediates, are shown to be "mosaics of characteristics" (p. 110) found in two distinct groups.

Chapters following Number 5 to a large degree expand on and further document what already has been presented. They deal with "The System of Nature from Aristotle to Cladistics," "The Failure of Homology," "The Fossil Record," "Bridging the Gaps," "The Molecular Biological Revolution," "Origin of Life," "A Biochemical Echo of Typology," beyond chance, perfection, and "Priority of the Paradigm." Some significant quotations on the pertinent topics discussed in these chapters follow:

The evolutionary basis of homology is . . . severely damaged by the discovery that apparently homologous structures are specified by quite different genes in different species. (p. 149)

The only sort of evolution documented in the fossil record are several instances where a rela-

tively minor morphological transformation can be traced through a convincing series of fossil forms. The best known case is probably that of the horse . . . (p. 182) the horse is the exception which proves the rule. (p. 185)

As evidence for the existence of natural links between the great divisions of nature, they are only convincing to someone already convinced of the reality of organic evolution. (p. 195)

The complexity of the simplest known type of cell is so great that it is impossible to accept that such an object could have been thrown together suddenly by some kind of freakish, vastly improbable, event. Such an occurrence would be indistinguishable from a miracle. (p. 264)

The discovery that the methanogens belong to a quite new division of the living kingdom is yet another case which illustrates one of the main themes of this book, that whenever new types of organisms are occasionally discovered they never turn out to be ancestral to known groups but stand related only as sister groups in keeping with the thesis that nature's basic order is circumferential rather than sequential. (p. 288)

. . . all in all, the basic axioms of typology, that all the members of each type conform to type, that intratype variation is limited and type specific, so that when outgroup comparisons are made the subgroups of the type stand equidistant from more distantly related groups, hold universally throughout the entire realm of nature. This does not mean, of course, that typology is necessarily correct. But if we accept that closeness to empirical reality is the only criterion by which to judge alternative theories, we would, if strictly impartial, be forced to choose Aristotle and the *eidos*, in favour of Darwin and the theory of natural selection. There is little doubt that if this molecular evidence had been available one century ago it would have been seized upon with devastating effect by the opponents of evolution theory like Agassiz and Owen, and the idea of organic evolution might never have been accepted. . . . if the ancient representatives of groups such as amphibia, lungfish, cyclostomes and reptiles manufactured proteins similar to those manufactured by their living relatives today, and if, therefore, the isolation of the main divisions of nature was just the same in the past as it is today, if for example ancient lungfish and ancient amphibia were as separate from each other as their present day descendants are, then the whole concept of evolution collapses. (p. 290-291)

So how willing is the present community of evolutionists to consider seriously an alternative model?—about as willing as sixteenth-century geocentrists were to consider the Copernican system.

. . . so ingrained was the idea that the Earth was the centre of the universe that hardly anyone, even those astronomers who were well aware of the growing unreality of the whole system, ever bothered to consider an alternative theory. (p. 349)

Denton is strongly opposed to the idea that chance with random changes could be responsible for the origin and diversification of life. He does not write as a creationist, but I sensed his reaching in this direction.

The eerie artefact-like character of life and the analogy with our own advanced machines has an important philosophical consequence, for it provides the means for a powerful reformulation of the old analogical argument to design which has been one of the basic creationist arguments used throughout western history—going back to Aristotle and presented in its classic form by William Paley in his famous watch-to-watchmaker discourse.

According to Paley, we would never infer in the case of a machine, such as a watch, that its design was due to natural processes such as the wind and rain; rather, we would be obliged to postulate a watchmaker. Living things are similar to machines, exhibiting the same sort of adaptive complexity and we must, therefore, infer by analogy that their design is also the result of intelligent activity . . . the inference to design is a purely a *posteriori* induction based on a ruthlessly consistent application of the logic of analogy. The conclusion may have religious implications, but it does not depend on religious presuppositions. (pp. 339, 341)

As an observer he is aware how important the Darwinian revolution has been in sociology and politics in past decades.

The twentieth century would be incomprehensible without the Darwinian revolution. The social and political currents which have swept the world in the past eighty years would have been impossible without its intellectual sanction. It is ironic to recall that it was the increasingly secular outlook in the nineteenth century which initially eased the way for the acceptance of evolution, while today it is perhaps the Darwinian view of nature more than any other that is responsible for the agnostic and sceptical outlook of the twentieth century. What was once a deduction from materialism has today become its foundation. (p. 358)

Most of what Denton says in this book has been said before by others. But a very important contribution of the book is its presentation of biochemical data within a typological framework. I want to study this further in careful detail.

Denton generally has his facts straight, but there are sections of the book which probably could be clarified and/or strengthened by some more recent or additional material. On Pages 245 and 338 he refers to the complexity of ribosomes. What he says characterizes the procaryotes (with three RNA chains and about 55 proteins); whereas in the eucaryote ribosome, which is even more complex, four RNA chains and at least 78 proteins have been detected.

The book was published first in England (1985) and then in the United States in 1986. In the American printing there are just a minimum of idioms and spellings perhaps not frequently used here [for example, "put paid completely" (p. 254) and "programmes" (p. 351)].

The book is bound to have a major influence and should be read and circulated widely. It is required reading for all those involved in creation/evolution studies. Libraries should hold it. Hopefully we can anticipate from Denton additional writings which will serve further to improve our understanding of origins.

Meteorites: Their Record of Early Solar System History by John T. Wasson. 1985. W. H. Freeman and Company, New York. 267 pages. \$29.95.

Reviewed by Paul M. Steidl*

Meteorites is a text suitable for upper-level undergraduate courses. Its purpose, as the title implies, is to derive from the study of meteorites what the early solar system conditions were when the meteorites supposedly formed by natural processes. The viewpoint, therefore, is from the evolutionary mainstream.

Though it represents itself as using as little jargon as possible, and is careful to define many simple terms such as *asteroids* and *comets* in the text, it rapidly gets into complex arguments and technical terms which are not defined. This occasionally makes it difficult to follow for the non-specialist. But anyone determined to read it carefully can derive much from it.

Meteorites can be divided into two sections. The first deals primarily with what can be learned about the meteorites themselves by direct analysis, while the second section is speculative, trying to determine their origins. The first section begins with some introductory material about the history of meteorite observation and description of known falls. It rapidly becomes more technical as it goes on to describe and classify meteorites according to their mineralogical properties and histories. It also describes numerous methods applied to try to determine the ages of meteorites, including radiometric dating, cosmic ray ages and solar flare particle track ages. Wasson does give a particularly clear explanation of whole rock isochrones. He mentions a meteorite found in a box in a Japanese Shinto Shrine. The date on the box was 861 A.D. Radiocarbon dating of the box itself gave a date of 410 $\pm$ 350 A.D.

The second section tries to identify where and when meteoroids formed in an evolutionary solar system model. This begins with an overview of stellar evolution. But it fails in its purpose to justify the existence of a solar nebula conducive to planetary formation, since when all is said and done, the nebula's properties are chosen on the basis of what is easiest to handle. The usual suppositions are given about the nature of the solar nebula, the order of condensation of minerals in grains, etc. The futility of trying to explain meteoroid formation by such means becomes obvious as Wasson's arguments become increasingly complex and circuitous. Typical of his comments is, "Unfortunately, it is easier to find fault with these models than it is to praise them" (p. 149). *Meteorites* also has several more or less useful appendices. Perhaps the most practical is How to Recognize Meteorites. It also has a table of meteorite classifications.

The book has a number of good points. He often goes into the rationale behind a particular section

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rather than jumping into a subject without explanation. For instance, before dividing meteorites into categories, he makes clear the function and development of a taxonomic system and its applicability to meteorites. Though brief, such descriptions are helpful. Also, he has quite a knack for anticipating my questions and objections. In many instances he honestly admits that a problem exists, something rather rare in an undergraduate text, though becoming more common in recent years. Some examples are the problems with chondrule formation (pp. 149ff), the fact that most models require a high temperature nebula while astrophysical considerations predict a low-temperature one (p. 185) and the source of meteorites considering their short lifetimes in inner solar system orbits (p. 207ff), among others.

On the other hand, there is a tendency to oversimplify certain problems, or even assume that they are already solved. Problems with stellar evolution and the formation of the solar nebula itself are not mentioned in his summary. He states that the Kirkwood gaps in the asteroid population are explained as due to resonances with Jupiter's orbit (p. 197) when actually the situation is much more complex. I suspect, though, that in such cases he is merely trying to get on with a subject rather than to present a false impression.

There are a number of points of interest to the creationist. A classic feature of some iron meteorites is the Widmanstätten patterns. These patterns are octahedral structures in the meteorite caused by different phases of iron-nickel alloys. Most astronomers, including Wasson, say that they form during slow cooling of the meteorite through high temperatures (around 600 to 900°C at rates of a few degrees per million years. However, similar patterns are found in artificially made alloys (Barrett, 1952). Also, there are problems with the implications of these rates. Such slow cooling could only happen at the centers of large (600 to 2,000 km in diameter) asteroids of which there are few or none known. Further, the silicate portions of some meteorites possessing these patterns (mesosiderites) are typical of surface rocks.

As is usual in such speculative areas of study, a great number of assumptions are necessary before anything can be done. The reasoning necessary to bring observations into accord with theory is often long and tortuous, and even then certain acts remain inexplicable (e.g. the fractionation of certain refractory elements in inclusions in the Allende meteorite, p. 67; the heat source for the apparently differentiated meteorite parent bodies, p. 80; the source of certain interstitial materials in chondrites, p. 116, etc.). Obviously, naturalistic theories are far from yielding a satisfying explanation for the origin of meteorites.

Wasson's book is highly informative and thought-provoking. It would make good reading for anyone interested in gaining an overview of the modern study of meteorites. And meteorites, more than most other astronomical subjects, provide a rich source of information for the creationist, hitherto almost untapped.

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- Barrett, C. S. 1952. Structure of metals: crystallographic methods, principles and data. McGraw-Hill, New York, p. 542.

In the Beginning: A Scientist Shows Why Creationists Are Wrong by C. McGowan. 1984. Prometheus Books. Buffalo, New York. 268 pages. \$12.95.

Reviewed by A. W. Mehlert*

PART II

The Alleged Evolution of Major Types

As stated previously McGowan admits to the general lack of species transitionals, but blames the imperfection of the geologic record. However, the fossil record is astonishing rich as is candidly admitted by Denton (1985, pp. 188-91). Denton, a noted Australian molecular biologist claims that of 178 living families of terrestrial vertebrates, excluding birds, 156 have been found as fossils, i.e., almost 88 percent. He states that an estimated 56 percent of fossil genera of groups such as mollusks have been found and identified. These figures are quite high and are reasonably convincing indicators that the geologic record is really far better than the transformists would have us believe, and the fact that there are only a handful of questionable major group lineages speaks for itself.

McGowan feels a little more confident with some of the higher taxa such as classes, despite G. G. Simpson's comment (1944, p. 99) that the discontinuities become *more common* the higher the level, until they are virtually *universal* as regards phyla, classes, orders, and even families. Colin Patterson (1982) senior paleontologist at the British Museum of Natural History, could not even name a single proven transitional in a letter which he wrote to Luther Sunderland.

Bearing this in mind we must not be surprised when McGowan has to 'color' his case somewhat for his major transitional examples. Nevertheless his evidences are detailed and well presented, and require study and soundly based refutation. If he cannot produce transitionals between species, he feels that the geologic record is kinder to the evolutionist by showing a few major transformations.

The Horse Family

McGowan is convinced that the story of horse evolution is good, solid evidence for a major transformation, but is it? He seems to be ignorant of the amazing similarity of the 'dawn horse' *Hyracotherium*, to the extant *Hyrax* group which includes the conies or damans of North Africa. Nilsson, as quoted by Cousins (1971), pointed out that *Hyracotherium* shows *no* equine traits. Also known as *Eohippus*, this little creature from the so-called Eocene, was about the size of a fox and was originally classified as related to conies (*Hyrax*) because of its great resemblance to them. It had four toes on the front feet and three on the hind feet, just like the modern *Hyrax* and its overall morphology was much like the hyrax.

According to most text books writers, the first real horse was a three-toed specimen called *Merychippus* which made an abrupt appearance in the Miocene. Its size varied from that of a small pony to a full horse, had horse teeth and other horse features and was a clean break from anything which had allegedly gone before. In short, *Merychippus* was a horse and Mc-

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Gowan finds himself in a dilemma here because on page 145 he calls it a proper horse, but on page 148 he denies it was a full horse! His reasoning is unclear but he seems to find problems with the fact that *Merychippus* had front feet with three toes. (Actually the two side toes did not make contact with the ground.) Modern equids are sometimes born with two extra side toes as he admits, but little is proved either way, as the question of side toes is only trivial compared with what he is trying to prove.

McGowan (p. 148) also claims that zebras are not horses which is a rather puzzling statement to make. Zebras and 'common' horses both belong to the horse genus *Equus* and although the two have been mated and produced healthy offspring, they have proved sterile (Leakey, 1979, p. 147).

In the standard horse series there are three main groups, of which only the last (*Merychippus*, *Pliohippus*, *Hipparion* and *Equus*) are real horses. The preceding two major groups, including *Miohippus* and *Eohippus* are separated from each other and from real horses by distinct breaks in time and morphological continuity, and there is little to suggest that any of these two groups had any evolutionary relationship with horses. The real origin of the *Equus* genus is, to say the least, very uncertain and according to Nilsson the only real evolution appears to be on paper, in the textbooks! Kerkut (1960, pp. 144-9) came to the same conclusion.

Michael Denton, a self-confessed non-creationist, also has some unkind things to say about horse evolution. (pp. 182-4). He describes it as a case where relatively minor morphological transformation can be traced through the fossils, and says that "The horse series is not as perfect as is commonly assumed . . . the single line of gradual transformation from *Eohippus* to *Equus* is . . . largely apocryphal . . ." He further admits that progress from one level to another has occurred by short steplike transitions, some of which are not represented in the fossil record. He also quotes G. G. Simpson as saying that the most famous of all equid trends, the gradual reduction of the side toes is flatly fictitious and that there was *no such trend in any line of Equidae*.

Denton also expresses some skepticism as to how different was *Eohippus* from modern horses and asks the rhetorical question—could the horse sequence be only an extension of microevolution? Denton accepts microevolution throughout his book but flatly denies that it can lead to macro transitions; a position with which most creationists would find themselves in agreement except for the terminology—we would substitute 'variety within the kind' for the word microevolution.

Archaeopteryx—From Reptile to Bird

This curious fossil bird is one of the favorites of evolutionists and McGowan (pp. 116-7) presents a list of dissimilarities and similarities between reptiles and birds. He says that of 13 comparisons, *Archaeopteryx* has 11 reptilian features and two aves (bird) features, the wishbone and feathers, but he has omitted the skull which is broad and which has a large braincase, both avian features. Another feature he appears to have

overlooked is the perching feet which is also very birdlike.

It is generally accepted by most evolutionists that the bird *Archaeopteryx* displays great similarities to reptiles of the theropod group, (Order Thecodontia), of the subclass Archosauria, which flourished in the so-called Jurassic. In particular, there is a strong osteological similarity between the reptile *Microvenator*, a theropod, in many features but the example of the thylacine marsupial requires great caution against reading too much into these resemblances. Anyone who has examined the skulls of both the marsupial and placental dogs must wonder how such a staggering resemblance could occur between two creatures so distantly related in evolutionary terms. Denton refers to this puzzle as possible convergent or parallel evolution (1985, pp. 178-9), which to me is one of the biggest 'cop outs' in the evolutionist arsenal. Denton's point is that we must use extreme caution in cases where animals of two different classes such as birds and reptiles, share some features usually found only in one, and these similarities, although striking, *do not imply any close biological relationship*.

He points to the case of the living fossil, the coelacanth fish, where a study of the soft parts of the anatomy proved very disappointing because much of what was found was not expected of a tetrapod ancestor (to the amphibian). Therefore, until soft parts of disputed transitionals become available, which seems unlikely, we should be very careful in placing them in this or that lineage. Leonard Brand, senior vertebrate paleontologist at the Loma Linda University in California, in a personal communication (1980), stated that the best interpretation of *Archaeopteryx* is that it was a flying bird which became extinct, with its position among the birds being comparable to that of the living monotremes among the mammals. Because we have living monotremes to study and because we *know that they are mammals*, we can also see that they too are unique and different from other mammals, and to assume an evolutionary origin is not necessarily justified.

According to Brand, there are a considerable number of similarities between *Archaeopteryx* and other birds:

1. Normal bird feathers with structures virtually identical to 'modern' birds.
2. The skull is broad and similar to other birds, with a large braincase like other birds and *unlike* thecodont reptiles.
3. It has a well developed furcula (clavicles plus interclavicle makes up the wishbone).
4. It had *fully developed* wings.
5. It had perching feet which are not really comparable to the powerful hindlimb structure of the small bipedal theropods.

Even though *Archaeopteryx* lacked a keel, it had a very robust furcula which would have provided the point of origin for a well developed pectoralis muscle which would have supplied the power necessary for the wing downstroke when flying.

A report in *The Australian*, (Anon., 1986a), states that:

Dr. Sankar Chatterjee has found bird fossils, with teeth and long bony tails and classed as *Protoavis*,

75 million years older than *Archaeopteryx*. The fossils are *more bird-like* than *Archaeopteryx*. Dr. Chatterjee says *Protoavis* and *Archaeopteryx* may have had separate ancestors and evolved different paths. *Protoavis* had an avian skull with a large braincase, with powerful wing flapping muscles.

Personally, I find it difficult enough to believe in one evolving line of birds, let alone two! Niles Eldredge and Stephen Jay Gould, America's leading paleontologists, have both rejected *Archaeopteryx* as an evolutionary intermediate between reptiles and birds. They say (1977) that it was a 'curious mosaic' which did not count as an intermediate, thus placing themselves in opposition to the opinion of McGowan who thinks it did!

Denton (pp. 175-8) comments on the status of *Archaeopteryx* as an example of a good intermediate:

This primitive bird did indeed possess certain skeletal reptilian features—teeth, a long tail, claws on its wings. However, in one respect, flight, the most characteristic feature of birds, *Archaeopteryx* was *already true bird* . . . it was as capable of powered flight as a modern bird . . . no doubt it can be argued that *Archaeopteryx* hints of a reptilian ancestry but surely hints do not provide a sufficient basis upon which to secure the concept of the continuity of nature. . . . this archaic bird is not led up to by a series of transitional forms from . . . a reptile through a number of types with increasingly developed feathers . . . because information about the soft biology of a fossil form is difficult to obtain, . . . to what extent *Archaeopteryx* was avian in its major organ systems will always be largely a matter of *conjecture*.

Denton found that from a study of the bird's cranial endocast, it would seem that its brain was *essentially avian in all important respects* and that for various important associated reasons, it must have had, of necessity, a fully avian heart, circulatory and respiratory system to supply the vastly increased demand for oxygen that occurs during powered flight; in other words, it must have been as avian as any other bird in all important anatomical and physiological characteristics.

Theoretical Problems with *Archaeopteryx* as a Transitional

There are two ways by which belief in evolutionary transitions can be justified—1. By finding at least a good number of connecting links; and 2. By theoretical reconstruction. As *Archaeopteryx* is virtually alone, method number one is ruled out, so can we envisage the possible ways by which a reptile could be viably converted to a bird?

It has to be stated immediately, that the biological engineering problems standing in the way of such a remarkable transformation are immense. Even changes which on the surface may seem trivial, on closer examination would necessitate staggering reorganization of the whole anatomy and physiology of the organism.

Denton (p. 205), discusses some of these massive changes:

. . . a sequence of stages from a primitive quadrupedal to a facultative bipedal reptile, to an obliga-

tory cursorial biped, followed by stages of elongation of the forelimbs and enlargement of 'scales' on the arms to increase their surface area, thereby forming ever larger thrust surfaces. Flapping action of these 'protowings' would add thrust to that provided by the hind limbs, resulting in greater acceleration and running speed.

Denton concedes that it is very difficult to see how an impervious reptile scale could ever be converted gradually into an impervious feather without passing through non-viable stages and I will return later to the intractable problem of the origin of the feather. Denton goes on to point out the uniqueness of the avian lung, in the design of the heart and cardiovascular system, the gastrointestinal system and a host of other necessary adaptations and concludes that it all adds up to an enormous conceptual difficulty in envisaging how a reptile could have been gradually converted to a bird.

Origin of The Feather

The climax of the case against the alleged reptile—bird transition is the supposed (but never demonstrated) change from reptilian scale to avian feather. How are the evolutionists going to explain the immense leap—the macroevolution of one of the most complex biological features in existence? McGowan thinks he has the answer—although there is only a small likelihood of feathers being fossilized, he finds a possible way out by turning to living birds—the penguins. He correctly points out that feathers and scales have a similar protein base—keratin. Oddly, he fails to point out that keratin is also the protein base for wool, hair, nails and hooves.

He examines the wing of the penguin, and comments:

We see a wide range of covering structures, from small scale-like structures at the leading edge to undoubted feathers at the trailing edge . . . viewed under the microscope, the scale-like structures . . . are seen to be fringed by long processes that project from, and are continuous with the margin (p. 119).

This of course is quite true. He continues:

These long processes have smaller processes projecting from their margins. The long processes correspond to the barbs of a feather and the small ones correspond to the barbules or side branches of the feather, while the central scale corresponds to the rachis (the central ribs or shafts of feathers). The proportions however are markedly different. The rachis predominate in the scale-like structure.

Here I take strong issue with McGowan. The microscopic processes *are not comparable* to the interacting complexities of feather structure. The 'processes' are random and *without order* and in no way can they be said to truly correspond to the fine engineering exhibited in the hooks, barbs and the interlockin properties of feathers. The flying feathers of birds are an example of the most astonishing biological engineering marvels found in nature. The feather consists of a central shaft or rachis, which carries a series of barbs at right angles which form the vane. The barbs which make up the vane are held together by rows of barbules and on the anterior portion, hooks project downward and interlock with ridges on the posterior

barbules. In one feather, approximately one million barbules work together to bind the barbs into an impervious vane, which is perfect for flight. See Figure 1.

The microscopic 'processes' which McGowan described above have nothing to do with the development of feathers and to say that they do is merely wishful thinking. Although McGowan does not actually say that this is how feathers evolved (for obvious reasons), he has really given us, very cleverly, stones for bread—

1. What he needs is *historical* evidence, i.e. some evidence from fossil material and to show that something exists in living forms (and even this is extremely unhelpful), it is still not the empirical evidence which is required.
2. If feathers did evolve in this unlikely way, then although we can forgive the geologic record for only rarely giving us the finer parts of delicate feathers, at least the transitional structure of a wing evolving from a theropod forelimb should be somewhere detectable in the rocks. Only one or two examples would be enough, but as is the case with flying reptiles, flying mammals, and flying insects, there is not even a hint of what would have been a major transition.

In view of all the above, it is extremely difficult to believe in a gradual change from rough scales into such a biological wonder as a feather and a wing, by chance mutations and selection and even more unacceptable is the postulate that the whole transition was accomplished by one or a few saltations. Every known law of biology is hostile to both propositions. I say that *Archaeopteryx* is no more a reptile with feathers than today's penguins are a transition from bird to fish.

I must point out that Denton is not the only biologist who is puzzled by the fact that although *Archaeopteryx* has been regarded by evolutionists as somewhat of an example of an intermediate form by virtue of its possession of features belonging to two classes, the strange thing is that those features do not themselves exhibit any sign of being intermediate, i.e. as Stebbins

and Ayala (1985) point out, *Archaeopteryx* unites a skeleton that remains dinosaur-like with feathers that closely resemble those of modern birds. They continue: "In spite of the intermediate position of *Archaeopteryx* as a species, its individual traits are *not* transitional in character."

As I strike again and again at other so-called intermediates, the most likely correct interpretation of *Archaeopteryx* is that by Eldredge and Gould mentioned previously—that this peculiar bird does not count as an intermediate but is simply a curious mosaic and much like the living montremes of today. As an example of a major transition it falls woefully short.

The Alleged Fish-Amphibian-Reptile-Mammal Sequence

The supposed fish to tetrapod and mammal progressions are often cited by evolutionists as being the best examples of major transformations in the fossil record but as I will show, these sequences also, on closer inspection, are far less convincing than we are told.

McGowan, pp. 151ff, tackles the creationist case against the alleged invasion of the land by the descendants of the lobe-finned fishes—the rhipidistians of the Order Crossopterygia. Particular interest lies in the genus *Eusthenopteron* fish and the 'first' primitive tetrapod, the amphibian *Ichthyostegrid* of the subclass Labyrinthodontia. McGowan, like other evolutionists, finds that some similarities between the *Eusthenopteron* fish and the amphibian *Ichthyostegrid* are strong evidence of an evolutionary relationship. Both are of 'Devonian' age, and the femur, tibia and fibula of the amphibian forelimb supposedly correspond to similar patterns in the fish. Similar patterns are found in the respective skulls, teeth and parts of the backbone.

Brand (1980, p. 1) gives the following similarities:

1. Both seemingly have labyrinthodont tooth structure.
2. Both have large notochordal canal through the floor of the posterior braincase.
3. Fish have a distinct cleavage between posterior and anterior portion of braincase, but tetrapods do not have this except for the *Ichthyostegrid* amphibian, which has only a *trace* of this braincase division.
4. *Ichthyostegrid* had a rostral bone comparable to fish rostrals.

However, Brand states that the amphibian has some 'advanced' characteristics not expected in such an early and primitive tetrapod. Further there are some very serious difficulties such as striking differences between the fish and the amphibian.

1. The biggest of course, is the vast gap between the two in classification. The rhipidistians are very definitely fish of the Osteichthyes (bony fish) class with fins and are thus a whole class away from the Labyrinthodonts which are Class Amphibia, and quite obviously four footed tetrapods.
2. Although McGowan mentions the ribcage aspect, there is simply no comparison between the two. The fish *Eusthenopteron* does *not* have a ribcage comparable to the fully developed ribcage of the amphibian. Further, the ribs of the fish are dorso-

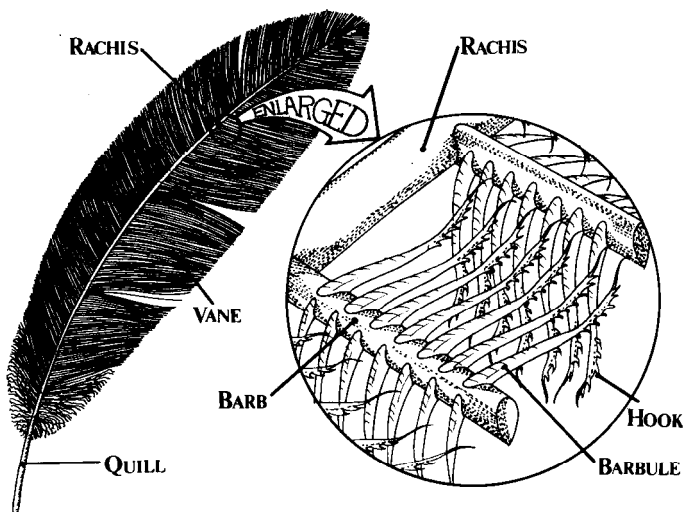


Figure 1. The design of a feather, one of the most amazing structures seen in nature. Drawing by Ross Marshall

laterally directed whereas the opposite is true of the amphibian. It would be interesting to hear an evolutionist explanation how the dorsal fish 'ribs,' lying between the muscle blocks, ever developed to form the full labyrinthodont ribcage.

3. All of the Crossopterygian fish had gills and used them almost exclusively for oxygen supply (Colbert, 1966, p. 85).
4. Despite what McGowan says about the limb bones being comparable, the fact is that the jointed legs and feet of the amphibian are already and clearly fully adapted for land use and the bones in the 'hind' fin of the fish are so undeveloped, so to speak, that one may legitimately ask from where did the *hind* limb of the amphibian come!
5. The pelvic girdle of the fish is very minimal and hardly comparable with that of the amphibian.
6. Despite McGowan's comments, a close look at the skull patterns of the two specimens in question shows there are very serious differences in the opercular, the temporal, the circumorbital and other bone areas of the skull. In the fish, the rostral portion of the skull in front of the eyes is very short but the post-parietal portion is very long. In the amphibian this situation is entirely reversed and no transitions are known.
7. In the fish, locomotion is effected primarily by body and tail movement but with the amphibian we see a *reversal* of locomotor functions. (Colbert, p. 88). Also, Davis (1971, pp. 234-42), points out the *fundamental* differences between the walking amphibian and the stabilization function of the fins of the fish, and the consequences of this on the alleged transformation.
8. There is also a large discrepancy between the large ray fin of the fish and the long bony tail of the amphibian.

In 1979 Luther Sunderland interviewed several of the world's leading paleontologists on the subject of major transition. On the alleged transition from fish to amphibian Sunderland queried Colin Patterson, Niles Eldredge, David Raup and Donald Fisher. Each one was embarrassed by the question and *not one* of these leading museum experts could produce any fossil evidence of an intermediate ancestor linking fish with amphibians. (Sunderland, 1984, pp. 63-4).

Denton (1985, p. 164) also has some biting remarks to make on this alleged transition. He writes:

... about 350 million years ago, a number of archaic and now extinct groups of amphibia make their appearance as fossils. However, each group is distinct and isolated *at its first appearance*, and no group can be construed as being the ancestor of any other amphibian group.

Denton states:

It is generally *presumed* that amphibia evolved from fish and even the order of fish, the Rhipidistia, has been specified. However, transitional forms are lacking. The *first* amphibian had well developed fore-and hindlimbs *of normal tetrapod type* which were *fully capable* of supporting terrestrial motion. (pp. 166-7)

Denton continues his skepticism:

... on the basis of osteological features, the systematic position of (coelacanth) as near relatives of the extinct rhipidistians, *and as tetrapod* cousins had become part of 'evolutionary fact,' perpetuated today in textbooks. Great things were therefore expected from the study of the soft anatomy and physiology of *Latimeria* (the living coelacanth) ... Here at last was chance to glimpse the workings of a tetrapod ancestor. These expectations were founded on two premises. First, that rhipidistians are the nearest relatives of tetrapods, and secondly that (the living coelacanth) is a rhipidistian derivative. (p. 179)

However things did not go so well and Denton says that the results were very disappointing because much of the soft anatomy, particularly the heart, intestine and brain were not as was expected of a tetrapod ancestor. Denton continues:

If the case of the coelacanth illustrates anything, it shows how difficult it is to draw conclusions about the overall biology of organisms from their skeletal remains alone ... the coelacanth represents yet another instance where a ... species which might have provided the elusive evidence of intermediacy so long sought by evolutionary biology, proved to be only another peripheral twig on the presumed tree of life. (p. 180)

All in all, the alleged transition involves so much massive change that it would take an immense amount of time, even if evolution were true, and therefore we would expect to see at least a few examples of intermediates between these two classes, but as always, not a single one is to be found. Brand, (1980, p. 2) states that "the probability of evolving even a few basic elements of the amphibian system from a fish ... is incredibly small."

The Reptiles Including Mammal-Like Reptiles

The evolutionary paradigm insists that there is good fossil evidence for the amphibian to reptile sequence but there are two great problems —

1. The claim that the amphibians are good intermediates between fish and reptiles is largely based on the grounds that in terms of their morphology, the groups seem to fall into a natural sequence, but when the morphology of the fossil candidates is studied in detail, the evidence for the sequence is not convincing. As Denton (p. 113) notes that there is much justification for considering the cardiovascular system in amphibian and reptile as *unique specializations approximately equidistant from* a typical fish. Also, an immense physiological alteration is required to change an amphibian egg to the amniote reptile egg. Denton (p. 218) gives full details of the enormity of the change and summarizes the problem with the words: "The evolution of the amniotic egg is baffling." On page 219 he says that trying to work out how the heart and aortic arches of an amphibian could have been gradually converted to the reptilian condition raises *absolutely horrendous problems*.
2. The only candidate for a transition between amphibians and reptiles is a creature from the Permian age—Seymouria, but its first appearance in the

fossil record is at least 20 million years too late, even by evolutionary time scales (Kerkut, 1960, p. 136). Then Denton tells us: "recently a fossil of an immature form closely related to Seymouria has been found bearing larval gills like a tadpole, which suggests that this group of amphibians were *wholly* amphibian in their reproductive system." (p. 177) Thus it appears that even the lonely candidate Seymouria is almost certainly just another amphibian.

The first fossil reptile, *hylonomus* of the Order Cotylosauria, appears at approximately the division between the so-called Mississippian and Pennsylvanian boundary, or allegedly about 300 million years ago, and the interesting thing to note is that the creature has all the basic distinguishing features of its class, as is the case with all the first representatives of every major taxonomic group.

The Synapsids

Among the reptile group is a sub-class of much interest, the synapsids or mammal-like reptiles, which are claimed by evolutionists to show clear evidence of the origin of our own class of creatures, the mammals and this is one of McGowan's favorites.

The particular group within the synapsids which is thought to have given rise to mammals is known as the cynodonts of the so-called Triassic. Brand (1980, pp. 4-5), gives a list of 11 characteristics of mammal-like reptiles, including the cynodonts, which he says are similar to mammals. While creationists do not contest some of these, there are some features of great importance on which the whole question of transition is based.

1. Most cynodonts have a large dentary, but the rest of the usual reptilian jawbones are still present but greatly 'reduced.'
2. The cynodonts had two occipital condyles (most reptiles have only one.)
3. All cynodonts have the usual reptilian quadrate-articular jaw articulation, but in some there is an *inferred* contact between the squamosal and dentary, forming a *minor* part of the joint. (Mammals have a *full* squamosal-dentary articulation.)
4. Most evolutionists believe that some mammalian ear-bones, the stapes, incus and malleus, are homologous to reptilian jaw elements; the stapes, quadrate and articular.

Brand (1980, p. 5) lists 10 *major* differences between the cynodonts and mammals, including the typical reptilian ear structure, which is found in *all* the cynodonts such as *Thrinaxodon*, *Morganucodon*, *Ictidosaur*, *Kuehneotherium* and others. *There are no exceptions.*

Let it be clearly stated that the two favorite mammal-like reptile candidates, *Morganucodon* and *Kuehneotherium* each possessed a *full complement* of reptilian bones in the lower jaw and furthermore there was *no reduction* in the functional importance of the reptilian q-a jaw joint. In fact the accessory bones present showed no reduction either in size or complexity of structure. In particular, the actual reptilian jaw joint itself, the q-a, was relatively as powerful in the mammal

Morganucodon as it was in the reptile *Cynogathus*! This was quite unexpected. The most striking characteristic of *Morganucodon* is its cynodont (reptile) character. (Emphasis added.)

The above revealing admission by Kermack and Mussett (1973) is an indication of how confused is evolutionist thinking—there is no justification whatever for calling *Morganucodon* a mammal.

A careful reading of Kermack and Mussett shows that they reject the idea that there was a gradual evolutionary replacement of the reptilian q-a jaw joint by a mammalian s-d joint, since the reptilian jaw joint of *Cynogathus* was extremely powerful and the same goes for the reptile *Morganucodon*. In the case of the latter, a fragment of the jaw was recovered with the quadrate bone *still in contact* with the articular.

Now the question is, did these creatures have, in addition to this q-a jaw joint, a contact between the squamosal and dentary, and would this mean the incipient formation of a mammalian jaw joint? While most evolutionists believe this, their belief rests on *inference*. No actual fossils have ever been found showing the dentary in actual contact with the squamosal bone of the skull. Not even a single *intact* lower jaw is available and all specimens were reconstructed from fragments. As it is still only an inference that the dentary actually made contact with the squamosal, and remembering the fact that these reptiles had a fully developed and powerful q-a reptilian jaw joint, the case for an evolutionary transition is extremely shaky.

The Hearing Apparatus

Every cynodont mammal-like reptile had a typical reptilian hearing arrangement, precisely engineered and no intermediate stage is known from the fossils indicating a transition to the equally precisely engineered but very different mammalian middle-ear auditory apparatus. In addition, *no reptile* has ever possessed the essential organ of mammalian hearing—the organ of Corti which is extremely complex.

There are also many other major changes which would have to simultaneously be taking place—a new mode of reproduction, mammary (milk) glands, temperature regulation, a change from scales to hair or fur, and a new method of breathing. The mammalian diaphragm alone is a major hurdle for evolution to clear.

A world authority on mammal evolution is Tom Kemp, of the Oxford University Museum. Kemp (1982) wrote that the fossil record shows not gradual change, but a series of jumps, and he commented as follows on the synapsids:

... they evolved from an *unknown lineage* ... each species of mammal-like reptiles appears *suddenly* in the fossil record and is not preceded by the species that is directly ancestral to it and (they) disappear some time later, equally abruptly, and *without leaving a directly descended species.*

From a creationist viewpoint the above admission is incredible. With a transition of such major magnitude going on over millions of years, not one transitional species lineage is known!

Brand (1980, p. 5), in his analysis states: "... the fossils do not answer the most important question—

did the similarities (and/or the dissimilarities) arise by evolution or creation? The data is not of the level of quality to decide between the two." The comments on the cynodonts which I have made above include the known specimens such as *Probelesodon*, *Massetognathus* and *Probainognathus* as discussed by McGowan.

In view of the evolutionists' dogmatic insistence about their theory, it is remarkable that they cannot tell us the origins of any of the 32 orders of mammals. (Simpson, 1944, p. 105). The oldest bat from the so-called early Eocene (50 million years ago), appears suddenly and fully formed and with all the essential advanced equipment possessed by modern bats and the same goes for insectivores, rodents, ungulates, whales, primates and all the other mammalian orders.

The great American paleontologist Alfred Romer, (1966, pp. 184-200) tells us: "We are therefore completely in the dark about the history of Triassic, Jurassic, and Cretaceous mammals," and ". . . a 40 million year no-man's land in the Triassic during which the *presumed* transition to mammals was occurring." Romer (p. 184) bars the cynodonts from being mammal ancestors because of certain technical reasons such as too much specialization in many of their features. Francis Hitching (1982, p. 90) writes that the transition from reptile to mammal is in serious trouble because of two problems—the very *early* evolution of the mammalian ear and its *extraordinary* sophistication. He says: "The lack of evidence that this did happen (no transitional forms) is frequently remarked upon by creationists." If Hitching can recognize the problem, why cannot McGowan and his fellow evolutionists?

Creationists must also wonder just how reliable and meaningful is the humanly devised taxonomic and classification system. It may well be that the present range of taxa is not sufficiently flexible and that groups such as the cynodonts, other mammal-like reptiles and also many of the dinosaurs groups such as bipedal forms do not reflect the uniqueness they deserve. Like *Archaeopteryx*, the monotremes and the marsupials, the cynodonts should be given full class recognition of their own, and thus be recognized as being unique.

If we could examine living representatives of the synapsids, and some of the bipedal dinosaur forms, as we can with the present-day platypus, we would immediately recognize their uniqueness and separateness, and this would warrant *new* classifications for these groups. We can see that the cynodonts, monotremes, marsupials and curious mosaics like *Archaeopteryx* are not at all necessarily evolutionary intermediates simply because they may possess some features common to two or more classes. It is almost inevitable that many created vertebrates could share some features, modified individually to suit the required environmental and other factors affecting their life style. The evolutionists may speak of evolutionary trends or ladders, but if each rung is subject to challenge, then the whole ladder is not of much use.

Richard Goldschmidt of the Columbia University is quoted by Macbeth (1971, p. 155) as having described the fossil evidence for the amphibian to reptile to mammal transition as 'meager,' and Goldschmidt further said that there was hardly an indication of intermediate forms in these pairs.

Polyphyletic Origins

Because of the many marked differences between all types of mammal-like reptiles, some authorities resort to the cop-out of polyphyletic origins—that is, each of the groups arose independently from different stem reptiles! This sort of 'solution' to their problem is really no solution at all, because it highlights even more the lack of transitional lineages. If they cannot find a decent lineage for just one group of mammals, how much harder it is to explain the lack of ancestral trails for multiple groups! This polyphyletic idea is tied in with so-called parallel evolution which is openly called a cop-out by Gribbin and Chervas (1981a, p. 520).

The case of the astonishing similarities between the marsupial *Thylacine* and the placental extant wolf poses such an enormous problem for evolution, that there is little other course than once again invoke parallel or convergent evolution. This requires that the marsupial animal had a separate origin from the full placentals, and that the two unrelated creatures developed much the same features in parallel with each other since sometime in the Cretaceous or even earlier! Gliedman, (1981, p. 50) expresses his astonishment at this and one can even detect some skepticism. This 'explanation' *must* be invoked by evolutionists because they know that the two are not close relatives, belonging to different species, genera, families, orders and even sub-classes.

Now this same *unproven* and unbelievable hypothesis is used frequently, especially in the reptile to mammal field to explain the puzzles and contradictions inherent in the assertion that the Synapsids produced the mammals. We are told that many of the Synapsids paralleled each other in certain features, and a number of *different* lineages are proposed by different authorities, but none can establish a reasonable sound line. The picture presented by the bewildering array of fossil Synapsids is so blurry and often contradictory that Barry Cox (1971, p. 106) was forced to admit that: "There is as yet, no clear series of fossils linking any particular mammal-like reptile to the earliest mammals."

Creationists would tend to regard these problem fossils in another way—either as acceptable variations within the kind or as separate created kinds, and if creationists cannot tell, neither can the evolutionists. In view of all the above, there is no compelling reason to assume that any reptile ever evolved into any mammal. Creationists demand more than inferences, hints and speculation as proof of the descent of mammals from reptiles!

The Origins of Man; The Australopithecines Including Lucy/Afarensis

For many years we have been assured that there was a reasonably feasible lineage of fossils linking the 'primitive' primates of the Paleocene to the genus *Homo* (Man). This lineage, which does not have unanimous support among primatologists, consists of mostly scraps of teeth and jawbones and used to run as follows:

Tree shrews and tarsiers
Pliopithecus

Oreopithecus
Dryopithecus
Ramapithecus
Australopithecus
Homo

and spanned a time in excess of 65 million years.

Unfortunately for evolution, the above line has now almost totally disintegrated as further fossil finds showed that only the Australopithecine apes are now considered as possible human relatives, all of the others now being relegated to varieties of gibbons and and orangutans. (Brace & Montagu, 1977, pp. 170-9; Zihlman & Lowenstein, 1979, pp. 86-91; Weiner, 1971, p. 40; Pilbeam, 1970, p. 103; Andrews, 1982, pp. 185-6).

McGowan directs his last main arrow against creationists in considerable detail, when he devotes the whole of his last chapter to stress the Australopithecines as ideal hominid ancestors for Man. These ape-like creatures, discovered first in the 1920's by Raymond Dart, and named *Australopithecus* (Southern Ape), have attracted much attention over the years from evolutionists mainly because they are the only available candidates for ape-man intermediates.

When we examine the various species of the group, we find that they have a black mark against them by virtue of the fact that, like all major groups of plants and animals, they appear suddenly in the fossil record, around 3.5 million years ago with no known precursors whatsoever, especially since *Ramapithecus* fell from favor. (McKean, 1983, pp. 23-4). Brace and Montagu (1977, p. 271) declared that *Ramapithecus* was indistinguishable from well-worn specimens of *Dryopithecines*, an extinct ape.

The Australopithecines

These creatures are generally divided into two or three species — *A. africanus*, *A. robustus* (a larger type, and *A. bosei*, commonly known as *Zinjanthropus*. A further late find was made in 1986 which I will discuss later.

All Australopithecine skulls are extremely ape-like and Montagu once wrote (1957, p. 51), that they could not possibly be ancestral to man because of these extreme ape-like features. McGowan (p. 173) displays a photograph of an *A. robustus* specimen which shows the foramen magnum location at about half way between ape and human. It is not as centrally located under the skull as with humans, but its position would be advantageous to arboreal apes which rarely walk on the ground.

Charles Oxnard of the University of Chicago has not been overimpressed with the case for the alleged upright, bipedal gait which most evolutionists ascribe to the Australopithecines (1975, pp. 389-95; 1979, pp. 264-74). Lysen (1984) has analyzed Oxnard's work and its creationist implications. Detailed multivariate analyses made by Oxnard on pelvic, shoulder, arm and ankle bones led him to the strong belief that the Australopithecines were definitely in the ape camp, and if anything, tended in some ways to resemble the orangutans. Oxnard had a large variety of bones on which to work, representing Australopithecines from one to over two million years old, and he certainly did not accept an upright bipedal locomotion for these

creatures. The great British man of science, Lord Solly Zuckerman also could never be persuaded that these ape-like creatures were related to man, (1970, pp. 75-94). Because of their honest doubts about the status of the Australopithecines, both Zuckerman and Oxnard were recently accused by Sarich as being creationists, so strong is the hold of the evolutionary paradigm. (This amazing accusation was reported in *Acts and Facts*, October 1986, 15(10):4). Of course neither Oxnard nor Zuckerman have ever been sympathetic to creationism.

Harvard University's Stephen Jay Gould (1979, p. 739), stated that bipedalism is no easy accomplishment—it requires a *fundamental reconstruction* of the anatomy. We would therefore expect to find some examples in the fossils of this amazing transformation, but as usual there is nothing at all. Also on the same page, Gould included a photograph of the palate of the famous Lucy, complete with full upper dental arcade. As Gould admits in the caption, Lucy's palate and dental arcade are "similar to the chimp," and have a U shape in contrast to the parabolic arcade of humans. Further, the incisors and canines are rather large and far exceed the human size. The Australopithecines possessed much larger premolars and molars than even chimps, so I fail to see any relationship to humans in these dental features.

Homo Habilis, So-Called

In many modern human lineage charts we find this peculiar phantom creature, mostly consisting of the famous skull 1470 found by Richard Leakey in Africa in 1972. This skull was once rated much higher up the evolutionary ladder by Leakey but it has now been downgraded, along with a few other bones and designated *H. habilis*, supposedly halfway between the Australopithecines and *H. erectus*. Brace and Montague (1977, p. 271), describe skull 1470 as being "... indistinguishable from a large brained Australopithecine." Clark (1977, pp. 5, 22) says "... from a paleontological point of view, there would be no problem in downgrading *habilis* to an Australopithecine."

In view of all the evidence, objectively considered, it is difficult to accept that any Australopithecine including so-called *H. habilis*, has anything to do with human beings. The reason that no ancestors can be found for these creatures is that there are not any, and the whole problem is compounded by the error of insisting that they locomoted bipedally. Once again we see the uniqueness of types—there are apes and men and nothing in between and I believe that the evidence shows that they were probably a variety of chimpanzee as we shall see when we move on to the most famous fossil of them all. Before looking at Lucy / *afarensis*, I note that Shea of Northwestern University (1984, pp. 148-9) writes of Oxnard's work:

... his conclusions regarding morphology and behavior have been prophetic. His ... claims that *Australopithecus* engaged in a form of locomotion quite different from that of modern *Homo* were ignored or ridiculed by many for years, but they have recently gained support ...

Lucy/Afarensis (Small and Large Specimens)

The most famous Australopithecine is called Lucy, and was found in 1974/75 in the Afar region of Africa

by Don Johanson, of the Cleveland Natural History Museum. In his initial detailed report (1976, pp. 790-810). Johanson admitted quite candidly that the fossils were from more than one site, and he made a clear distinction between the skeleton of Lucy, which he described as an Australopithecine and far from the genus *Homo*, and the other fossils which he clearly described as very *Homo*-like. In 1979 he had a change of mind, and strongly influenced by Tim White, he decided to lump all of his Afar fossils together and even included some *Homo*-type jaws and teeth found by Mary Leakey at Laetoli, 1000 kilometers away! This total conglomeration was then announced to the world as *A. afarensis*, the long missing ape/man ancestor. (1981, pp. 48-55). Needless to say, Johanson shot to fame over-night and yet only a handful of other paleontologists publicly criticized his mixing of the two species (Fisher, 1983, p. 102; Andrews, 1984, p. 24.). The noted French paleontologists Yves Coppens also pointed out what Johanson had done on BBC TV; *The Making of Mankind*, 1982.

Richard Leakey and Allan Walker also are reported (Williams and Hirst, 1986, p. 3) as saying that Lucy/*afarensis* might well be two separate species. "We think there might be chicken eggs and duck eggs all thrown together in the same basket." Their views are backed up by Sarah Brunney (1986, p. 20). She mentions the "growing belief that Lucy and her kin represent two species."

When one studies the literature it does not take long to see that the differences and contrasts between Lucy and the small *afarensis* specimens on the one hand, and the *Homo*-like larger specimens on the other are so great that it is a wonder that more experts have not denounced Johanson's unpardonable and unscientific action. It appears that too many scientists are prepared to uncritically accept the opinions of others.

From the literature I have been able to compile a list of 18 features of Lucy/small Afar specimens, including skull, jaw, teeth, rib-cage, iliac, fingers, toes, talus, palate etc. which are clearly ape-like. For the large Afar specimens, I have found 15 features including teeth, jaw, toes, fingers, talus, thumb, iliac, thigh/hip socket, hand etc. which seem to be very *Homo*-like. For example, the talus (ankle) of Lucy/small Afar is tilted *backwards* like a gorilla which alone would make it impossible for the owner to walk upright in human fashion. The tali of the large *Homo*-type specimens are tilted *forward* as in humans for normal fully erect locomotion.

The rib cage of Lucy is remarkably chimp-like as is her opposable big toe and her iliac. Her height (3 ft. 8 in.) and weight (70 lb.) are chimp size while the large specimens of 5 ft. height and 150 lb. weight are human size. The hip/thigh socket of the large specimens is modern and the hand is described by Johanson (1976, p. 808) as "... exactly the same as ours in shape, size and function with a fully rotatable thumb capable of handling tools with finesse."

The published photographs and measurements of Lucy / *afarensis* skull, jaws and teeth reveal an astonishing likeness to a chimp. Like other Australopithecines, she had very large canines and incisors, and her molars are larger than a chimp—even approximating those of a gorilla! Lucy, either from the neck up or

from the neck down bears little resemblance to humans, but matches the *pygmy chimp* remarkably well! (Zihlman, 1984, pp. 39-40.) Chérfas (1983, p. 172) contrasts the chimp-like locomotion of Lucy on the ground with the larger Afar specimens which "walked as we do."

One of Lucy's features is ambiguous—the valgus degree of the knees which is similar to man, but also similar to the orang and spider monkey, *both of which spend much of their time in the trees*.

Of Lucy's knee joint, Stern and Susman (1983, p. 298) claimed:

... the knee of the small Hadar hominid (Lucy, etc.) shares with other Australopithecines a marked obliquity of the femoral shaft . . . , but in *all other respects* it falls either *outside* the range of modern human variation or barely within it . . . we must agree with Tardieu that the overall structure of the knee is compatible with a significant degree of *aboreal locomotion*.

It is to be noted that there is *no sign* of an arboreal life style in the large *Homo*-like Afar fossils, and every *sign* of upright human type locomotion. Only one feature of Lucy out of 18 lends any support for erect walking—a partial front view of the pelvis, but this also could be a feature helpful for tree dwelling apes. The location of the Australopithecine foramen magnum, which is closer to man than in most apes, could also be a sign of suitability for an arboreal life just as easily.

Taking all the facts into consideration, a very strong case exists that Lucy/small Afar was an arboreal ape and almost certainly a variety of the chimpanzee group, and it is quite amazing that Chérfas, (1983, p. 178) is still able to describe Lucy as an ideal ancestor for humans. McKean however is not enthusiastic. He writes (1983, p. 26) that Lucy is *not* the missing link, and that the fossils of Lucy's forebear must be found which "could be the long-sought missing link." He also says that other scientists doubt whether this 'missing link' will ever be found. I believe the search will still be going on in 100 years time!

I wonder whether McGowan is aware of the extraordinary way by which the two British experts Gribbin and Chérfas (1981a, pp. 518-21, and 1981b, pp. 592-5) attempt to extract some sense from the morass of contradictions caused by the acceptance of Lucy and other Australopithecines as hominids.

They have been forced into the position of postulating that, because of the absence of fossil ancestors for modern chimps and gorillas, and the sudden appearance and subsequent disappearance of the Australopithecines *without evolutionary descendants*, that:

1. The gracile forms (*A. africanus*) devolved into today's chimps; and the robust forms (*A. robustus* and *A. bosei*) became today's gorillas and
2. A very modern-type human existed three to four million years ago which became today's humans. According to their scenario, Lucy and her kind were the common ancestors of all other Australopithecines (which became the modern chimps and gorillas), and also of mankind.

Another expert confused by the basic error of Johanson and the phantom Lucy/*afarensis* is Sean Nee (1986, p. 16), who has also been pushed into an

untenable hypothesis. Nee finds that the only way out is to conclude that male human-type ancestors had a taste for bestiality, and mated with female chimps about 2.7 million years ago. I do not feel a comment is really needed, but it shows just how determined evolutionists are to hold on to the evolutionary paradigm, even when it leads them up the proverbial garden path.

Fortunately there are signs of some return to sanity on the Lucy/Afar blind alley. Shipman, (1986, pp. 87-93) has published a long paper on the implications of a new robust type Australopithecine fossil skull found in Kenya recently, which has thrown the whole question of man's alleged evolution wide open. The skull, known as KNM-WT 17000, has certain features which have cast the pre-human lineage into disarray, and the major consequence is that it seems no longer viable to maintain that Lucy and the other Afar specimens are one species. Shipman says (p. 90), that a strong school of thought now emerging suggests that: "This disorienting group suggests that at least two species of *Australopithecus* and possibly *Homo* are mistakenly lumped together into *afarensis*."

Further in the paper, Shipman gives a few options for a way out of the dilemma in which the paleontologists now find themselves. All except one are fraught with difficulties—the only way out seems to be, as Shipman states:

Finally, we could assert that we *have no evidence whatsoever of where Homo* arises from and *remove* all members of the genus *Australopithecus* from the hominid family, despite the fact (!) that they are relatively large brained and bipedal . . . (p. 93)

Of course creationists and some others dispute the alleged uprightness of their locomotion, but we would certainly agree with removing these creatures from any pre-human lineage. Shipman admits that changing one's ideas is more painful than moving house; but it does now appear that the pendulum is already strongly swinging against Johanson and his *afarensis* ape-man. The evolutionists now have virtually nothing left in their armory.

Conclusions

For my final refutation of McGowan's attack on creation science, I turn to a recent and very comprehensive work by the Australian molecular biologist, Michael Denton. (1985.) Although non-religious and non-creationist, Denton nevertheless has an excellent knowledge of evolution theory and is honest enough to point out repeatedly the devastating weaknesses and objections from which it suffers. Whether it be the ubiquitous missing transitions, the failure of homology or the enormous problems with the lack of a plausible mechanism, Denton unerringly puts his finger squarely upon the weakness and fully explains why the present theory has failed so dismally to account for life itself and for the origins of the various life forms on this planet.

In his chapter on the fossil record, (pp. 157-98) Denton repeatedly points to the virtual total lack of intermediate forms which should link the groups if evolution were true. Especially devastating to the

theory, he writes, is the fact that the fossil gaps are *systematic* — that is, there are fewer transitional species between the major groups, (phyla, classes, orders, families) than between the minor groups. There are plenty of examples of speciation (variation within types to a creationist), at the lower levels, but when we look for links between the higher taxa, the *universal rule is that they do not exist*. On page 192 Denton says: "Discontinuities we might be able to explain away in terms of some sort of sampling error, but their *systematic character defies explanation*."

He points to the enormous number of transitional species *which must have existed* whether evolution occurred by gradualistic means or by punctuated equilibria, yet virtually none are found. He writes of the extreme paucity of unambiguous transitionals and even the handful of alleged major group transitions such as amphibians, mammal-like reptiles and *Archaeopteryx* are so pitifully few in number. Further he is not at all impressed by these forms and says the case of the 'living fossil,' the coelacanth fish, shows how difficult and misleading it is to draw evolutionary conclusions about the overall biology of fossil forms from their skeletal features alone.

Denton's reason for rejecting the transitional claims of the pathetically few candidates available, are scientifically sound and it is no wonder that cladism is rapidly gaining ground. Many professionals now have abandoned any evolutionary basis in their work, and simply group forms in accordance with the number of similarities they may or may not have, and this is an unbiased approach because cladism does not imply anything about an organism's origins—evolutionist or creationist.

Even more damaging to the evolutionist cause is Denton's chapter on the molecular implications of the biological structure of various life forms. (pp. 274-307). After commenting that: "Nearly all known groups appear to be isolated and well defined and . . . linear series of transitional forms are virtually unknown." (p. 274) He goes on to say after examining protein sequences such as Cytochrome C and others that:

. . . all the members of one type, however superficially divergent, *always* conform exactly to the basic eidos of their type, all possessing equally and in full measure all the defining character traits of their type and all standing therefore *equidistant in all important aspects of their biological design from the members of other types*." (p. 276)

This implies that the overall orderliness of the divisions of nature is exactly true as early 19th century biologists insisted. After several pages of technical biological discussion, Denton writes: (p. 285)—

There is *not a trace* at the molecular level of the traditional evolutionary series—jawless fish → bony fish → amphibians → reptile → mammal; . . . incredibly, man is as close to the lamprey (jawless fish) as are other fish! To those well acquainted with the traditional picture of vertebrate evolution, the result is *truly astonishing*. (p. 285)

He closes his technical chapter on molecular biology with these words (p. 306):

Despite the fact that no convincing explanation of how random evolutionary processes could have resulted in such an *ordered* pattern of diversity, the idea of uniform rates of evolution is presented in the literature as if it were an empirical discovery. The hold of the evolutionary paradigm is so powerful that an idea which is *more like a principle of medieval astrology* than a serious 20th century scientific theory has become a reality for evolutionary biologists . . . we face great, if not insurmountable conceptual problems in envisaging how the gaps could have been bridged in terms of gradual random processes. *We saw this in the fossil record*, we saw it in the case of the feather, in the case of the avian lung, and in the case of the wing of the bat. We saw it again in the case of the origin of life and we see it here in this new area of comparative biochemistry . . . Yet in the face of this extraordinary discovery, the biological community seems content to offer explanations which are *no more than apologetic tautologies*.

Denton closes his book by stating—

Ultimately the Darwinian theory of evolution is no more nor less than the great cosmogenic myth of the twentieth century . . . the origin of life and of new beings on earth is still largely as enigmatic as when Darwin set sail on the Beagle. (p. 358)

There is not much more to add, except that evolutionists believe in their theory *in spite of the evidence, not because of it*. The noted British science writer Richard Carrington (1963, p. 265) once wrote that: “. . . our present bodies and minds are the end results of a series of accidents.”

When supposedly intelligent scientists resort to such incredible determination to deny the existence of a great Creative power in the Universe, in face of all common sense, in face of all the evidence, then we can only resolve to carry on the battle to bring sanity back to the philosophy of life. In the end of course, scientific creationism will win out; the signs are already visible in the rising sense of hysteria and alarm shown by writers like McGowan. They know the stakes and are putting in every possible effort to preserve the most unscientific theory ever pressed on to an unsuspecting public; our determination to bring an end to this sham science is growing, and we must redouble our energies until the final victory is won and God the Creator is restored to His rightful place.

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