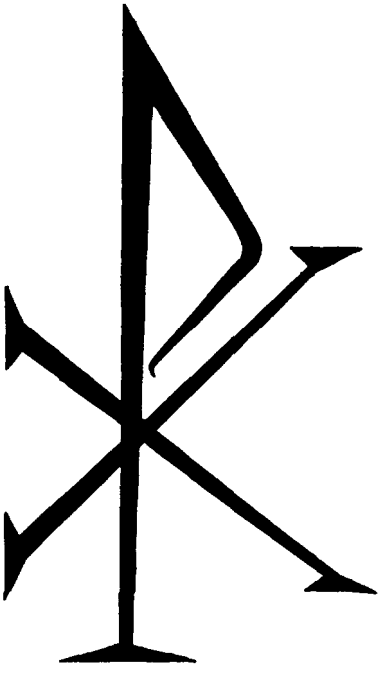
CREATION RESEARCH SOCIETY

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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EDITORIAL COMMENTS

There is an expanding interest in creationism as a scientific view of origins. In November, 1969, the California State Board of Education at its Los Angeles meeting decided to include creationism in the California science framework for elementary education.

The editor of Creation Research Society hereby commends members of the California Board of Education for their wise and momentous action. While this step will bring greater breadth to the educational spectrum, it will also help overcome the dogmatism of giving only one view of origins to children in the public schools.

Such moves as this one in California indicate that there will be a greater call for creation oriented research and review articles in the future. It is hoped that the major articles and shorter reports in this *Quarterly* will help meet that growing demand.

The first report by Bernard Northrup shows how the origin of a major west-coast rock system fits best with catastrophism and creates real problems for the time-worn uniformity principle.

In his paper on fossil man, anthropologist R. Daniel Shaw presents much data which he examines from the perspective of the creation model.

Several shorter papers by C. H. Mosher, William Tinkle, and Julio Garrido point toward inadequacies of evolution theory as a means to explain certain basic facts of science.

Continuing his helpful study of population dynamics in recorded Biblical history, Harold Armstrong brings us a nomograph useful in understanding the rate of population growth and the time periods that were involved. He also has contributed his welcome column of comments regarding creation evidence from current literature in science.

We are pleased to present another article by Walter Lammerts in a series introducing readers to colleges which support the creation view–this time Andrews University, Berrien Springs, Michigan.

Several additional features include more reviews on current literature by various reviewers and notes by Henry Morris and Harold Armstrong about the topic of thermodynamics raised in the December *Quarterly* by Emmett Williams.

This issue introduces the reader to the productions of several new authors including Julio Garrido, R. Daniel Shaw, and C. H. Mosher. We hope this array of talent new to this journal will encourage other scientists in our ranks to submit their research articles to enhance our general understanding of creationism.

GEORGE F. HOWE *Editor*

RESEARCH PROPOSAL

A proposed research project concerning palynology of the Grand Canyon has been submitted by Clifford Burdick (Hon. Ph.D.), consulting geologist of Tucson, Arizona, and approved by the Creation Research Society Research Committee.

This project is an extension of earlier research by Dr. Burdick reported in the *Creation Research Society Annual, 1966,* p. 36. In that study of the microflora in sedimentary rocks of the Grand Canyon, Dr. Burdick found pollen grains of Angiosperms and Gymnosperms, and spores of plants closely related to pines.

These fossil pollen grains were found in pre-Cambrian formations. According to commonly accepted evolutionary theory, Pre-Cambrian formations were deposited millions of years before these higher plants "evolved."

At the request of the Board of Directors of the Society, Dr. Burdick is carrying this work further. He plans to have two recognized palynologists, neither of which is a creationist, collect and analyze samples similar to those described in the earlier report, Since the first findings are clearly inconsistent with evolutionary theory, and due to the interest generated by the earlier report, independent corroboration is required.

Dr. Burdick has submitted the following budget for the Project:

Fees for two independent scientists ($150 each)	$300
Sample collection (guide, mule rental, travel, food)	$150
Laboratory analysis of samples	$200
Total	$650

The Committee invites members and friends of the Society to provide financial support for this scientific research project that bears directly

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NOTICE

A new distribution center in North America for material published by the British creationist organization, Evolution Protest Movement, which was founded in 1932, has now been established. For further information write to:

E. P. M. Distributor
Box 5083, Station B,
Victoria, British Columbia, Canada.

COMMENTS FROM PRESIDENT MORRIS

The decade of the sixties has been analyzed by legions of commentators and columnists and most of its characteristics have been well reviewed. One important development, however, has been overlooked, and this may well be the most significant of all. Both in Christian faith and in scientific studies, a remarkable revival of creationism has been quietly gathering momentum during the last ten years; and the time is now ripe for what could be really explosive developments in the years just ahead.

Just before the end of the decade came the refreshing decision by California State Board of Education members to require the teaching of creation as a viable alternative to evolution in the school curricula in the state. From our point of view, of course, this is the only reasonable and fair and honest approach, but the influence of the "evolutionist establishment" has been so strong, for so long, that many of us (including myself, I have to admit) have felt that such a decision would require God's personal intervention before it could ever be accomplished. And, as a matter of fact, that may have been exactly what happened!

We must not be ungrateful for the long hours of study and effort expended over many years by those deeply concerned and dedicated people who have persisted against almost impossible odds in this battle for creationism in the public schools. As a matter of fact, in much of the national publicity attending the California decision, the Creation Research Society received much credit which it really did not deserve.

As all of our members know, we have specifically limited our activities as a Society to the twofold function of research and publication, deliberately refraining from promotional or political or other types of activities. We have felt that, as a scientific society, we could most effectively use our limited resources of time and money by concentrating on providing the solid scientific background of research and writing which will prove essential as resource material in the wider promotion of creation science.

Individual members of the Society, including especially some of our non-scientist sustaining members, have of course participated very effectively in the drive to have creation recognized along with evolution, in the schools of California, Texas and other states. We are thankful for these courageous and dedicated people and would encourage others also to speak up as individuals on these issues as occasion permits.

A strong faith in the integrity of God's Word, and the conviction that He will honor the efforts of all who build uncompromisingly (yet graciously) on the foundation of that faith, could result in a sweeping movement over the Christian world to acknowledge Christ as Creator and Lord in every discipline of thought and life. A sound framework of Biblical creationism and catastrophism, supported by solid and convincing scientific data in abundance, has already been established, and the time certainly is here for its intensive promotion and application by those able to do so.

Now, at the same time, there is still a large and growing need for scientists who will dedicate themselves to solid research and writing in scientific creationism; and this must certainly remain the most basic function of our Society. There are many problems in urgent need of solution in the context of the Biblical framework, especially in the fields of geology and anthropology. Although we recognize the literal historicity of the Scriptural accounts of special creation and the worldwide flood, there is yet considerable uncertainty as to the exact correlation of these and related events to the actual data of geology and geophysics, of paleontology and archaeology.

This uncertainty is well illustrated by the important articles by Northrup and Shaw in this issue. Both articles are invaluable contributions to creationism, well-documented and closely-reasoned. Yet Northrup is inclined to attribute the "Paleozoic" strata to the Noahic flood, with the "Mesozoic" and "Cenozoic" formations to post-flood catastrophes, especially a break-up and separation of the present continents from one original continent, as perhaps implied in the Biblical verse, Genesis 10:25.

Shaw, on the other hand, suggests that the various Australopithecine, Pithecanthropine and similar human fossils were buried by the flood in caves and other superficial deposits. This view would logically imply that all the pre-Pliocene strata must be attributed to geological events between creation and the flood.

Others, including myself, tend to attribute all the fossiliferous formations to the one worldwide flood cataclysm and to continuing intermittent regional catastrophes (e.g., the glacial age, the post-flood volcanic and tectonic activity, etc.), resulting from the drastically changed physiographic and hydrologic relationships caused by the flood, with the exact divisions not yet clear.

Whether any one of these, or some other approach, is right, we do not yet know for certain. It is obvious that much work of an important and fundamental nature remains to be done. Some, unfortunately, have presented specific hypotheses of catastrophism in a very dogmatic, even belligerent, manner, and such attitudes of course

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BOOK REVIEW

Franciscan and Related Rocks, and Their Significance in the Geology of Western California, by Edgar H. Bailey, William P. Irwin, and David L. Jones. Bulletin 183. San Francisco: California Division of Mines and Geology, 1964. ($2.50).

REVIEWED BY BERNARD E. NORTHRUP*

Introduction

Seldom has a book been written within the interpretative framework of evolutionary macrochronological geology that has so effectively demonstrated the inadequacy of that framework to explain the facts found in field research.

The bulletin *Franciscan and Related Rocks, and Their Significance* in *the Geology of Western California* is a volume of great consequence to all interested in catastrophic geology. The authors enumerate (obliquely, to be sure) more than a score of reasons for turning to a catastrophic format in search of a plausible explanation of the remarkable assemblage of rock structures that dominate western California, and apparently the entire West Coast.

A very dear Christian geologist friend, earnestly troubled about the relationships of Genesis and geology, once asked me, "But where did all of the sands come from?" This is the key question in the evaluation of Bulletin 183. The answer is found within the Bulletin.

In the case of the Franciscan assemblage of rocks this question is not one that is insoluble to the Christian geologist. To the uniformitarian geologist, however, it can only be confounding if the facts are considered squarely. For concerning the content of the graywacke alone (this is a very fine grained, dirty, unsorted, high matrix sandstone), the Bulletin reports the startling fact that there is "sufficient sand to cover the State of California to a depth of 10,000 feet" (p. 21) in this formation.

While this might appear an overwhelming argument for uniformitarian geology, because of the supposed vast amount of time required for the gradual reduction of earth's rocks to produce this amount of sand in this limited area, the facts concerning these sands powerfully controvert this approach. Rather, each truth about the Franciscan assemblage of rocks contained in this Bulletin may be used to argue that no vast amount of time was involved at all in the production of these sands, but that they were instead the product of extremely catastrophic, violent processes occurring abruptly in time and involving the degrading of basement and continental shelf materials into rock paste and sands that were redeposited almost as rapidly. Concerning the graywacke alone the authors admit,

> The vast volume of terrigenous material, as well as the great thickness locally of individual beds and the presence of a high matrix-content, points to a very rapid deposition or "pouring in" of the sedimentary material. (pp. 35-36)

The book might well have been titled more accurately, "Evidences of Franciscan Catastrophism," for the many forceful arguments presented that require a catastrophic model for consistent interpretation would make this title appropriate.

But what is the Franciscan assembly? It is a heterogeneous assemblage of rocks, predominantly graywacke, but including chert, shale, greenstone, some limestone of precipitate origins, blueschist and other minor elements. The group of rocks clearly was deposited in one or more deep marine troughs.

The dominant rock, graywacke (so called because at least 10 percent consists of a pulverized, crushed matrix) is a sandstone of medium to fine grain with very irregular bedding. Its grains are remarkably angular, with very little indication of transportation or of any kind of weathering. The cement which bonds it is normally a very fine paste of well ground rock flour. All of its physical features indicate "rapid deposition of unsorted material, presumably by turbidity or fluxoturbidity currents" (p. 5).

This would not be a surprising geological find, except for the unbelievable quantity of these sands, which are undoubtedly the product of extremely extensive mechanical abrasion in a submarine environment. That this was accompanied very possibly by violent submarine volcanic action (p. 6), which was a critical factor in the chemical precipitation of the small belts of limestones and cherts, is also significant as will be seen.

A large proportion of the book being reviewed is devoted to a description of the remarkable features of the Franciscan assemblage. Since the mere cataloging of these features under logical headings might fail to demonstrate clearly their significance to the Biblical geologist, a brief evaluation of these features will be made. The headings are largely derived from the text, although the order has been elected by the reviewer to demonstrate impact of the evidence more clearly.

*Bernard E. Northrup is professor of Old Testament at the San Francisco Baptist Seminary, San Francisco, Calif. He holds the Th.D. degree.

I. Proofs of Rapid, Continuous Deposition

A. VAST VOLUME OF TERRIGENOUS MATERIAL (pp. 20, 21, 35) Though normal stratigraphic methods cannot be applied directly, a number of significant evidences are marshaled to show that the assemblage called Franciscan is over 50,000 feet thick, an estimate all the more remarkable in the light of the clearly defined Great Valley Sequence to the east, which may be measured stratigraphically at 40,000 feet in thickness. While both of these figures are admittedly estimates, it becomes apparent at any rate that the Franciscan assemblage is exceedingly thick.

This Franciscan assemblage parallels the Great Valley Sequence and lifts it, shearing its westward slopes into gigantic hogbacks most clearly seen to the north and south of Winters, California. Bounded on the west by the Pacific (though underlying it extensively also) and by the San Andreas and Nacimiento faults, it extends south into Baja California and north an undefined extent into Oregon, Washington, Canada and Alaska (although usually limited for discussion by the northern boundary of the Klamath mountains).

This vast bed of Mesozoic materials is of such a nature and consistency as to require "a rapid deposition or 'pouring in' of the sedimentary material" (p. 36). The significance of this striking statement is breathtaking in the light of the following paragraph on the size of this deposit:

> By far the most abundant rock of the Franciscan is graywacke, which has a truly astonishing volume. Even if the average thickness of the Franciscan is regarded as only 25,000 feet, and the depositional area in California and offshore is about 75,000 square miles, the total volume of the Franciscan graywacke is more than 350,000 *cubic miles* [Italics supplied]. To make this large figure more meaningful we might point out that this is sufficient sand to cover the State of California to a depth of 10,000 feet or the entire coterminus United States to a depth of 600 feet. (p. 21)

Thus this area, up to 70 miles across and at least 1,500 miles long, with no exposed basement and few younger rocks, is filled with finely ground debris consisting of rock flour and fragments, including an unusual abundance of minerals derived from metamorphic and igneous rocks (p. 22). This gains significance when studied in the light of the many other remarkable factors that are also present in the assemblage.

B. GREAT THICKNESS OF LOCAL BEDS (pp. 22-23) When the four to six mile thick (30,000+ ft.) beds that are discernible on Pacheco Pass are added to 18,000 feet found farther west to the north of the Bay, it may be seen that 30,000 feet, and indeed even 50,000 feet may be conservative as an estimate for the Jurassic and Cretaceus beds. Almost a total absence of macrofossils hinders the normal approach to correlation of beds by the historical geologist, but in any case, they can be described as tremendous in size. That this is not simply a wild correlation is possibly supported by the depth-pressure-temperature requirements of the blueschists for their metamorphosing .

C. PRESENCE OF HIGH MATRIX CONTENT This factor which requires rapid deposition is found in the microscopic examination of a thin section. In the graywacke the materials are often so well cemented that samples will break across many of the grains. Surrounding these sharp clasts and grains lies the matrix which acts as a superb cement, "Most of the Franciscan graywacke has a matrix content of at least 10 percent . . . " (p. 27). In some cases this rock paste is found to compose up to 50 percent of the stone (p. 32). (What a marvelous grinder is this that has deposited such a remarkable pile of grindings at the foot of the Workman!)

This rock paste acts as the cement for particles of all sizes. It is clear that between the grinding of this paste and the deposition of the crushed and pulverized materials little sorting action has occurred. The continuous nature of and the extreme rapidity of the action producing this sandy elastic material is certainly very strongly suggested.

D. ABSENCE OF INTERLAYERED LIMESTONE OR CALCAREOUS CEMENTS Consider this sentence in the Bulletin: "The absence of interlayered limestone or calcareous cement in most of the Franciscan also suggests continuous and rapid deposition" (p. 36). While this idea is not developed further in the text, the point is clear that a slow deposition of these materials in the clearly established marine environment would have left significant limestone deposits of those materials gathered by calcium accumulating creatures. The almost total absence of this kind of material in these beds may be used to argue strongly for extremely rapid, uninterrupted deposition. Is this acknowledgment without further discussion in the text not a significant indication of the ineffectiveness of uniformitarianism to cope with the evidence?

II. Other Proofs of Rapid Mechanical Erosion

A. LACK OF ROUNDED QUARTZ AND FELDSPAR GRAINS While quartz grains average about 30 percent of the graywacke, feldspar may amount to 60 percent of it. Much may be learned from microscopic examination of a thin section. Several fine slide views in the text confirm the following statement from the text:

> The predominant features seen in thin section are the general lack of abrasion and the

lack of sorting of the grains of the rock. Most of the grains are angular, and this is especially true for the monomineralic grains. Rock fragments tend to be subangular or subrounded, but in many sections the compaction of the rock has led to a modification of the shape of the softer composite rock fragments by their yielding to fit between the monomineralic grains. (p. 27)

The very angularity of these grains opposes the view of slow decay, for these grains have apparently not been blown, tumbled, rolled nor washed on the beach (p. 27). Other broken rock fragments, varying in quantity from two to fifty percent, are found with these monomineralic grains. Sometimes they are from sources indicating reworked volcanic materials, sometimes reworked materials from the same beds, and at times the clasts indicate a large intake of basement rock. These angular grains appear to have an average size of one-half millimeter to microscopic size, depending upon the quantity of matrix present.

To the present reviewer, this factor requires a vast "mill, " powered by a tremendous force, supplied perhaps by an enormous block of raw materials which was being processed and redeposited at the site of the operation during continental movement. This left a massive dump now called the Franciscan assemblage. At any rate, it can be seen that the interpretive system espoused in the Bulletin is wholly inadequate since the nature of such a mechanism is not suggested.

B. HIGH PERCENTAGE OF ROCK FRAGMENTS These rock fragments that accompany the rock paste and mineral grains demonstrate that some type of crushing action was working in massive scale in a marine environment, and that so little time passed between the "milling" action and the deposit that there was no time for rearrangement of the grains according to size. That the milling action was utterly nonselective is demonstrated by the variety of possible sources mentioned in the previous section.

The only logical conclusion that can be drawn from this remarkable situation is that the mill that ground this unbelievable quantity of sand was a moving section of the continent below the continental shelf, and that the deposit of the freshly ground materials took place almost simultaneously as currents swept them against the shelf, depositing them amidst boiling volcanic eruptions that brought the chemical precipitations that are also found embedded in the deposits. A further telling blow against the macrochronological approach is found in the next observation on the rapidity of this vast action.

C. LOW Fe_2O_3/FeO RATIO INDICATING LITTLE CHEMICAL WEATHERING, (p. 32) One of the excellent characteristics of the Bulletin is that the sections are developed in graded order of difficulty, climaxing in a discussion of the chemical features of the particular rock under consideration. This allows the casual reader to handle the more easily read sections without completely bogging down. But no part of this significant Bulletin should be neglected because of difficulty. This simple chemical ratio is a most significant clue that much Californian rock solidified catastrophically! Again it is best simply to quote a section:

> Lack of rounded quartz and feldspar grains, as well as the high percentage of liabile rock fragments, indicates rapid mechanical erosion of a nearby source area. The low Fe_2O_3/FeO ratio and paucity of interlayered clay beds also indicate the lack of chemical weathering in the source area. (p. 36)

It must be added that no weathering took place in the transportation cycle or in the depositional area either. It seems that no other method of mechanical erosion and pulverization of these materials than the one suggested above can supply a meaningful model to explain this factor. Exposure of the iron particles to the atmosphere, even for a short time, would result in a totally different oxide ratio in these formations if the temperature and humidity were also conducive to Fe_2O_3 formation.

D. ABSENCE OF WEATHERED CLAY BEDS As suggested above, the lack of normal weathering cycles is also displayed in the absence of evidences of the normal transformation of certain of these materials into clays. This indicates that the processes of chemical weathering were almost totally forestalled by the marine conditions which brought the particles and their deposits into existence. While admitting that "the reason for the low K_2O/Na_2O ratio, both in the Franciscan and similar units, is not understood . . .," (p. 36), the authors do give a possible explanation in the discounted argument, "Incomplete weatherings of source rocks" (p. 36). This is surely the understatement of the fact.

It is the reviewer's opinion that there simply was no weathering of the material before it was immediately redeposited after being ground to dust particle size. That the reader may understand the reason for this position and its ultimate significance, the next series of evidences in the Franciscan must now be considered.

III. Proofs of Turbid Marine Deposition

Apparently marine conditions prevailed throughout the deposition of Franciscan rocks, and, although graded beds and sole markings are not commonly seen, the standstone textures, the lack of a large-scale crossbedding and ripple marks, as well as the absence of an

indigenous shelly fauna, point to turbidity current and fluxo-turbidity current deposition in a deepwater environment (p. 36).

In this splendid, concise fashion the Bulletin authors summarized the evidences of a deep submarine environment as the location of the deposit of the Franciscan beds. The precise location of the pulverized debris dump and the manner of its deposit both support the contention that the mill that produced these materials was located there also.

A. THE SANDSTONE TEXTURES Examination of the assemblage provides convincing data that it is not at all the work of wind. This has been supported by the discussion under Section II. The absence of aeolian crossbedding further confirms this. This is an interesting fact in the light of the vast wind deposits of this very same presumed time that are found widely distributed throughout the far western interior of our continent. Indeed, sand dunes are a dominant factor in the Mesozoic materials found in several of the mountain states.

Neither is the assemblage the result of stream erosion nor of marine shoreline erosion. This contrasts with the Great Valley Sequence on which it borders on the east. That formation series was surely the result of coastal erosion and deposit in gigantic magnitude. All of the characteristic signs of continental marine deposits are found.

But for the Franciscan, all of the evidences point to a deepwater environment. The very texture of the sands deposited, in that they are fine grained, practically unreworked by transportation and thus sharp edged, correlates well with the concept of abrupt deposition. This requirement is difficult to adapt to any other than an unexpanded chronology. Catastrophic events that the author presumed have produced the remarkable field evidences are distorted and stretched until almost unrecognizable when approached by the macrochronological system of interpretation.

B. LACK OF LARGE SCALE CROSSBEDDING (p. 22) A characteristic of shallow water marine or lake deposits is the regularity of bedding planes. These are beautifully illustrated by the evenness of the extensive Eocene deposits of western Utah. The Roan and Book Cliffs which lie above the great dune sands show that after a temporary exposure of the land and its subjection to great winds that went to and fro, the area was again submerged as an inland sea where waters were relatively quiet until its sudden drainage wrought havoc with the present Colorado Plateau.

In the Franciscan, however, the bedding is best characterized by great "irregularity in the thickness of the beds and the unusually great thickness of some of them" (p. 22). A single section may vary from one-half inch to ten feet, although hundreds of feet are found. The observer must be careful to avoid mistaking shale which has been plastically injected into fractures for actual bedding planes. This is a common phenomenon both in the Franciscan assemblage and in the tilted Great Valley Sequence.

The massiveness of these Franciscan beds, with the absence of reciprocating current patterns of shallow water, require a steady flow of heavy, load-filled currents of such vast proportions that they defy uniformitarian imagination. Time alone cannot satisfy here.

C. LACK OF RIPPLE MARKS (p. 24) Though both wind and water oscillations leave ripple marks, their absence in massive deposits is properly used to signify a turbid deepwater deposit. Now these marks of oscillation can be located quickly in the Great Valley Sequence where its layers are exposed on Highway 16. Their absence in the Franciscan which borders it only a very few miles to the west is indeed significant.

D. PRESENCE OF GROOVE AND FLUTE CASTS (p. 24) Grooves and flute casts are characteristic of deepwater current deposits. These sole markings are depositional patterns oriented in the direction of current flows. They are occasionally found between beds of greywacke. They indicate deepwater turbidity currents as they are not produced by shallow water agitation.

The little ridges and valleys left by the currents lie in fluted patterns which enable the geologist to reconstruct the direction of current flow before the next bed was deposited swiftly to cover the patterns. These may be observed nicely in an exposure of the Great Valley Sequence just north of Rumsey, California, on Highway 16. This is only a few miles from the line of contact with the Franciscan. These patterns must not be confused with wind or water ripple marks, superficially like them, but oriented 90° to the currents producing them.

The occasional presence of these add further evidence that the massive milling action producing the assemblage occurred below the continental shelf under rare hydraulic circumstances. That this work was not accomplished on the shelf is apparent from a number of factors that have been mentioned already. Now any single factor or group of factors here could be observed today, but the multiplicity of evidences pointing to catastrophism has a significance factor that increases by squaring, not by simple addition.

E. ABSENCE OF INDIGENOUS SHELLY FAUNA (p. 36) The offshore depositional environment of the Franciscan is remarkably correlated by fossil information. The Bulletin authors note:

> Megafossils are remarkably rare in the Franciscan, and in spite of the wide distribution and the great thickness of the unit, they have been found in only about a dozen localities. On the other hand, microfossils, including Formanifera in limestone and Radiolaria in chert, are locally very abundant. (p. 115)

This contrasts significantly with the Great Valley deposits, particularly on its eastern margin of shallow water origin (p. 135). This factor could only mean that the great Franciscan deposition took place well offshore in an area that had never been a shallow water deposit area.

It does not even contain extensive megafossils in fragments that would indicate a composition of shoreline materials which had been reworked and redeposited. Their scarcity indicates that only rarely were shoreline materials transported by the violence of the coastal waters so as to intrude into this deepwater collection of materials. That such currents were present, however, is supported by the following factor.

F. PRESENCE OF LARGE CONGLOMERATE LENSES (p. 39) Extraformational deposits provide significant clues to the violently catastrophic times of the Mesozoic "era." Lenses of conglomerate cobbles and pebbles, while usually covering a small area, may be found as large as 2,000 feet long (p. 39). While it has graywacke as its matrix, this conglomerate clearly has origin outside the formation. These cobbles are thoroughly rounded by tumbling action in transport.

These lenses of conglomerate are a common phenomenon around the Livermore Valley in the Great Valley Sequence. At times they form rounded knolls that are a part of the unique contouring of the area. These materials appear to have been swept offshore to be deposited in the Franciscan that was being formed simultaneously in deepwater.

It is the reviewer's opinion that this could have been done only in an extremely abrupt fashion. To be included in the graywacke deposit and mingled with it while it was being ground and "poured in" to form its massive offshore beds, these conglomerates from the shoreline area near the foot of the present Sierra Mountains were evidently transported by jet streams of submarine currents. Possibly massive rip tides swept them offshore before they could fall on the continental shelf. It was indeed a catastrophic time.

In no other way can one account for deposits that include quartzite, chert, and granite materials in sizes extending from one inch pebbles to boulders as large as two and one-half feet in diameter, all well ground by tumbling, intruded into these massive beds of elastic and powdered materials. Some of these conglomerates appear to have originated as far away as the Paleozoic and lower Mesozoic materials of the western Sierra Nevada and the Klamath Mountains (p. 41). And yet they seem scattered in current deposited lenses throughout the abyssal offshore structures that were being rapidly built from materials even then being aggraded from basement and ocean floor.

That these factors require a more rapid framing sequence or "film speed" than that considered "normal" to properly project the history of the leading edge of the continent is obvious. Simply stated, this indicates abrupt continental separation and movement with the geological catastrophism which would accompany such an event. There is one Bible text with which this event could be identified. It is the post flood text so often overlooked, Genesis 10:25, ". . . In his days was the earth divided."

G. PRESENCE OF MASSIVE SUBMARINE INTRUSION EVIDENCES (pp. 41-55) Erratically distributed throughout the Franciscan assemblage and its evidences of massive grinding and redeposition are also found great beds of volcanic intrusive that comprise approximately 10 percent of the assemblage (p. 41). In places these have been shattered and ground up to form a considerable part of the graywacke.

In other places there is no evidence of milling action. Rather they are often found in a remarkable "pillow" structure that could only be formed by the extrusion of molten materials as blobs into a deepwater basin. While "all the extrusive volcanic rocks appear to have been deposited in a submarine environment" (p. 43), not all of these extrusions take the unique rounded form called pillows. These structures seem best explained as follows :

> A mechanism that might account for these piles of separate pillows is a *violent* [Italics added] jet eruption of highly fluid lava on the sea floor. The breaking up of this jet stream of lava into large drops or blobs, which are chilled as they fall back about the vent, then builds up a pile of pillows. As a drop of magma, forming a pillow, falls through the water its surface solidifies but remains thin enough to yield under the weight of the drop to conform to the shapes of the earlier pillows onto which it settles to rest. (p. 51)

Laboratory analysis of these pillows confirms this view that the surface of the pillow is suddenly chilled and indicates that the varying chemical makeup of the surfaces and interior of the pillow is the result of the various rates of cooling experienced by the outer shell in contrast with the inner core (pp. 53-54).

It is not difficult to see that these forms are also a significant factor pointing to a catastrophism ignored by the field geologist today. While un-

derwater volcanoes are not unknown today, the extensiveness of the evidence of submarine volcanism here requires an unretarded chronological approach to a very chaotic period to account for its presence in large quantities among "rapidly deposited" materials that have been "poured in" to form these beds.

H. PRESENCE OF CHERTS VOLCANICALLY FORMED IN DEEPWATER (pp. 55-68) One of the most remarkable evidences for a catastrophic model of interpretation is the Franciscan chert. While it composes less than one-half of a percent of the assemblage, it is "of special interest, because it provides information on the depth of deposition of some parts of the eugeosynclinal assemblage" (p. 55). (Eugeosynclinal deposits differ from miogeosynclinal deposits chiefly in their inclusion of major volcanic activities–p. 13).

The cherts involved are very "fine-grained, hard, highly siliceous rocks" that are loaded with extremely fine particles of iron oxides or hydroxides. For this reason they are usually red, brown, buff, or green (p. 55). The chert is finely bedded in layers up to four inches thick, often intermingled with a shale of the same color.

Careful study of the brilliant, often violently folded layers reveals that these are not actually normal sedimentary bedding planes at all, but rather lenses that grade off into nothing in a short distance (p. 62). They are characteristically filled with the microfossil, *Radiolaria*, which may compose as much as 50 percent of the rock (p. 64).

And how is this an evidence of catastrophism? The text of the Bulletin is rather clear on the subject:

> Chert and a distinctive shale occurring with it . . . are believed to be chemical precipitates formed by the reaction of magma and sea water under considerable hydrostatic pressure. They are important as indicators of the oceanic depth in which part of the Franciscan was deposited. Rhythmically interlayered red or green chert and shale form lenses less than 50 feet thick and less than a mile in extent, generally with and above greenstones. . . . This association of chert-shale lenses with greenstone suggests a genetic relation. The lenses may represent silica, alumina, and iron released by submarine volcanic rocks at the time of volcanic eruption, the eruption occurring at a depth great enough for sea water at the reactive interface to be heated to a temperature of about 350° C without boiling. At this temperature and at a pressure equal to that of oceanic depths of 13,000 feet, water can dissolve over 1,000 p.p.m. of silica. Such heated, silica-enriched water would rise, be cooled, and quickly become oversaturated with respect to silica. Silica would then be polymerized and precipitated as a gel, apparently along with aluminum and ferrous hydroxide, and it would rain down onto the sea floor forming a mass of impure silica gel. Subsequently, by a process of diffusion and crystallization, layers that superficially resemble normal sedimentary beds would form. . . . This postulated origin for the chert-shale lenses seems to be the only one compatible with all their unusual structural and chemical features, and it implies that deposition of some Franciscan rocks must have been at a depth nearly equivalent to or greater than the average of the Pacific Ocean. (p. 6)

When considered in the light of the series of evidences already examined, this complex bit of abyssal chemistry is indeed significant. It is another piece in the mounting evidence which requires the rejection of any macrochronological explanation of California geology. Here is highly significant support for the imagined great depth involved in the assembly of the Franciscan. Here also is support for the massiveness of the violently turbulent, explosively heated marine environment in which the precipitation of these silica beds took place.

An examination of the striking chevron-folds of red chert on the heights northwest of Golden Gate Bridge shows this apparent relationship between the chert and the large beds of pillows that lie along Highway 101 just north of the bridge below these chert beds. The fantastic rapidity of deposition proposed for this relationship scarcely appears to fall within the realms of uniformitarian concepts. The rapid sequence of deposition of the pillows required by their very nature has already been discussed.

It appears that it was this same volcanic intrusion that precipitated the massive chert beds at the same time. The astounding folds that are found in these chert beds apparently indicate the extreme rapidity of the movement of the crust in the area of the precipitation.

Conceivably, long before these layers of silica had hardened, they were compressed violently by lateral compressions which left them folded upon themselves like the folds of an accordion. The frequency of exposure of these beds throughout the State of California provides abundant evidence of utterly catastrophic, disruptive chaos that is best considered under a nonextended chronological model.

It is interesting to note that this intense concentration of silica at the foot of the continental shelf has a counterpart in the exceedingly extensive blanket of oxide-stained silicates which cover much of Utah, Arizona, New Mexico and Colorado during this same Mesozoic "era." There

may be an unobserved relationship which has resulted in the silica enrichment of these waters even before the precipitation of the cherts and shales took place. In any case, the deposition of these cherts requires the offshore submarine explosions of volcanic activity in a deepwater environment that certainly would have accompanied abrupt continental movement. This is further corroborated by the following evidences.

I. THE PRESENCE AND NATURE OF THE PRECIPITATE LIMESTONES (pp. 68-77) As should be expected, limestone is not a significant part of the eugeosynclinal assemblage which is being considered, for the deposit is clearly not one made in quiet shallow waters commonly associated with limestone. Indeed, these limestones are of quite a different origin, since in places they are mingled with and blended into the chert.

Now the deposition of chert has already been interpreted to be of a violently different nature than that imagined for organic sedimentary limestone. This mingling of the two materials wherein chert may amount to as much as 30 percent of the material (and up to 40 percent iron) leaves only one conclusion.

This is precipitate limestone, except for very minor deposits of organic detrital materials abraded from shelly materials. While the microfossil, *Globigerina,* may be massively present, evidences require rejection of the idea that this is simply a deep sea deposit of ooze. Indeed, evidences are conclusive that this was no normal deposit at all.

> The scarcity of terrigenous material in the Franciscan limestone indicates either that the currents responsible for the deposition of graywacke and shale were prohibited from reaching sites of limestone deposition, or that limestone deposition *was so extremely rapid as to mask the terrigenous increment.* [Italics added] (p. 76)

This certainly suggests that the rapidity of the deposit far exceeded any present rate of accumulation of oceanic oozes.

> These differences between Franciscan limestone deposits and recent *Globigerina* ooze deposits are sufficient to suggest that the Franciscan limestone may have had a different mode of origin. Judging from its extremely fine grain size, its sporadic distribution in lens-shaped rocks, as well as the variable abundance and seemingly random distribution of Foraminifera, the typical Franciscan limestone may have been a result of volcanic activity and formed by direct chemical precipitation of calcite with concomitant accumulation of minor amounts of organic shell material, mainly foraminiferal tests. (pp. 76-77)

All of this is quite contrary to the "normal" mode of explanation of the origin of limestones, and is quite suggestive of the very unorthodox environment in which these materials were precipitated. It is an environment unlike any found in the world today. The past obviously cannot be judged correctly by the present.

J. PRESENCE OF BLUESCHISTS (p. 111) The Franciscan rocks are for the most part unchanged by heat and pressure factors. Within the assemblage, however, a group of metamorphic rocks is found that are called the blueschists that exhibit isochemical recrystallization. There are other groups, but for the sake of simplicity, discussion will be limited to this group. They exhibit signs of exceedingly significant geological conditions from the catastrophists point of view. Simply stated, for the metamorphism exhibited in the blueschists to have taken place they must have been placed under remarkable pressure-temperature circumstances for a relatively brief period of time.

> Considerations of the probable pressure-temperature field of formation of the blueschists indicate that pressures were abnormally high (>5Kb) relative to the temperature (<300°C). *If* the metamorphism of the broader areas is due to *load* [Italics added], the rocks must have reached a depth of about 70,000 feet, through downwarping and accumulation, *so rapidly* [Italics added] that a normal thermal gradient was not established. In addition they must have been uplifted soon after their depression and metamorphism, so as to prohibit the establishment of a normal thermal gradient that would have raised the temperature sufficiently to convert the blueschists to greenschists or a higher grade facies. (p. 7)

In other words, a unique combination of enormous pressure and unexpectedly low temperature accompanied by an unexplainably brief period of exposure to the environment was required for the limited metamorphosing exhibited in the blueschists. The blueschists are basic to the idea that these amazing circumstances were found in California in the middle of the Mesozoic "era."

Now the reviewer knows of no place on the earth where sedimentary materials are expected to be found at a depth of 70,000 feet. Using a uniformitarian argument, admittedly, it seems best to reject the suggestion that load is the agent which supplied the pressures involved and required. The abrupt removal of that load to meet the time requirement, of course, obviates a uniformitarian explanation. It might be explained otherwise.

Reviewer Supplies Model

The model suggested by the reviewer which involves the abrupt movement of the continental mass appears to supply the threefold requirements for metamorphism of this type satisfactorily. There are evidences which appear to require that the entire phenomenon cannot be extended beyond the limits of 500 years.

This model considers the mid-Atlantic ridge to be the point of departure from which the dividing single continent of preflood times moved. The fracture is viewed as an abrupt phenomenon supplementing the linguistic division of Babel, but accomplished late enough to actually provide the method of transportation which scattered mankind. The animals which had already moved away from the ark undoubtedly sought ecological zones hospitable to their own physical makeup. Division of the land mass isolated these for the most part in the general areas of the continental fragments where they are now found.

Mechanisms proposed to produce such profound and abrupt movement of the crust after the flood are discussed by Cook[1] and Kelly[2]. It is the reviewer's opinion that Cook is correct that the Noahic flood massively weighted the polar regions of the single continent with the ice sheets of the Paleozoic "era," and that the relieving of these pressures produced the rifting and movement after the flood's subsidence had largely taken place.

However, Kelly may be right that meteoritic or cometary impact in the northern ice cap was involved to the extent that it acted as a trigger to allow the sudden release of the massive ice load on the paleopolar regions.[3]

A recent suggestion remarkably parallel to the reviewer's model (except for uniformitarian framework) appeared in a newspaper release on the views of UCLA professor W. Gary Ernst. He postulated a Franciscan trench, once lying where western California extends today, filled with sediments from the overriding "continental plate," later elevated to become the coastal ranges.[4]

The structure which produced, apparently simultaneously, the Franciscan assemblage and the Great Valley Sequence requires a coastal model something on the order of the following: (a) The Great Valley Sequence was deposited of continental materials massively eroded by seismic tidal waves. (b) The continental shelf, well over a thousand feet deep through most of the deposition, was very nearly rimmed by a submarine ridge lying along the edge of the shelf. (c) This allowed only minor exchange of materials from within the basin and from the deepwater site of the Franciscan. (d) The latter was deposited by the grinding action of the overriding thrust fault in an extensive trench along the coast and against the continental shelf itself. (e) Apparently this action was also accompanied by lateral northward movement of the Nacimiento fault block, so the picture must net be over-simplified. (See Figure 1.)

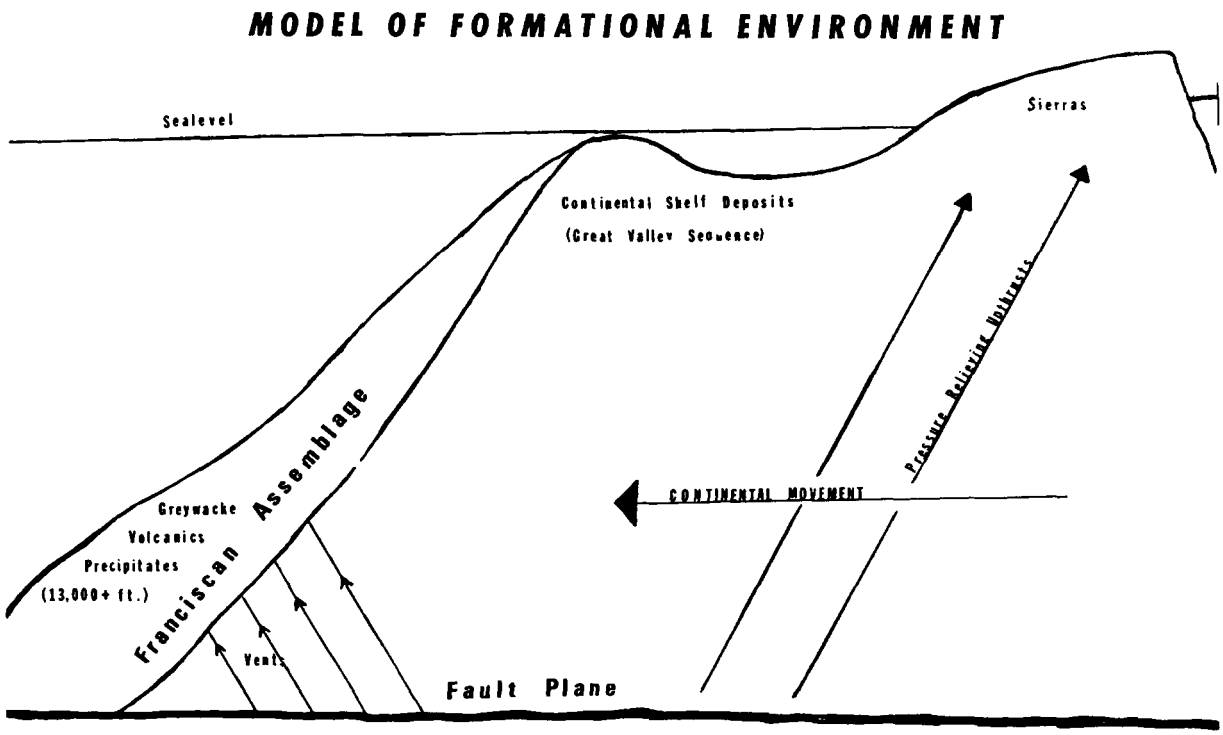
Thus there would be no time for the increasing thermal gradient to be produced by heat generated by radioactivity within the crust. The pressures involved in the movement of a portion of the crust as massive as the continent, and the resistance met in its overriding of the oceanic basic floor might very well have provided the pressure requirements without the enormous depth of load suggested in the Bulletin. Also, according to the continental movement model, the Franciscan assemblage was almost entirely (apart from offshore materials) lifted above sea level to its present position by that same movement as pressures were relieved by the upwarping of the coast range.

This uplift was very possibly only a minor part of the great series of vertical pressures which relieved the lateral pressures generated by this movement. This type of pressure relief can be illustrated by attempting to push a small throw rug ahead of oneself on a cement floor. As friction builds up horizontal pressures, these tend to be relieved by vertical buckling.

Recognizing that the undersurface of the postulated moving continental platform would be in a semifluid state under greatly increased temperature and pressure factors would account for the massive batholiths that are postulated as intruding the Rockies from the Cretaceus "period" on. These masses ruptured Paleozoic and early Mesozoic "era" materials of the receding flood along the Denver Front Range, leaving their shattered ends exposed majestically at the base of the great granite intrusions of the Rockies.

They also may have produced massive, extensive volcanic flows which dominate the Tertiary "period" deposits in the Pacific Northwest. These latter materials cover the extension of the Franciscan along the Oregon coast. The intrusive magma masses produced the final elevation of the Sierras and Cascades in the Pleistocene "epoch." Titanic erosion of these great masses to their present configuration within the limitations of perhaps 5,000 years at the most (from the flood to the present) would have been involved in the traumatic violence of the hydraulic activity postulated as an important part of this disturbed period when Noahic flood waters were yet retreating from the present continental masses.

Uplift of the great ranges of North and South America can be accounted for by this same mode. Through this means the Paleozoic (Noahic flood) materials were violently uplifted and distorted,



broken and tilted, eroded and redeposited all over the continent.

That this denuding largely affected the Franciscan assemblage after its deposition seems immediately evident in the field. These Mesozoic materials have been subjected to violent attack by seismic wave action. It is the reviewer's opinion that this action is largely responsible for the present contouring of these structures, for they exhibit, with the Great Valley Sequence on the eastern fringe, a surprising lack of precipitation erosion evidences.

While precipitation erosion evidences are actually present in places, they often can and should be largely recognized to be the result of wave runoff during the time of elevation. The latter is supported by massive evidences of marine erosion and deposition throughout the mountain valleys of the area. These are almost certainly playas, the result of agitated waters that were being temporarily trapped in these basins.

While the term "playa" is reserved for desert basins, they are not inappropriate here, for one may reason that those desert basins received their flat floors in the same way as a result of trapped, violently agitated basin waters which have usually left their marks on the walls of the basins as well. The fans and terraces of the Great Valley have their counterpart in many regions throughout the Western interior in its basins.

This remarkable absence of precipitation erosion is exhibited in the strikingly contoured hills of the Livermore and Amador Valleys. All of these factors fit with the suggested model that the California coast was heaved up out of the ocean even while it was being subjected to titanic attack by gigantic ocean waves. Whether this happened after the Franciscan had been deposited or during the process is not known. If the latter is true, then it may be expected that the Franciscan assemblage will be found to continue far offshore, and perhaps even down the continental shelf.

Thus it is suggested that the presence of blueschists in an environment of submarine volcanic explosions, of massive aggravation and redeposition, and also of enormous pressures and uplifts, is certainly a significant evidence of Biblical catastrophism that must be given more adequate consideration in properly oriented research. It must not be forgotten, however, that this is far from the viewpoint presented in the Bulletin. While the authors are at times catastrophic in their language, they are uniformitarian in their interpretation, as may be seen from the following significant conclusions:

> As Franciscan blueschists do not normally show any sign of having been in the greenschist environment, we may infer that they not only reached considerable depths *rapidly*

> [Italics added] but also were subsequently uplifted to higher levels before a normal thermal gradient was established. The fact that aragonite is present and has not inverted to calcite not only indicates *very rapid subsidence* but also clearly indicates *rapid uplift and erosion*. [Italics added] . . . This conclusion is compatible with what can be inferred from the geologic history of the Franciscan and its structural relation to other units. (p. 112)

That this "catastrophism" found in the Bulletin was not stated in accordance with the violence required by the reviewer is apparent from the following:

> For such a curve to approximate the actual thermal gradient in the Franciscan requires the sedimentation and downwarping to have taken place in a period of a few million to a few tens of millions of years . . . , though *just how* brief *the period must be depends on what assumptions are made* [Italics added] regarding heat flow into the pile, heat generated within the pile, and heat gains or losses due to metamorphic reactions. (p. 111)

Since the actual time structure suggested herein is entirely based upon assumptions, it is evident that it may involve a "macro-error," if the word may be coined.

IV. Proofs of Violently Disruptive Crustal Movement During Deposition

For the sake of completeness and to show the dual role of some evidences, the following clues of abrupt movement suggested in the Bulletin are now repeated from other sections. They supplement their role there when viewed from a new perspective.

A. PRESENCE OF PILLOW LAVAS AND SUBMARINE ERUPTIONS Only disruptive crustal movement in the deepwater environment could be the cause of these extensive deposits. Recognition that this disturbance resulted in massive extrusions of magma along the entire West Coast in this environment presents a historical situation inexplicable in uniformitarian terms.

Consider the *largo danse macabre* required for bubbles of magma to be extruded in grotesque, macrochronological movement, slowly rising from their spewing volcanic jet, being deposited by gravity in millennial slowness amidst the gradually growing pile of continental grindings now called graywacke!!

No, the remarkable conformity of these pillows requires that they were mass produced and that they fell tumbling in semifluid state upon each other in great profusion, each shaping itself to those beneath, each having only sufficient moments of time for cooling before its successor fell for its own upper crust to gain supporting strength. Though difficult to picture, this deepwater marine environment which was also convulsively heated enough to precipitate highly concentrated silicates and calciums, seemingly was achieved by crustal movements unparalleled today.

B. PRESENCE OF MIXED CRYSTALLINE AND SEDIMENTARY TERRANE The fact that the sedimentary materials in the Franciscan assemblage contain unsorted mixtures of materials from original basement rock, from reworked, extruded rock, and from reworked sedimentary materials (both intraformational and extraformational), strongly supports the thesis of massive disruption. That it was a problem to the writers is evident:

> The nature of the source area from which the Franciscan sediments were derived is imperfectly understood. The lithic fragments indicate a mixed crystalline and sedimentary terrane, and the presence locally of volcanically rich graywacke and tuffaceous beds points to a volcanic source for some of the sediments. Much of the latter material, however, may have been derived from penecontemporaneous, intra-Franciscan volcanism. . . .
>
> Middleton . . . concludes that . . the peculiar characteristics of high-rank graywacke are the result of a partial volcanic (spilitic) provenance, combined with rapid erosion and little chemical weathering. (p. 36)

This unique combination of materials, difficult to explain as is evident in the above, nicely fits the catastrophic model. It solves the problems of the intraformational volcanism, of the "rapid erosion and little chemical weathering" and the "very rapid deposition or 'pouring in' of the sedimentary material" (p. 36).

C. PRESENCE OF LOCALLY VOLCANICALLY RICH GRAYWACKE AND TUFFS While sufficiently discussed above, the individual impact of this evidence in the reconstruction of the tumultuous time of deposit must not be overlooked. The action was taking place in an environment shattered by massive aeolian as well as submarine eruptions. The implications regarding crustal upheaval and movement staggers the imagination but helps to complete the picture of the time of deposit of the Franciscan.

D. PRESENCE OF GREENSCHISTS While it has been indicated that large quantities of the blueschists "escaped" complete metamorphism into green schists, it is also true that some of these materials did not. Through contact metamorphism by intrusions, some of them became subject to the higher temperatures apparently necessary for the conversion (p. 112). This fact gives something of a check on the pressure-

temperature requirements for the blueschist, since the extra heat of a volcanic intrusion was necessary for full metamorphism. Furthermore, this item confirms the view that the crust was shattered in another way.

E. PRESENCE OF INTRUDED BELTS OF SERPENTINE Between the Franciscan and the Great Valley Sequence lies a large intrusive mass of serpentine that is at least 70 miles long and up to three miles across. A "plastic intrusion" of materials well below the melting point into the fracture between these two masses that represent offshore abyssal deposits and offshore continental shelf deposits is very evident. That serpentine might be involved in this type of flow under pressure is well known (p. 87). The points of contact are remarkably sharp. The serpentine separates the huge hogbacks representing the ends of the Great Valley Sequence from the Franciscan graywacke and shales of the area.

It is the reviewer's opinion that the serpentine mass represents an intrusion in a major fault which now separates once united structures, and that this intrusion took place at the time of the final elevation of the Franciscan to its position dominating the western horizon beyond the Great Valley. This intrusion of serpentine may be considered, of course, another indication of extreme catastrophism, abrupt diastrophism. The broken roots of the Great Valley Sequence lie shattered, folded and upended against the serpentine mass.

It is difficult to avoid the implications that the world's most catastrophic crust-shattering series of faults and mass movements ever known occurred during the Mesozoic "era." These movements resulted in the present configuration of the continents as they were massively restructured and resurfaced during the long period of the retreat of the Noahic flood. Thus the present reviewer attributes "Mesozoic" catastrophism to the years after the Noachian deluge.

V. Conclusion

More than a score of evidences of geological upheaval and tectonic disturbance set forth in the Bulletin, *Franciscan and Related Rocks and Their Significance in the Geology of Western California,* have been examined. An extensive weakness in the macrochronological interpretative framework by which these structures have been explained in this remarkable and valuable book has been identified. While the contribution of the Bulletin to one's knowledge of California is beyond reproach, for it is a superbly collected and edited work, the startling "significance" of the Franciscan assemblage is obscured.

It is the conviction of the reviewer that many of the standard works in the field of geology, while on the surface appearing to be destructive to our faith, would actually prove to be of keen interest and of great significance to the flood geologist after a careful removal of their "outer husk" of uniformitarianism. It will be seen that many of the facts contained therein (and even the arguments for erroneous views) are in reality consistent with the accurate Biblical account.

The Christian geologist must never retreat from such a question as, "But where did all of the sands come from?" Rather, he should grasp the occasion and turn the attack with a question that should prove quite embarrassing to the uniformitarian: "Yes, where indeed did all of the sands come from? Have you ever noticed the problem in the Franciscan assemblage?"

References

[1]Cook, Melvin. 1966. Prehistory and earth models. Max Parrish, London, England.

[2]Kelly, Allan O. 1966. Continental drift: is it a cometary impact phenomenon? Carlsbad, California: Published by the author. 100 pp.

[3]*Ibid.,* p. 60-61.

[4]Ernest, W. Gary. 1969. California scientist says trench 100 million years old, *San Fernando Valley Times,* Saturday, Oct. 25, p. 5.

NOTE ON SCOPES TRIAL

Readers will be intersected in a quotation mentioned in a letter from George W. Cooper, Instructor of Psychology, Madison Area Technical College, Madison, Wisconsin, on the point that John T. Scopes wrote: "I didn't know enough about evolution to lecture on it," in his book *Center of the Storm* (Holt, Rinehart and Winston, Chicago, 1967) on page 193.

Of further interest is the statement, on page 60 of the same book: "To tell the truth, I wasn't sure I had taught evolution." Or as a reviewer of the book expressed the idea: ". . . to the best of his recollection, he (Scopes) never actually taught evolution," in "The Day the Bible Beat the Monkeys" (LIFE, December 9, 1966, p. 98).

Such an admission of the non-teaching of evolution by John Scopes was published a year earlier by Sherwin D. Smith in the New *York Times Magazine* of July 4, 1965:

> The strangest aspect of the case, however, lies in a casual remark that Scopes let drop before a reporter the day the trial ended. He had not wanted to be called as a witness, he said, because then he might have had to admit that on April 24, the day cited in the indict-

(Continued on Page 203)

FOSSIL MAN: ANCESTOR OR DESCENDANT OF ADAM?*

R. DANIEL SHAW**

The fossil remains of what have been viewed by evolutionists as "Adam's ancestors" have long captivated the interest of anthropologists, paleontologists, and others interested in man and his relationship to the rest of the animal world. The present study analyzes the distribution of the hominid fossils throughout the Old World. That distribution points out that the most "primitive" types appear on the periphery, while the most morphologically advanced forms appear closer to the center of the Old World, the Mesopotamian Valley.

In coordinating the fossil record with Scripture, one is faced with the major question of the relationship of the fossils to Adam. The author uses a creation-dispersion model, showing the theoretical possibility of the fossils being the descendants of Adam. Peoples migrating out from a population center in small groups would have become geographically and genetically isolated allowing for considerable variation and genetic degradation. Later migrants would push earlier migrants further to the periphery. The further the population from the point of origin, the greater the morphological change.

For well over a century, evolutionary theories and uniformitarian principles have taken precedence over creation and catastrophism. Recently there has been a growing trend to further research and a gradual swing back to creation and catastrophism. The present paper takes an historical approach to the fossil record showing that people migrating from a common origin, encountering pre-flood conditions and finally subjected to the Biblical flood could bring about the fossil record we observe today. Therefore, fossil men could well be "Adam's descendants."

Introduction

For well over a century, men have been discovering, examining, and naming fossils that appear to be linked to "modern man." These analyses have resulted in a confusing mass of taxonomic terms and hypotheses, drawing a heavy cloak of false validity around evolutionary theories. In recent years, a welcome trend toward synthesis has developed; a trend that has not only made the literature more readable but has helped pinpoint problematic areas toward which future work must be directed.

A primary factor in any consideration of the fossil record (or anything else for that matter) is the attitude from which the subject is approached. Over twenty years ago Professor Portmann of Vienna noted that, if we take a palaeontological versus a historical view toward the fossil record, we will arrive at wholly divergent results: "One and the same piece of evidence will assume totally different aspects according to the angle–paleontological or historical–from which we look at it."[1]

Chittick graphically shows the effect of viewpoint through his "facts box," arriving at the same conclusion.[2] Let me clearly state at the outset that the approach taken here is historic, with an observation of facts and a discussion of how those facts fit into a coherent view of man's history.

The Prevailing View

In viewing the fossil record of man, authors of current literature tend to arrive at four major levels or stages of Hominid development; the Australopithecine, the Pithecanthropine, the Neanderthal, and the Modern.[3] From a uniformitarian or evolutionary viewpoint, these stages generally are cast in an orthogenetic line of progression upward through the Pleistocene. Correlations of morphology, stratigraphy, and "absolute date" are the main criteria of such a scheme (See Table 1).

Morphologically, there is considerable agreement that those fossils, apart from the Australopithecine stage, belong in the genus *Homo.* Controversy continues to rage over the placement of Australopithecines inside or outside the range of the genus *Homo.* The Pithecanthropine material is seen by some as *Homo erectus,* and the Neanderthal and above are assigned to *Homo sapiens*[4], although a few workers question the authenticity of Pithecanthropine remains, as we shall see shortly. Doubt also remains in some minds about the status of Neanderthal as a species or simply a racial differences

There appears to be increased pressure to place the entire fossil record within a single species and view the whole matter as racial diversification. Indeed, Stewart pointed out before the present trends began: "Like Dobzhansky, therefore, I can see no reason at present to suppose that more than a single hominid species has existed on any time level in the Pleistocene."[6]

Hemmer[7], using allometric measurements of the skull, recently included all fossils above the Australopithecine stage within the range of

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Geologic	Epoch	Fossil Stage	Years from Present
PLEISTOCENE RECENT	Upper	Modern	30,000
		Neanderthal	180,000
	Middle	Pithecanthropine	500,000
	Lower	Australopithecine	1,750,000

Table 1. An Evolutionary, uniformitarian time column for the fossil stages.

Homo sapiens. This, of course, in no way reduces the presumed amount of evolutionary change but merely enlarges the meaning of "species" to include a wider range of variation for hominid remains.

It must be made clear at the outset that in discussing the fossil record we are concerned with populations rather than individuals. It is true that the specific fossil represents an individual, but it in turn is but one member of a population and therefore only representative. There can, however, be considerable variation expressed in any population, thus requiring extreme caution when drawing conclusions about the appearance of "prehistoric" populations from the individuals discovered. With such considerations in mind I would like to turn to an analysis of the distribution of fossil finds throughout the Old World.

The Australopithecine Stage

Beginning with the Australopithecines (the most "primitive" in the evolutionary framework), we find that sites containing their remains appear primarily in South Africa. Here, the sites consist largely of limestone caves, with the fossils firmly cemented into the breccia. Many of the fossils show the effect of considerable pressure which may have occurred during or after deposition.

East Africa is involved also in the Australopithecine story because of the finds by L. S. B. Leakey, particularly those of *Zinjanthropus* and *Homo habilis*[8]. Olduvai Gorge, where Leakey has faithfully labored for over 30 years, has been a virtual "gold mine" of fossil material, yielding many forms, both osteological and cultural.

The stratigraphy is probably one of the clearest for the Pleistocene of anywhere in the world, enabling palaeontologists and anthropologists alike to reconstruct much of Pleistocene ecology and culture history. Since the uniformitarian time concept is built on as yet unproved assumptions, however, the "time significance" of these stratified series is presently rejected by this author.

Leaving Africa, we pick up the Australopithecine story again in Java where a lonely and hotly debated fossil *(Meganthropus)* has been found without tools, stratigraphically below the Pithecanthropine stage. Another cousin of the Java find was identified in the form of a group of isolated teeth from China. Tobias[9] would like to see these last two finds attributed to Leakey's Habiline stage, thus being somewhat intermediate between the Australopithecines and the Pithecanthropine. This may be so on morphological grounds alone, but for the present I will join with Brace and others who consider them all to be Australopithecine.

Viewing the location of these sites, we find them scattered in a peripheral area of the Old World, buried in the last outpost, so to speak. Statistically, most of Australopithecines come from South Africa, furthest away from the center of the Old World (Map 1).

We should indicate here that certain workers regard the Australopithecine stage as a group of great-apes in no direct sense related to man. They maintain that the small brain capacity, the lack of tools, and the apparent specialization suggest that these beings were simply extinct ape-like animals.[10] It is noteworthy that Dr. Leakey himself has all but abandoned *Zinjanthropus* as a likely human ancestor.[11]

The Pithecanthropine Stage

The Pithecanthropine (Figure 1) were made famous by a young Dutch doctor exploring in Java during the 1890's. Java continues to be an area of considerable interest for the remains of *Pithecanthropus,* the sites being well described by Coon.[12] These fossils have estimated brain capacities of approximately 950cc, nearly double that of the Australopithecines. As might be expected, we also find Pithecanthropine material in China, which von Koenigswald[13] maintains is closely related to, though somewhat more refined than, the Java material.

Turning to other areas of the world, we note that Africa again comes into the picture with sites this time being prominent in North Africa at Ternefine and Rabat. South of the Sahara the

A composite reconstruction made under the direction of Franz Weidenreich and based upon the Pithecanthropine fragments found at Choukoutien, near Pekin. Originally called Sinanthropus pekinensis.

Figure 1. From C. Loring Brace, THE STAGES OF HUMAN EVOLUTION: Human and Cultural Origins, (C) 1967. Reprinted by permission of Prentice-Hall, Inc. Englewood Cliffs, New Jersey.

Koro Toro fossil remains in some dispute. Chellean man was found in the Olduvai Gorge, and a single jaw and a few teeth comprise the total of the Pithecanthropine stage found in South Africa.

The Pithecanthropine are also found in Europe. The still mysterious and not unanimously accepted Heidelberg jaw, an occipital and a few teeth from Verteszollos (Hungary), and a tooth fragment from Brezletice (Czechoslovakia), believed by some to be the earliest of human remains in Europe,[14] are all included in the Pithecanthropine story. The above mentioned fossil finds have been well documented and described elsewhere; the geographic location is the interest for this paper.

The Pithecanthropine are widely separated and still peripheral to Eurasia, but there appears to be a somewhat closer statistical distribution around the center of the Old World, than for the Australopithecines. The Pithecanthropine material has a more even distribution than the Australopithecines, being found on all the large land masses of the Old World except Australia (Map 2). This more even distribution, plus the wide distribution of cultural debris throughout Asia, Europe, and Africa, attest to the presence of Pithecanthropine individuals throughout the Old World. Technologically they were advanced enough to penetrate nearly all ecological zones

1. Taung
2. Sterkfontein
3. Swartkrans
4. Kromdraai
5. Makapansgat
6. Olduvai Gorge
7. Garusi
8. Djetis Beds (Java)
9. China

Map 1. Distribution of Australopithecine Sites.

and, based on stratigraphic evidence, apparently displaced the Australopithecines in many areas.

While discussing the Java and China evidences of the Pithecanthropine stage, some mention should be made of the questions surrounding the finds. According to Rev. O'Connell's well-documented review,[15] it is not possible to be certain that the human femur found by Dr. Dubois bore any real connection to the skull cap situated in the same bed. It is possible that the femur was from a human, while the skull cap may have come from an ape. There was no sure way to estimate the cranial capacity of this first skull cap or of those later discovered by Dr. Von Konigswald as in each instance the brain case was missing.

It is somewhat more distressing to note that for 30 years Dr. Dubois concealed the truly human Wadjak skulls that he had also found in Java! Such conflicting evidence has led certain authorities such as Dr. W. R. Thompson[16] and Rev. O'Connell to go so far as to conclude that Java man was a fraud. Rev. O'Connell sites the famous Marcellin Boule as rejecting the Java Man and shows that Dr. Dubois admitted before his death that it was actually the skull of a gibbon.

Concerning the China finds, Rev. O'Connell[17] points to the fact that all the Pithecanthropine skulls collected in China at the Choukoutien site have disappeared in some unexplained manner. Some casts or models of the *Sinanthropus* specimens were supposedly made from the original finds and these models exist; but the models differ in several ways from eye-witness descriptions of the missing skulls! As in Java, skulls and other remains of truly human forms were discovered—this time in the same deposit as the reputed Pithecanthropine type. Such information has led O'Connell to conclude that the missing *Sinanthropus* skulls were really fossil remains of large baboons or of macaques and that the tool industry in that region (including an efficient lime-burning operation) was attributable to the humans recovered at the same location.

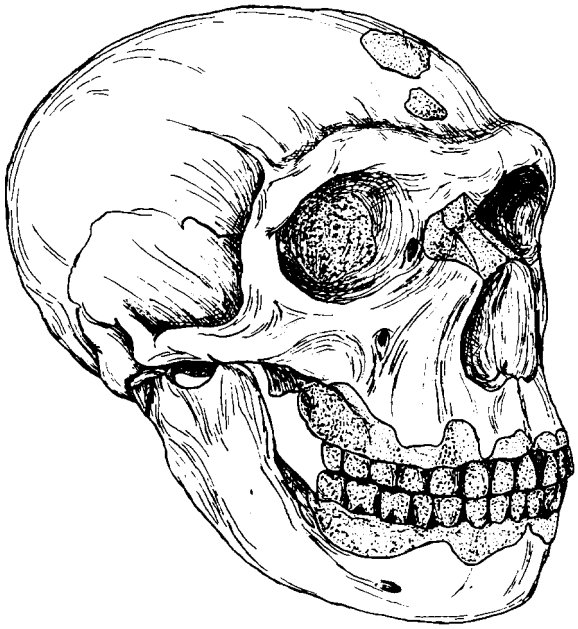
The Neanderthal Stage

The Neanderthals (Figure 2) are well represented by a large number of finds that are centered in the Levant and Europe. This is the burly, "cave man" type fellow who appears to be responsible for a rather elaborate and refined tool kit, and apparently pushed other races further to the periphery. Morphologically, the great difference between the Neanderthals and the "lower'" fossils, is the cranial capacity which averages over 1500 cc.[18]

Turning to the distribution of the Neanderthals, specimens, have been found in Africa at Saldanha and Broken Hill. As with the previous stages, some material has been found in Java and China, thus allowing for some very interesting comparisons. In Central Asia, we find a child's remains at Teshik Tash, made famous by

1. Baksoka (Java)
2. Choukoutien
3. Verteszollos
4. Heidelberg
5. Prezletice
6. Ternefine
7. Rabat
8. Koro Toro
9. Olduvai Gorge
10. Swartkrans

Map 2. Distribution of Pithecanthropine Sites.



The "Old Man" from La Chapelle-aux-Saints, Correze, southwestern France. An extreme example of the "classic" Neanderthals.

Figure 2. From C. Loring Brace, THE STAGES OF HUMAN EVOLUTION: Human and Cultural Origins, (C) 1967. Reprinted by permission of Prentice-Hall, Inc. Englewood Cliffs, New Jersey.

a ring of goat horns presumably used in some form of burial ceremony. Possibly our first record of care for the sick and aged was found in Shanidar in the remains of a crippled old man and his family. The Mt. Carmel finds at the caves of Skhul and Tabun provide physical anthropologists with what appears to be fossilized races.[19]

Debate over the so-called "progressive" and "classical" Neanderthals has created great interest. The more progressive forms tend to be found in the east, while classical forms are found mostly in Western Europe. This variation, however, appears to be no different than that between *Australopithecus* and *Paranthropus* (from South Africa) that are both now classed as Australopithecine, and *Sinanthropus* and *Pithecanthropus* (China and Java respectively) of the Pithecanthropine group.

Viewing the Neanderthal distribution statistically, we find them clustered to the west and to the north of Mesopotamia and in Europe, with more isolated finds toward the periphery (Map 3). Though the cultural distribution of the Neanderthals is considerably more widespread, the evidence still supports the contention that their primary distribution was much closer to the center of the Old World than the Australopithecines and Pithecanthropine.

1. **Neanderthal**
2. **Spy**
3. **La Chapelle**
4. **Le Moustier**
5. **La Ferrassie**
6. **La Quina**
7. **Gibraltar**
8. **Saccopastore**
9. **Krapina**
10. **Mt. Carmel**
11. **Shanidar**
12. **Teshik Tash**
13. **Choukoutien**
14. **Ma-Pa**
15. **Solo**
16. **Broken Hill**
17. **Saldanha**

Map 3. Distribution of Neanderthal Sites.

Fossil Distributions: Region of Origin

This brief analysis of the distribution of the three stages of fossils for the Pleistocene points out that what appears to be the most primitive or degenerate forms of man are found in the most peripheral position, while the more advanced forms usually appear much closer to the center of the Old World. This suggests, as Custance[20] has pointed out, that man may have migrated from a point close to the center of the Old World, and what appears to be "primitive" forms at the periphery may, in fact, be descendants of the more "modern" forms that appear at the center.

Other factors may be involved which could lead to such a distribution: (1) physical conditions, i.e., soil types, caves, etc., conducive to fossilization and preservation of fossils, (2) accessibility of fossils for discovery, and (3) orientation of the discoverer, i.e., Dubois in one case, Leakey in another, each convinced that he should find fossils of early man. When, however, fossils are found, explanations for their presence in such a location must be considered.

It is possible, as pointed out previously, that this whole problem of the three "stages" is solved in a different manner. If the Australopithecines were in fact ape-like animals (as some authorities believe), then there is no question as to whether they were man's ancestors or his descendants. According to that view, they were simply not related to man in any way.

Also, if the existence of a Pithecanthropine stage is indeed questionable, then it too would be of no real concern in man's origin. If the Java form was indeed a gibbon (as Dubois finally believed and as certain others now agree), and if the evidence for a Pithecanthropine stage in China is also highly questionable, these forms simply "evaporate" from the arena of serious scientific dialogue about man's origin. More evidence and thorough study of both the Australopithine and Pithecanthropine finds is essential.

Meanwhile, many students of anthropology do indeed consider the Australopithecines and the Pithecanthropine as valid links in man's ancestry. Recognizing that both forms may be "disqualified" on the other grounds mentioned, it is still of interest to the author here to see if another model or view of these types is possible—assuming that they are valid, and assuming that they are indeed related to man–assumptions which are in themselves questionable.

Using these two assumptions, however, it is my intent to see if another point of view is possible regarding the fossil record. The migration theory presented here conforms with the evidence and provides a possible basis for coordination with Scripture. In considering the distance of migration and its relation to "degeneracy" Custance has noted three factors which affect variability:[21]

> (a) a new species is more variable when it first appears; (b) a small population is more variable than a large one; (c) when a species shifts (or a few members of it) into a new environment, wide varieties again appear which only become stable with time. . . .
>
> Fossil remains constantly bear witness to the reality of these factors, but the witness has meaning only, and the facts are best accounted for only, if we assume that a small population began at the centre and, as it became firmly established there, sent out successive waves of migrants usually numbering very few persons in any one group, who thereafter established a further succession of centres. . . . Each new centre at the first showed great diversity of physical type, but as the population multiplied locally a greater physical uniformity was achieved in the course of time.

Before considering this in more detail, I would like to take a look at where the original center may have been.

There are, in the Old World, two areas which have a conspicuous lack of fossils, India and the Mesopotamian region. Both areas have been studied extensively by archaeologists and many ancient sites have been uncovered, but all that is found is what man left, never man himself.

In India, we find a tool kit which corresponds well with Pithecanthropine material in Africa and Java, leading one to believe that Pithecanthropine races inhabited the Sub-Continent regardless of the fact that we are unable to find their actual remains.

In Mesopotamia, however, though Neanderthal type culture assemblages appear in the Iraq foot hills, nothing earlier than the Jarmo phase of incipient agriculture can be found.[22] This seems to coincide well with the lack of any "prehistoric" fossils in the area.

It would appear then that the Mesopotamian region could well be considered the center from which man originally migrated to the ends of the earth. In this view, the Neanderthals, Pithecanthropine, and perhaps the Australopithecines represent degenerate descendants of that migration.

Genetic Action on Small Populations

The genetic aspects of such a distribution emanating from a point of common origin must now be brought into full focus. Custance has pointed out the effects of genetic drift acting on small populations (as these migrating peoples certainly must have been). Geographical isolation is also a vital consideration when discussing the movement of small populations.

As people migrated, they would gradually become separated by natural geographical barriers. Such separation would involve a reduction of gene flow which would ultimately result in an isolated homogeneous population. Genetic change under such conditions can be quite rapid, with natural selection, mutation (to a lesser extent), and genetic drift acting upon the small population "with much greater speed and effectiveness than earlier evolutionists dreamed."[23]

Such genetic change could effect significant racial differences, within a few generations. Continued inbreeding, migration, and genetic isolation could produce some of the drastic variation we find in the fossil record. The degrees of variation within the various stages appear very similar to what we observe today as racial differentiation. The variation between stages, though appearing to be greater than racial diversification today, is certainly not in the range of taxonomic difference if we deal with morphology (shape) alone. Consider the many varieties of dog, all members of the same species.

It appears to me then, upon a consideration of morphology, associated culture, and stratigraphy, that *Zinjanthropus* and *Homo habilis* are of the same species,[24] especially when these are compared with the Java and China material. Morphologically they probably stood erect and had essentially the same skeletal anatomy as present populations. Thus they had virtually the same structural relationship to most of the Pithecanthrophines as the latter group had to the Neanderthals.[25]

Therefore, on genetic and morphological grounds, the Australopithecines could well represent the product of relatively rapid migration, and extreme inbreeding. The same degenerative process could be true, to a lesser degree, of the Pithecanthropine and Neanderthal populations.

In my opinion, all probably emerged from the Mesopotamian region, pushing earlier migrations ever further out, forcing adaptation to new conditions, and creating new physical and cultural appearances. Indeed, LeGros Clark has noted in a discussion of Australopithecines that: ". . . it would not necessarily follow that the transition occurred in South Africa. It may have occurred in some other part of the world, and the South African fossils in that case may represent but slightly modified survivors of the ancestral stock, which persisted to a much later time in the Transvaal''.[26]

Yet in all fairness we should state, as earlier, that certain investigators, who view the fossil hominids from the creation standpoint, suggest that the Australopithecines in general were not actually human, but represent the remains of large extinct, ape-like animals. More data are necessary to settle the question with finality.

Besides the effects of genetic and geographical diversification, there are ether physical factors to be considered. The function of the endocrine glands may have had an effect. Some authors have made a point of the similarity between persons suffering from acromegaly and Neanderthal fossils.[27] Sir Arthur Keith has suggested that endocrinology may be a key to understanding the formation of race.

Though this appears to be an oversimplification of the problem, glandular function has possibly had some effect. In small, rapidly changing populations that are not in genetic equilibrium, it could have an even greater effect, resulting in forms similar to those found in the fossil record. Both prenatal and postnatal development is dictated by the genes, but organized by hormones. A hormonal imbalance could result in a malformation of the skeletal system (the area of greatest concern so far as fossilization is concerned) producing such specimens as are found.

Although many of the fossil finds do not derive from aged specimens, old age might have been a factor of considerable affect upon a particular skeleton. Effects included in the process of aging are an increase in calcification, brittleness of the bones, closing of skull sutures and other points of ossification, and possible deformation through thickening of the bones and disease. The "Old Man" of La Chapelle-aux-Saints (a Neanderthal) is a prime example of the effects of arthritis upon the skeletal structure.

A Historic Model Best

Observation of the life processes, as well as study of radioactive decay, has led investigators to an understanding of what has been called the "decay curve." This simply indicates that all that starts ultimately stops. The process and time involved can be computed and, with sufficient experimentation, predicted.

The Laws of thermodynamics; (1) the conservation of energy, and (2) the increase of entropy, bring cut the same point, and necessitate that randomization increases rather than decreases.[28] This, in effect, "reverses" the so-called process of organic evolution forcing a historic model of man's origin and life upon earth into a new dimension.

Applying the decay curve and the second law of thermodynamics to genetic considerations leads to the conclusion that the basic building block of life and the carrier of all genetic quality, deoxyribose nucleic acid (DNA), must, in fact, be decreasing in efficiency rather than increasing.

Mutational changes in DNA are shown to cause defects of more or less serious nature.

Changed nucleotide bases, additions, or losses (as Crick has indicated[29]) all yield defective results. If this is so, then the first or original man must have possessed the ultimate in genetic quality, with decreasing potential being expressed in subsequent generations.

Returning to the question of the origin of the Australopithecines, we note that, since so little is known about the behavior and nature of the Australopithecines, little can be said of great certainty about their origin or their position. Some creationists may regard *Zinjanthropus* in particular and the Australopithecines in general not as part of the genus *Homo,* but (as Leakey now asserts) as a very distinct genus quite unrelated to man.

Strong inbreeding, however, accompanied by conditions that must have been encountered by people migrating from the point of human origin, could have lead to an accumulation of changes in the DNA code and therefore the appearance of the individuals as well as the population pools so involved. As previously indicated, I believe there is considerable evidence for placing the Australopithecines within the range of human diversity so that they could accordingly represent a degenerate form of the first human being.

In that case, the fossil record would be best understood by reversing the heretofore *evolutionary* scheme, and replacing it with a historically and scientifically coherent *devolutionary* scheme.

Fossils As Adam's Descendants

The question of this paper thus reduces to who the ancestors of the fossils are. Custance, as previously noted,[30] believes that through biological processes and culture history, he can account for all the necessary changes since the time of Noah, dating from approximately 3000 B.C. Though this is indeed a possibility, and as noted, genetic change can be effected very rapidly, nevertheless, I believe it may be more profitable to view the fossil record as Adam's descendants, and assign the present racial diversification as a result of the dispersion following Noah.

A number of works in recent years have linked the Pleistocene Ice Ages with the Noachian flood.[31] These works point to the catastrophic view traceable to the 19th century French scholar Georges Cuvier. This hardly means, however, that the status of recent catastrophic work is retrogressive. Rather it simply points to the great effect that evolutionary theory has had in leading scientific thought down a blind alley for well over a century. A wealth of material has been published in recent years that supports catastrophism. The great need at present is for a reevaluation and reinterpretation of the facts.

Apart from the mechanical approach taken with respect to the Biblical flood, its direct cause, and presumably what happened during it, many agree that it was an event which left an indelible mark upon both earth landforms and survival patterns, and hence has had a great effect on subsequent history. Place Adam in a preflood environment[37] and project a migration from him, as has been described, with the resulting geographical dispersion and genetic degradation: then bring about a catastrophe such as the Noachian flood, and I believe the result would be a large portion of the fossil evidence which we observe today.

The conditions under which fossils are generally found, and the condition of the fossils when found, strongly support the implication that death and deposition were due to catastrophe. Indeed, at Shanidar and Choukoutien, there is considerable evidence for cave fall and burial of individuals as a direct result. What caused the cave fall? Both caves, at opposite ends of Asia, experienced some kind of catastrophe at about the same time. It is no secret that many fossils are found in caves, rock shelters and other types of natural protection (recall the Australopithecines crushed in limestone caves of South Africa), leading to the popular view of the "prehistoric cave man."

The caves, however, could be the result of the flood, and because of their preservative nature we find the fossils there today. The so called "cave man" may never have lived extensively in caves at all. On the other hand, caves could have well resulted from the creative process which brought the world into being initially. As men moved out into the world, caves would have afforded a natural protection from the elements and wild beasts. The question of the origin of the caves is beyond the scope of the present paper. The fact remains that the caves and other types of natural protection contain fossils.

Those fossils that are not deposited in natural protection often show signs of sudden burial. If this were not so, there would be little chance for fossilization, as the organic matter of the body would be subject to carnivores, weathering, decomposition and subsequent obliteration. Therefore, a model that accounts for sudden burial, better accounts for the majority of fossils, because it removes them from the effects of weathering, and aids in their preservation. As Cook[33] notes:

> Paradoxically, while the fossil record is considered to be one of the most compelling arguments in favor of the evolution of the species, there is every reason to believe that fossilization itself is critically dependent upon catastrophism.

Where did Adam originate? This question has long been the subject of much speculation. If one accepts the present evidence concerning the distribution of the fossils, with the more primitive types pushed to the periphery by their more refined cousins, a projection to the center of this dispersion brings one to the heartland of the Old World, the Mesopotamia region.

It appears that Mesopotamia was the general region where the second dispersion of peoples commenced.[34] Whether one accepts Cook's model of continental drift,[35] or other models which project orogeny and other geographical alterations based on the present distribution of continents,[36] the center from which migration occurred remains the general area of the Middle East.

Morphology Not of Prime Concern

Looking again at the distribution of fossils throughout the Old World, it is not difficult to notice that morphology has possibly been emphasized too greatly in analysis, while genetics, endocrinology, and the aging factor and disease have not been given enough consideration. Comparing individuals found within the same site often forces the investigator to recognize the great variation within a population.

An example is Weidenrich's now famous description, on morphological grounds alone, of what appears to be four racial classifications for seven individuals in the upper cave at Choukoutien, all presumably from the same family.[37] Such variation may be explained if one takes into account relatively rapid migration and severe inbreeding. Under these conditions it would no longer be possible to assume that the people were adapted to the area in which they are found.

Palaeontologists have usually assumed that by sampling the fauna and flora of the area associated with the fossil, the conditions under which the fossil lived could be reconstructed and knowledge gained concerning the necessary adaptations. Undoubtedly many fossils have been "adapted" by their discoverer when, in fact, the fossil was more adapted to another area, but forced to move and died as a relatively newcomer to the area in which it is found. This would help explain the variations noted between populations of the same geologic strata and would be the expected in such a model as that presented here.

This model would also help explain such confusing relationships as Leakey found at Olduvai where the morphologically superior *Homo habilis* occurs stratigraphically below *Zinjanthropus* in Bed I, and yet Habiline type material appears almost contiguous with Pithecanthropine in Bed II.[38]

In general, a progressive increase in complexity upwards would be the expected, the earliest individuals to migrate being pushed further to the periphery and stratigraphically below the later. In those cases where two waves of migration were in association at the time of the flood, a very confusing state of relationships would result.

Biblical Period	*Fossil Stage*	*Years before Present*
Christ		2000
	Racial diversification from Noah and his sons	
Noachian Flood		5000±
	Australopithecine	
Result of wide	Pithecanthropine	
dispersion from Adam	Neanderthal	
Creation	Man Created in Perfection (Gen. 1:27)	7000±

Table 2. A catastrophic model of fossil stages showing morphological variation as a result of dispersion before the flood, and racial variation following the flood.

Conclusion

I have presented here a picture of the distribution of hominid fossils as found throughout the Old World including a majority of the major finds, though by no means a complete inventory. That distribution has been interpreted as the result of movement of peoples from a center out to the periphery. The geographical and biological factors involved in such a proposed dispersion lead one to recognize the possibility of great variation morphologically not only between populations but also within populations.

The conditions under which the fossils are found may be used to argue strongly that the individuals met with severe upheaval. This, as well as the environmental conditions associated with the fossils, leads me to suggest that these fossils were the descendants of Adam, the upheaval being the Noachian flood. Regardless of the mechanics of the flood event, the point from which the migrations emanated appears to be the Mesopotamian region.

The creation-dispersion model presented here stresses morphological variation as a result of the dispersion of peoples. As small groups moved out from the original gene pool, they were subjected to conditions, both environmental and physical, that affected their appearance. The Biblical flood captured these people under conditions that further changed their structural appearance resulting in what we view as the fossil record. Table 2 is presented as a tentative reconstruction and time table of these events as they might be correlated with Scriptural events.

Coupled with this dispersion-degeneration model, the author recognizes the distinct possibility that the Australopithecines may not have been human beings at all, but simply extinct ape-like creatures. And it is also possible that the Pithecanthropine likewise represent fossils of other animal types, distinct from man. If both of these ideas should prove to be valid, the dispersion model proposed here would be a simpler one and the creationist interpretation of the fossils would also be less complex.

This presentation is by no means exhaustive. Even as it attempts to answer a number of questions, so it raises a number of others. If however, I have managed to present evidence for a historic approach to the fossil record, and if I have managed to create a better climate to more fully comprehend the implications of such a model, I will have been fully successful. Quoting Cook, we must realize the importance of the approach taken in viewing the evidence.

> These sequences and many like them exist and, to be sure, carry a strong implication concerning relationships . . . what remains in question is whether these relationships are ancestor-descendant ones or the result of a particular background of the *Engineer.* [Italics his][39]

I believe the "Engineer," God, created man, who ultimately dispersed throughout the earth. As a result of disobedience and sin, man as he existed was destroyed and the earth drastically changed. The flood which brought about this change left an intriguing record of "relationships" which continue to both baffle and fascinate modern men of science.

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[32]Patten, Donald W. *Op. cit.,* p. 201. He speculates on pre-flood conditions in considerable detail. Global temperatures were more evenly distributed in the period before the Flood, a water vapor canopy greatly reducing temperature differentials on the earth's surface (Genesis 1:6, 7 and 2:5, 6). Tropical and sup-tropical conditions have been recorded in both Arctic and Antarctic regions. This warmer, less variable temperature, combined with different atmospheric gas mixtures, notably a greater percentage of water vapor and carbon dioxide, resulted in a luxuriant growth. Giganticism and longevity appear to be closely associated with such environmental conditions, producing the great variety of fossil material available in the "flood alluvium" (strata) of present day geology. Thus Patten associates antediluvian conditions with a global greenhouse effect as very similar to what is usually pictured by uniformitarians prior to the Pleistocene.

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NATURAL SELECTION INADEQUATE

C. H. MOSHER* AND WILLIAM J. TINKLE**

Shall we leave the question of creation versus evolution to the experts? Involving as it does, the true nature of man and ether living things, also the power and activity of God, it is hard to find a person who is qualified to give an answer that will preclude all other answers. A person who has specialized in the structure of some animal or plant may have no more than a child's conception of the essential nature of man.

In such discussions an education is desirable, but many educated men have never gone to college. Thomas Henry Huxley spent very little time in school, and George McCready Price studied geology for himself. Education involves observation, reading, and that comparison of one idea with another which we call thought. A significant number of persons who are self-educated have ideas which are worthy of being heard.

Such men look at natural selection, the cornerstone of evolution, and see flaws in it. A paraphrase of natural selection, "the survival of the fittest," is no more than a truism. It is necessarily true that the animals which have survived were fit to survive. Thus the slogan is true but it adds nothing to our knowledge.

Charles Darwin observed farmers making improvements in plants and animals by repeated selection of types for breeding stock. It occurred to him that such selection might occur in the natural environment.

A plant or animal that happens to have a helpful new structure will thrive and produce many offspring. On the other hand, an organism that happens to have a structure which is not functional is thereby impeded and loses its life in the competition or is killed by predators. Darwin imagined that such a process is cumulative enough to change creatures into more complex categories.

More careful observation during the twentieth century has taught us that "natural selection," instead of developing higher forms of creatures, merely gets rid of diseased, crippled, and abnormal individuals. Thus the process maintains a standard by setting a lower limit.

When we try to visualize how a certain organ might have been developed through chance changes and natural selection we run into this difficulty: when the nascent organ appears and until it is well enough developed to be functional, it is an impediment to the animal. Presumably, such an animal would lose its life in the struggle for existence and the new organ would cease to be.

Examples readily come to mind. Can you visualize a fish with lungs *almost* developed? Evolution would halt right there. As another example, the cow has a large complex stomach of four parts. When it swallows grass or hay, the food goes into the rumen or paunch. Later the hay is brought back to the mouth and chewed, then swallowed into the reticulum. From this organ it goes to the omasum, then to the true stomach, the abomasum. In contrast the hog has a simple, single stomach.

If a calf were born during the supposed development of cattle, with only the beginning of a complex four-part stomach, it would be handicapped. The new organs would not digest food and would get in the way of other organs. Logically, such a strain of cattle would have less vigor and fewer offspring than the former type, and would be crowded out before they became established.

It is postulated by evolutionists that frogs and other amphibia developed from fish; that fins somehow changed to legs. In modern fishes we do not see such changes taking place; and if we did, such nascent organs would be a detriment in the struggle for existence.

A fish swims rapidly by complex movements of the layers of muscle along its sides. Fins are used for slow motion and turning. The frog swims by powerful strokes of its hind legs and has no muscles on its sides that aid locomotion.

If a fish were changing to a frog there would be several stages in which it would have appendages that were neither good fins nor good legs. Many animals are predators of frogs, and it is only by means of rapid movement that enough frogs survive to escape extinction. An intermediate type certainly would be doomed!

There is a fish called a coelacanth, *Latimeria,* in which the pectoral fin is not attached directly to the body, but is at the end of a short stalk.[1] Some zoologists have interpreted this fin as the "beginning" of a jointed front limb. Yet, instead of the coelacanth becoming dominant and developing into a higher vertebrate, this genus almost was lost.

In fact, the coelacanth was considered extinct for a long time, and no fossils of it have been found in rocks "above" the Cretaceus series. But since 1938, a few have been caught in deep water off the east coast of Africa. (By the way,

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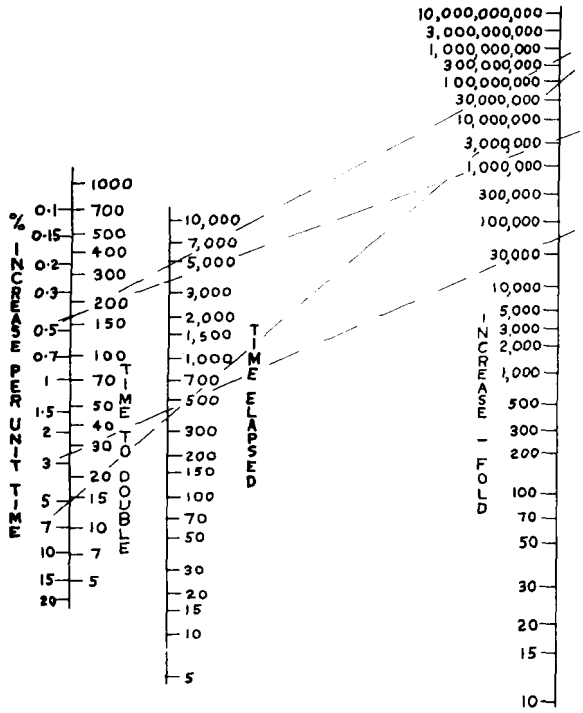
A NOMOGRAPH FOR USE IN POPULATION STATISTICS

HAROLD ARMSTRONG*



This nomograph may be used for calculating increases in populations, as is explained in the accompanying article. A straight line, joining points on any two of the scales, will cross the third scale at a corresponding point of appropriate magnitude. The four broken lines are explained as examples of application of this nomograph.

This nomograph is for quick, approximate, calculations of increase in populations. There are three scales, for the three quantities concerned:

(1) the rate of increase, expressed in per cent per unit time (or the time for the population to double, which is another way of expressing the same information);

(2) the time elapsed;

(3) the increase, e.g. one thousand fold.

It is used thus: A straight line, joining any two of these quantities on the respective scales, will cross the scale of the third quantity at the place of appropriate magnitude. Thus, if any two of the three quantities are known, the third may be found by just putting a straight edge on the nomograph.

It may be necessary, of course, to interpolate between the numbers actually marked. Two of the scales are logarithmic, and the third is a log-log scale; thus the divisions are net uniform. This is not, of course, a very precise means of calculation, but, then, great precision is rarely called for in these matters, for the information is usually not very precise.

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Four Examples Explained

The broken lines show examples of the use of this nomograph. The Children of Israel, e.g., increased from five persons (Jacob, two wives, and two concubines) at about 1950 B.C. to approximately 18,000,000 persons today; an increase of about 3,600,000-fold in about 3900 years. If 3,600,000-fold increase and 3900 years are joined on the graph, the line intersects the third scale at about 0.4% increase per year, which amounts to doubling in about 175 years.

Again, the population after the Flood was eight persons; today, the world population is about 3,000,000,000; an increase of about 375,-000,000-fold. If the average rate of increase was the 0.470 per year found above, the line shows that the time elapsed must be about 4,800 years, which would put the Flood about 2800 B.C. This is not far out of line with certain chronologies.

Furthermore, the fact that statisticians independently choose a figure of about 150 years[1] for the doubling time for human populations is evidence in favor of the Bible chronology from Noah to the present which yields a similar figure-175 years. It should be acknowledged that these calculations have been made by others, maybe with slightly different numbers.[2, 3]

Yet again, the Children of Israel increased in Egypt from about 70 to something around 3,000-000 (as an estimate). This would be an increase of about 43,000-fold in 430 years. (I know that some make the actual time in Egypt less, but let this pass for the sake of an illustration.) The graph shows that this would mean in increase of about 2.8% per year, which means doubling in about 27 years. And that is not out of reason, for there are populations increasing more quickly than that during present time.

Finally, consider the increase between the flood and Abraham's time, an interval of say 400 years. If the increase was rapid, say 5% per year (and more rapid increases have been known), the increase would have been about 100,000,000-fold, and thus the population of the world about 800,000,000. In fact, the rate of increase was likely somewhat less; but this is enough to show that there is no difficulty in the apparently considerable population of Abraham's time, although it was not so long after the flood.

Useful for Variety of Populations

This graph can be used for populations very different from human beings, e.g. bacteria in a culture. In such a case, it might be convenient to take as the "unit time" something other than a year; maybe a minute in dealing with the bacteria. The "time to double" and "time elapsed" must, of course, be expressed in the same units as the "unit time," e.g. in minutes as suggested for the bacteria.

The decay of radioactive isotopes can also be calculated with the graph. Then, instead of "increase," the change will be "decrease": decrease per unit time and decrease–fold. Thus, a hundred-fold decrease would mean that the amount of the isotope had decreased to $^{1}/_{100}$ the amount at the beginning of the period of time. The "time to double" would be considered the time to decrease to half–the familiar half-life. Again, the "unit time" need not be a year, provided only that all times are in the same units. In dealing with radioactive carbon, e.g., with a half-life of about 5500 years, it would be convenient to express time in centuries.

The reader might ask: "What is there creationistic about this graph?" In a sense, the answer must be—nothing. An evolutionist could use it just as well as a creationist.

Still, the creationist will be more interested in population statistics, especially of human beings. For the enormous time periods demanded by evolutionists do not allow any appreciable rate of increase; they can "fit in" only with fluctuation about some more or less constant number. But that is not what we see today; thus again the present would not be the correct key to the past.

If, on the other hand, one postulates a human population that has been increasing for only a few thousand years, as most creationists do, it seems likely that the populations of man and of the larger animals have increased more or less uniformly. Moreover, it seems likely that, as well as the start at creation, there was a fresh start at the flood.

So it makes sense for the creationist to study population statistics. In theory, someone might believe in evolution followed by a fairly recent universal flood; but, in fact, probably no one does. And a creationist who believed in a fairly recent creation and a local flood (and some, it appears, have held such views), could still be interested in these statistics.

The reason that these remarks are restricted to man and the larger animals is that surely the smaller animals, rabbits for instance, have run into plagues, overpopulation, etc., many times in the past, and these things have affected their numbers greatly. But there is no evidence that such things have had any considerable effect on man; and it would seem likely that the same thing could be said (at least, until a century or so ago), about the larger animals, and especially about such kinds as elephants.

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[2]Whitcomb, J. C., and Morris, H. M. 1961. The Genesis flood. The Presbyterian and Reformed Publishing Company, Philadelphia, pp. 396-398.

[3]Hand, J. R. 1959. Why I accept the Genesis record. Back to the Bible Publishers, Lincoln, Nebraska, pp. 76-81.

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this paucity of fossils even casts doubt upon their usefulness in determining the relative ages of rocks.)

The difference between types of living things is not simply a matter of different degrees of complexity. They are constructed according to different patterns, and each pattern is well fitted to the life habits of that organism. Zoologists agreed a long time ago that animals cannot be listed in a single column to supposedly represent development from the lowest and simplest.[2] Since this is true, a chance addition is more often a detriment than an advantage. Also, most mutations known are destructive and deleterious, and further no new characteristics come about through gene mutations. Only undesirable changes of existing characteristics occur through gene mutations.

We say again, observe, read, and think for yourself. It is impossible for a general permanent improvement to take place at the same time that the Second Law of Thermo-dynamics is leading to loss and disorder.[3] See if a perfect creation followed by loss and decay does not fit the facts much better.

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[2]Hegner and Stiles. 1951. College zoology. Sixth Edition. Macmillan Company, New York, pp. 292 and 798.

[3]Williams, Emmett L., Jr. March, 1969. A simplified explanation of the laws of thermo-dynamics, *Creation Research Society Quarterly*, 5:138-147.

THE THEORY OF EVOLUTION AND THE LIMITATIONS OF HUMAN KNOWLEDGE

JULIO GARRIDO*

This short paper is an attempt to show by diagram and written exposition that the theory of evolution lies in a zone of human understanding that is, at best, conjectural. Since the Bible account of creation consists rather of a witness or record of actual events, it should be regarded as superior to any human theories regarding origins.

Methods of Study and Space-time Dimensions

Man's method of study is always determined by dimensions of space and time. He may make direct analysis of objects in his environment, if these same objects are of such size that they are readily accessible to his senses.

When man is concerned with the structure or properties of objects that differ considerably in size from the dimensions of his own body, however, he must use instruments such as the telescope or the microscope, designed especially for a certain task.

When the structures and phenomena deal with dimensions not directly attainable by instruments, our knowledge can be arrived at by deductions. These deductions are based on data obtained by experimental methods and evaluated by our rational faculties.

In the case of structures having dimensions that are vastly different from those of the human body (such as the atomic nuclei or the hypergalaxies) it is nearly impossible to devise a spatial representation which would be acceptable to the human senses. In such cases reality is best represented by mathematical formulae alone and no valid sensory image exists!

In relation to time as well as space, man's capacity to observe is also limited. Phenomena which occur within an appropriate interval of time (neither too long nor too short) may be described by estimates that become more and more exact. When the time dimensions cannot be reached directly by his senses, man must again employ instruments or resort to deductive methods which extend his powers of observation (consult Figure 1). The image thus obtained may once again be only a sketchy representation which is best expressed by means of a mathematical equation.

When dealing with extremely small size or time dimensions, the image produced is in general an average which has only statistical value and individual phenomena cannot be measured directly. Heisenberg's principle of indeterminacy asserts that the act of observing such minute phenomena in itself creates disturbances which may be greater than the phenomena under study!

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In the case of phenomena of long duration (beyond the limits of human observation) the study can be accomplished only by assuming permanency of the conditions under which the phenomena developed. Results of such studies are continually subject to revision and are at best only conjectural. When a man tries to extend his understanding far beyond his own dimensions (in either time or space) his scientific knowledge is severely limited! These relationships and limitations are summarized graphically in Figure 1.

Limitations of Scientific Theories

Scientific theories are proposed to achieve the goal of providing broad bases for human knowledge. Yet the more comprehensive a scientific theory is in scope, the more it is subject to possible revision. Conclusions of scientists become more and more problematic the farther they move away from the description of concrete reality.

Although general theories have value as a basis for new experiments and for pedagogical exposition, their existence is often rather short-lived. The scientific method gives excellent results for describing and explaining partial aspects of reality, but when attempting to draw generalized conclusions, great caution must be exercised.

Evolution Theory in Particular

Several fundamental drawbacks may be detailed with regard to the theory of evolution. In the first place, it is a general theory that encompasses within a simple and universal idea, a very large number of events. For this reason, the theory of evolution extends far beyond the usual domain of scientific theorizing, and for many proponents all caution has been abandoned!

In the second place, proponents use evolution theory to reduce past events to schemes which are based upon estimates of present phenomena alone. This immediately places it out in the "zone of conjecture" (see Figure 1). Using evolution theory, men dare to guess about the manner in which certain events (e.g. the origin of species) may have occurred in the past. This conjecture is supposedly based upon "probability." Does not our estimate of "probability," however, rest ultimately upon that which occurs most frequently before our eyes?

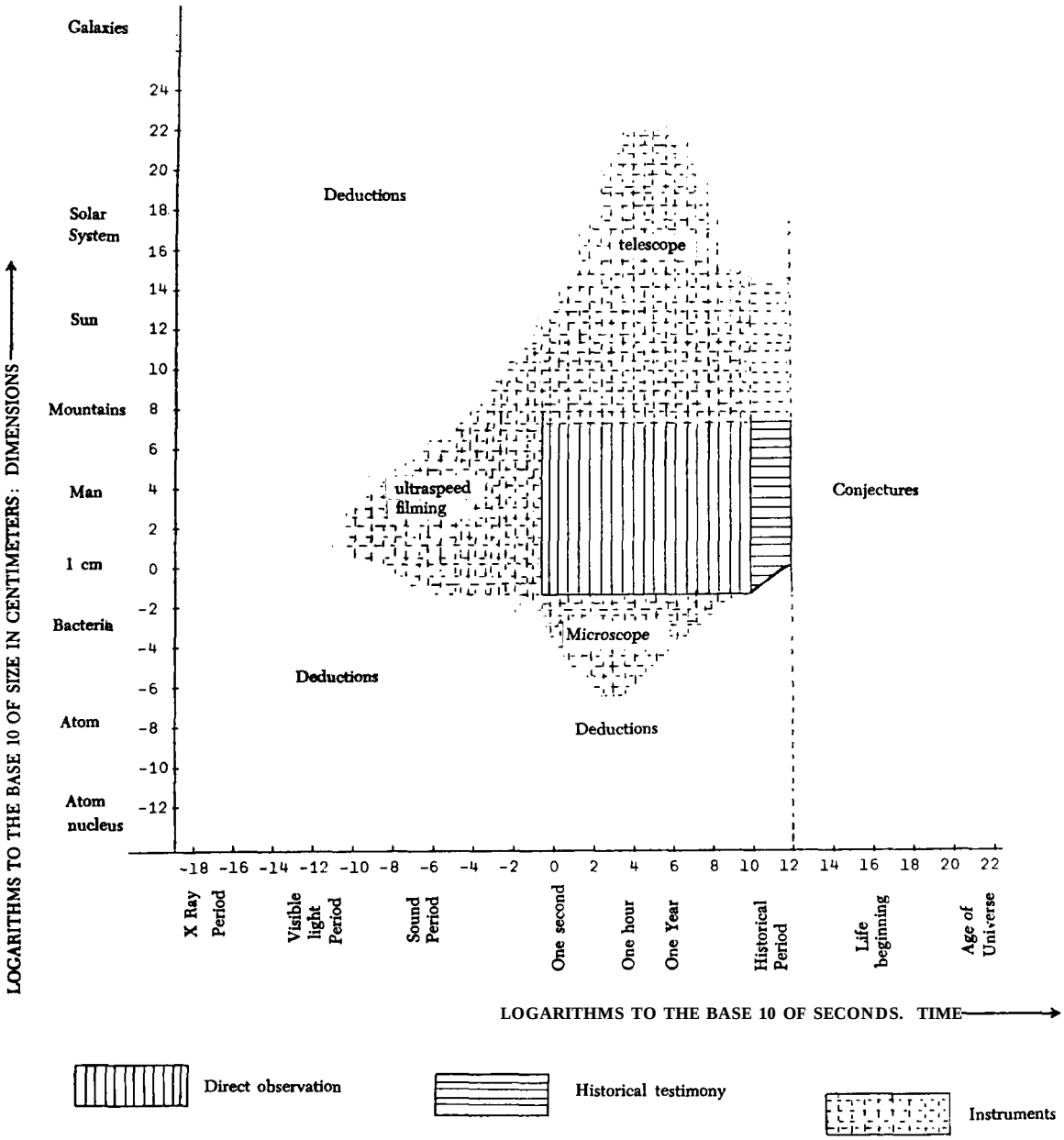

Figure 1. This figure represents sources of our knowledge and understanding regarding structures and phenomena and their relation with time and size.

The representation involves logarithms to the base 10 for time in seconds on the X axis and logarithms to the base 10 for size in centimeters on the axis of Y. The plan thus defined can be divided into five areas in correspondence with procedures utilized to acquire knowledge.

The first zone corresponds to sensorial knowledge which includes sizes ranging from 0.1 mm to a few thousand kilometers, and time intervals from one second to the life span of the observer.

Within the second area the sensorial capacity is increased by means of the use of instruments such as microscopes, telescopes, ultraspeed filming, etc. Limits of this area are changeable, and are in constant advancement as a consequence of technological improvement.

Beyond the area of instrumental observation there is another area which can be rendered by the application of deductive methods which are more or less reliable.

In the case of phenomena of duration extending beyond the life span of the observer, one has to resort to the testimony of trustworthy men. Therefore, a new zone is defined and limited obviously to the historical period.

At the right hand of this zone, that is to say in the case of phenomena of duration beyond written history, one can only guess about the way the phenomena occurred. It is within this "zone of conjecture" that the pretended biological evolution is placed.

In historical analysis, it is quite unsound to suppose that events which occur most frequently now are necessarily those which happened in the past. Yet, ironically for the evolution theory, if one were to attempt a theory of evolution based upon the notion of probability, he would be surprised to discover that natural events demonstrate *fixity of biological types,* and provide little or no *basis for transformism!*

Knowledge of the Past

If man really wishes to understand those aspects of the past which are not iterative, the only valid system (as historians know) is through the testimony of intelligent and trustworthy witnesses. It is in this way alone that one may acquire a knowledge of the detailed history of humanity.

Such specific knowledge cannot be attained by logical deduction for deductions are always prone to discussion and revision. The more sweeping a deduction becomes, the more likely it is to be inexact in a particular instance. In the domain of history, then, witness is the information of choice.

Fortunately we have available for study regarding the origin of living beings, a secure source of information. This is the revelation as it appears in the unchangeable Sacred Scripture. This revelation informs us concerning the origin of living beings and of humanity in a schematic but clear and precise manner.

Yet the theory of evolution is, at present, quite fashionable and is admitted as an unquestioned dogma, by numerous scientists. Some dare say, against logical reasoning itself, that evolution is not a matter of theory but of scientific fact. The falsity of such assertions appears when one considers the limitations of human knowledge regarding past events.

Proponents of naturalism, who do not allow any act of God in the world, do not accept the idea of the creation of man, and has put forward a number of more or less fantastic suppositions and hypotheses. Some of these are ridiculous, such as the one proposed by the Stoics who thought that the first men were born out of the earth, spontaneously, in the fashion of mushrooms! Monists, on the other hand, willingly admit that man is the result of chance, which would involve the possibility that atoms combine to yield more and more complex structures. They assert that at the end of many millions of years man came into being from one of these combinations.

It is surprising to realize that the evolutionists, who are usually agnostics regarding such important matters as the immortality of the soul, abandon their agnostic position when referring to the origin of living beings! In the case of origins, it would be wiser for them to say, "we do not know," rather than postulate fragile, if not unbelievable hypotheses.

Theistic Evolutionism

A number of professedly Christian evolutionists give the same value (in certain cases greater value) to their scientific theories as to God's Word; and, they wish to adapt the meaning of the Sacred Text to their ideas and conclusions. They propose to interpret the clear narratives of the Bible so as to say, "God has insufflated a soul into a preexisting animal being, and by this act the first man came into existence."

To uphold these interpretations of the Sacred Text is simply and clearly to deny its worth. If in such an important matter the Bible can contain many gross errors, what will then be the value of all its other affirmations? Christian evolutionists virtually admit that their theories and conclusions are more worthy of faith than the Sacred Scripture. This is comparable to a situation in which a historian would give more importance to conclusions arrived at by him (out of vestiges) than to a document which is clear and faithful.

The Origin of Man

The Sacred Scripture tells us that humanity originated from a single couple: Adam and Eve. The Bible says that the first man was created and that God, by means of a mysterious operation, formed woman out of a part of man's body. This fact stresses the unity and uniqueness of the creation of man, independent of the animals.

The Bible view, which stresses the common origin of all humanity, is opposed by polygenism, which is based on the idea that the human race originated from numerous couples, without any relationship, and whose origin would have been ape-like animals in what are called "centres of hominization." It is important to stress that the Bible, being *monogenistic* for the human species is polygenistic for the animal species.

Yet some evolution-minded scientists would assert exactly the opposite thesis—that there is basically a *monogenistic* origin of all the animal kinds including mankind, and superimposed on this a *polygenistic* origin of the races of mankind. Except for their origin from the common gene pool of the animal species from which these human races presumably "evolved," they would have no close relationship. This is certainly quite different from kinship resulting from tracing all races back to Adam and Eve!

Here again the attitude is to give more importance to theories and provisional conclusions of conjectural men than to the straightforward statements of Sacred Scripture.

UNIVERSITIES AND COLLEGES HAVING THE CREATION POINT OF VIEW

WALTER E. LAMMERTS*

Figure 1. Left, Administration Building; Center, James White Memorial Library; Right, Theological Seminary.

Figure 2. Campus Health Center.

Andrews University, Berrien Springs, Michigan, is the "academic home" of Dr. Frank L. Marsh, one of the original Creation Research Committee "Team of Ten" from which developed the Creation Research Society in the fall of 1963.

According to a recent letter, Dr. Marsh is still actively teaching entomology, among other subjects, at the age of 70. Dr. Marsh, a pioneer creationist, is well known as the author of many books in this field of study. Among them are: *Evolution, Creation, and Science* published in 1947; *Studies in Creationism, 1950;* and *Life, Man, and Time, 1957,* with Revised Edition in 1967. Also he has published numerous articles in the six volumes of the *Creation Research Society Quarterly* and *Annual.*

Quoting from his October 7, 1969 letter:

> A unique feature of Andrews University is its cosmopolitan nature. The registrar gave me the opening report for 1968-69, and it shows a total college and up enrollment of 2061 students (1219 men and 842 women). The University also has a Laboratory school (kindergarten through senior high school) and the enrollment in this part is 725. Our students are from all 50 states of the United States, the District of Columbia, Puerto Rico, and the Virgin Islands. This enrollment also included college students from 67 foreign countries–from Antigua to Yugoslavia. This makes us quite a melting pot. We have just about every color in the rainbow, and no serious troubles.
>
> All classrooms stand squarely for special Creation as opposed to evolution.

The following information from the various catalogues he sent is of interest. Andrews University is located on a beautiful 700 acre campus near the banks of the St. Joseph river. It began in 1901 as the Seventh-Day Adventist Emmanuel Missionary College. In 1960 this college, the Theological Seminary, and school of graduate studies were united under one charter as a University. It is accredited by the North Central Association of Colleges and Secondary Schools, and also by the Michigan State Board of Education.

About 36 buildings, many quite recent in construction, house the various departments. Since only the science curriculum will be of interest for this article, only this part of the program will be outlined. Bachelor of Science degrees are given in agriculture, biology, chemistry, foods and home economics, mathematics, medical secretary, nursing, physics, and secretarial science. The school of graduate studies offers programs leading to Master of Arts degree in biological science, education, English, history and political science, mathematics, and music.

Dr. Asa C. Thoresen is head of the biological science department. Assisting him are Frank Marsh, Harold E. Heidtke, Ch. D. S. Johnson, and Leonard Hare, all having Ph.D. degrees in various fields of biological science. Harold Coffin and Richard M. Ritland have their Ph.D. degrees in paleontology and geology, and specialize in research in these fields though teaching in the biological sciences department.

Dr. Coffin contributed an article for the *Creation Research Society Annual* of 1969 entitled, "Research on the Classic Joggins Petrified Trees," which gives, in a most interesting manner, the evidence that supports the idea that these trees could only have been buried and petrified by rapid sedimentation.

Tuition, room, and board per quarter costs about $760.00, plus miscellaneous expenses of $75-$100.00 for each quarter. The usual college year consists of three quarters. Student loans at very low interest are available.

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COMMENTS ON SCIENTIFIC NEWS AND VIEWS

HAROLD ARMSTRONG*

The flight of birds, especially over long distances, has recently come in for some attention. In some experiments,[1] birds were set flying in a wind tunnel. By measuring their metabolism, the efficiency of their flight was studied. According to results, as might have been expected, flight is about the most efficient way of getting about, in terms of the number of calories of food energy needed to move a certain weight a certain distance. Apparently, swimming, however, can rival flying in efficiency in some cases. The whole article should be read.

Another set of remarks on bird flight are included in a review of the book, *Bird Navigation*, by G. V. T. Matthews.[2] The fact is, man does not know how birds navigate. The ability is partly hereditary, but is improved by experience. To some extent birds use landmarks, and birds' eyes are well suited to such navigation, as well as being possibly suited to estimating angles, etc., for celestial navigation.

The following is suggested as a possible explanation of bird navigation: God's original purpose was to have birds serve as messengers and couriers for men, and possibly, under man's supervision, for other creatures. Thus, He made them able to get about efficiently, and to find their way.

I do not suggest that the birds were able to speak our language (although some old books, such as the Book of Jubilees, say that that was so of animals, before the fall), but we, before the fall, were able to communicate with them. Such a state of affairs might be suggested in, e.g., Job 5:23—Also, Isaiah 11:6 mentions restoration of the original state of affairs. Note that we even still say, "A little bird told me'"; a saying as old as Ecclesiastes 10:20.

The fall spoiled the original arrangement, but birds continued to range all over the Earth. If the seas were smaller than they are now, and the climate more nearly uniform, then it was easy, although not necessary, for them to do so. After the flood, when the climates had changed, what had before been only a pastime (so to speak) for the birds became a way of life, for some kinds at least. Thus they began migrating and continue to do so to this day.

Organic Remains in Sediments

According to reports, by careful examination, it is possible to find traces of what could be organic material in almost any sedimentary rock, no matter how old; and that this shows that ". . . unicellular organisms were active as far back as 3,400,000,000 years ago."[3] The hope is mentioned of somehow finding traces of the origin of life.

Of course, it must be remembered that the organic materials are probably much more likely to be the remains of life than its forerunners. The extreme difficulty of being sure that samples have not been contaminated is mentioned.

Creationists might be interested in this, but we shall not be disturbed at the location of old remains. We know that life appeared only three or five days after the earth was created, so it is not surprising that most sedimentary rocks show remains of life. Moreover, had any been without traces of organic material, it would probably have been contaminated during the flood.

Nor shall we be troubled by the numbers of some kinds of creature that might have existed, e.g. the creatures which leave chalky deposits, when we consider some of the estimates that have been made about what would happen if some creatures multiplied without restriction. In all these matters, not only does the creationist viewpoint cause us no special difficulty, it actually works better than the uniformitarian theory.

An Idea on Methuselah

Methuselah is always interesting, both because of his long life and because his name sounds strange. Recently I saw an article[4] in which the author stated, in passing, that the name means "when he is dead it will be." (Or perhaps "come''?). This meaning seems possible, although a lexicon proposes "missile-man." The word, "it,"' of course, represents the flood. And, in fact, the flood seems to have come within a year of Methuselah's death.

The suggestion is made that Enoch, who was a prophet (St. Jude, 14) put a prophecy into his son's name, as Isaiah (Isaiah 7:3, and 8:3, 4), and Hosea (Hosea 1:4-9) did later. So before the Flood people had the testimony of Methuselah's name for nearly a thousand years; yet, for all that, they apparently did not listen when Noah preached righteousness.

Though this matter has no immediate scientific basis, since it has something to do with the flood, creationists might find the idea interesting.

One Faith Against Another Faith

Many reams have been written, and as much again spoken, about objectivity in science as a great virtue. Now a well-known philosopher of science, Michael Polanyi, has said that objectivity in science is an illusion.[5] Actually a person in science, as elsewhere, is influenced by his pre-

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suppositions. And scientific knowledge must always contain elements that involve tacit understanding on the part of the human observer.

Thus, creationists need not be troubled by the charge that we make our faith, which is not a scientific matter, part of the basis of our science. For we may be assured that everyone's science rests on bases which are partly net scientific.

The real question is whether the ultimate basis shall be the faith once delivered to the saints, or faith in luck? The one faith has upheld countless Christians throughout two thousand years; the other faith has been chiefly the downfall of gamblers. Remember that luck, as Butler pointed out, is what "selection really is."

Eyes and Ears and Physics

Once it seemed that physics, while sometimes burdened with other senseless dogmas, at least was not "infested" with evolution. Recently there seems to be an attempt to introduce evolutionary propaganda even into this subject area. True, it is about as appropriate as (to use an illustration by Sherlock Holmes) trying to work an elopement into a proposition of Euclid.

A recent book on physics–and it seems, on the whole, a rather good one—has, in the introduction to Chapter 22, on optics, the following: "There are reasons to think that the vertebrate eye . . . originated on the surface of the body, and that it was the most potent single factor in the rise and further evolution of the vertebrate phylum."[6]

First of all, this reference to the eye is irrelevant; optics is the same whether eyes "evolved" or how they came about. If the eye originated at all, naturally it originated on the surface; what use would an eye inside be? And what does "most potent single factor" mean? Physics can only lose by importing from evolution the habit of making vague sweeping statements which are either glimpses of the obvious or else could mean anything or nothing.

Authors of a recent rather long article involving acoustics[7] undertake to investigate the evolution of man's "line of descent" by investigating the hearing of tree shrews, opossums, monkeys, etc. However, all that really comes out of the discussion seems to be the idea that the bigger an animal is, the better it hears low frequencies; and that our hearing of high frequencies is poorer than that of many animals.

The first point would be expected by anyone who had ever seen a violin and a bass viol. The second does not make sense from the viewpoint of "natural selections," but could be readily explained by teleology, in that our hearing is matched to our speech, for which high frequencies are not very important.

Statistical Tests Questioned

In biology, we often see elaborate statistical tests of data, which are supposed to show whether or not certain data establish a certain conclusion. Often it is impossible not to feel that this is a case of swallowing the camel and straining at the gnat.

The more important, and often unanswered question is whether the data are really representative. Until that question is answered, the statistical tests may show something about the samples actually used, but they may show nothing about whether the conclusions reached in fact apply to the things to which they are alleged to do.

Now an article has appeared making just that point.[8] The author states, in fact, that the statistical tests of significance are often absurd, and prove either nothing or everything. The article is well worth reading.

Too Many Species Admitted

Some time ago, authors of *The Genesis Flood,* suggested that present estimates of the number of species of animal are hopelessly inflated, and that it is quite fallacious to identify species with Biblical kinds, and then on that basis to find fault with the account of creation, or of the flood.

Now a plant taxonomist says that, as for plants, ". . . only a small proportion of the new descriptions which accumulate in botany are really of hitherto unknown species. . . ."[9] In fact, it is stated that there are far too many divisions. The author mentions his suspicion that the same is true of animals.

Creationists might suggest that biologists would do well to join the creationist ranks, not only because the creationist view is true, but also because a general acceptance of that view, by reducing enormously the number of divisions, would make life easier.

Who Saw It Happen?

Quite a few commensurabilities in the motions of the various bodies of the Solar System are known. In a recent discussion of commensurability of the motion of Mimas and Tethys, two satellites of Saturn, the author argues that such a state of affairs could not have come into being more than 240,000,000 years ago; otherwise disrupting forces would have had too much effect.[10] This, of course, is a tiny time compared with the age that is commonly quoted for the Solar System. The usual way of explaining the difference is to say that the satellite was captured. But, at best, such an answer is conjecture; no one ever saw such a thing happen. The creationist account, on the other hand, runs into no trouble from these conditions. They were made so.

How Could It Be?

Investigators reported recently that lignite from Senckenberg, Germany, considered by the ordinary dating to be from the Miocene, contained both lignin and cellulose.[11] This was not at all expected. Is this not another of the many bits of evidence for a young earth? For it is not so hard to believe that these things may have lasted for a few thousands of years, but very hard indeed to believe that they have lasted for hundreds of thousands, or millions, of years.

Quotable Quote

". . . early great expectations for spectacular advances, such as a champion chess playing machine, have died down considerably, and given way to a sober contemplation of the very deep problems to be solved, even for the mechanization of the lowest levels of true intelligence. . . ."[12] (From a report on a conference on "intelligent machines.")

Continental Drift Criticized

The opinion that the continents have moved about during the ages is not universal and has been criticized recently.[13] Physicist H. Jeffreys says,

> . . . some protest must be made against the biased propaganda in favor of continental drift . . . there have been . . . statements containing the words "universally" or "unanimously." They are false. Many noted geophysicists are unconvinced. Some criticisms . . . are in two lectures of mine. . . . There is now overwhelming evidence for a law of imperfection of elasticity at small stresses that forbids convection and continental drift. . . .

One of Jeffreys' lectures in the *Quarterly Journal of the Royal Astronomical Society* (Vol. 5, p. 10, 1964) contains much good information. The author pointed out that the so-called fits of the continents one to another (e.g., South America to Africa), are really not very good. In this connection, one must guard against being misled by the projection (e.g., Mercator's) according to which the map is made. Moreover, shapes should be considered not only at sea level, but also for some distance down. As for the arguments from biology (e.g., the similarity of living things in the two continents) they do not necessarily show that the continents were once together. For it is well established that living creatures can be transported over wide stretches of ocean. And there are other arguments against the notion of drift.

Design Means the Designer

As is well known, in addition to protons, electrons, and neutrons, many other "elementary" particles have been identified. Most of the new ones have very short lives, which is perhaps why they are observed mostly under very special conditions.

A recent note[14] describes one man's attempt to collect all these "elementary" particles into some kind of organization. He assumes that the electrons, protons, etc., are made up of smaller (?) entities, (it seems doubtful whether these sub-units should be called "particles"). Also he has formulated some rules that state that some combinations should have different masses, some should be positive, some negative, some neutral, etc.

This is not the first time that such a scheme has been tried, but this account is more readable than some others have been. One unusual aspect is that the sub-units have been given, not German or Latin or Greek names, but Welsh.

These matters may interest readers in showing (if it is needed) that the old materialism of one hundred or so years ago, in which everything was due to atoms (conceived as being like buckshot but smaller, flying about at random) is dead, even though people talk as if it were still alive. Indeed, it could have been refuted long ago, on philosophical grounds, but apparently no one in the sciences tried to do so.

But such an opinion about atoms is as big a mistake as it is to suppose that single-celled creatures are simple. In both the cells and the (whatever we should call the things which are commonly called particles, but which are so complicated that such a name is really not appropriate), we can see evidence of a complicated and skillful design, which is evidence of the Designer.

Error on Creatures Is Error About God

> . . . meditation on the divine works is indeed necessary for instruction of faith in God. First, because meditation on His works enables us in some measure to admire and reflect upon His wisdom. . . . Secondly, this consideration (of God's works) leads to admiration of God's sublime power, and consequently inspires in men's hearts reverence for God. . . . Thirdly, his consideration incites the souls of men to the love of God's goodness. . . . Fourthly, this consideration endows men with a certain likeness to God's perfection. . . .
>
> It is therefore evident that the consideration of creatures (created beings) has its part to play in building the Christian faith. . . . The consideration of creatures is further necessary, not only for the building up of truth, but also for the destruction of errors. For errors about creatures sometimes lead one astray from the truth of faith. . . .
>
> First, because through ignorance of the nature of creatures men are sometimes so far perverted as to set up as the first cause and as

God that which can only receive its being from something else. . . .

Secondly, because they attribute to certain creatures that which belongs only to God. . . .

Thirdly, because through ignorance of the creature's nature something is subtracted from God's power in its working upon creatures. . . .

Fourthly, through ignorance of the nature of things, and, consequently, of his own place in the order of the universe, this rational creature, man, who by faith is led to God as his last end, believes that he is subject to other creatures to which he is in fact superior. Such is evidently the case with those who subject human wills to the stars. . . .

It is, therefore, evident that the opinion is false of those who asserted that it made no difference to the truth of the faith what anyone holds about creatures, so long as one thinks rightly about God. . . . For error concerning creatures . . . spills over into false opinion about God. . . . For this reason Scripture threatens punishment to those who err about creatures. . . .[15]

More on Atlantis

Ruins believed to be remains of Atlantis have been found a few miles off the coast of Bimini, Bahamas, under the ocean by M. Valentine of the Museum of Science and Natural History, Miami, Florida, according to a recent report.[16]

In the report the ruins are considered the result of a ". . . natural catastrophe of unimaginable scope and violence . . ."', that ". . . history has proceeded, not by gradual evolution but by cataclysmic evolution—tremendous natural upheavals which literally changed the face of the globe in the twinkling of an eye . . ."; and that it may be that ". . . civilization . . . reached heights even greater than those achieved today, only to be destroyed overnight. . . ."

It is suggested that the great cataclysm occurred about 12,000 years ago. Whether this time is taken just from Plato's account, or whether there is other evidence, is not very clear. Many readers would put the flood less than 12,000 years ago; yet the times are close enough to ask whether, if there was such an upheaval, it may not well have been the flood?

Further, it is suggested that survivors from Atlantis may have reached the Americas, and that this explains the connections between the Indians and the Old world, of which there is evidence in legends, artifacts, and linguistic clues.

At the time that the newspaper story was written, Heyerdahl was trying to sail his papyrus boat across the Atlantic, to show that men might have sailed across to people the Americas. As we know now, he was unable to complete his voyage. Yet he came close enough, surely, to show that it could have been done.

Incidentally, there surely need be no conflict, as has been suggested, between Heyerdahl's theories and those which involve a catastrophe. Both could be true: men could have reached the Americas on different occasions, for both reasons.

This whole matter of Atlantis, though, is a curious one. Apparently the only evidence is Plato's story in the Timaeus, where the account of Atlantis is ascribed to an Egyptian. As far as I know, no trace of the story has ever been found in Egyptian manuscripts.

If the story is genuine, one might wonder whether it might not be a very garbled story of the flood. I have never heard of a story of the flood, anything like the Biblical account, in the Egyptian literature; but those who are more familiar with that literature may be able to inform me better on this point.

There is one aspect, which, I think, has seldom been noticed, which causes some doubt about the whole story at Atlantis. Aristotle, in his Meteorology, Book 1, Chapter 14, discussed changes in the earth, and, in particular, the fact that where there is now land there might once have been water, or vice versa, The only examples given are of quite small and unspectacular changes.

Now Aristotle certainly knew the Timaeus; he referred to it in other works. Why, then, did he not refer to Atlantis as an example of changes between land and water? Is it that he believed the story to be a fiction, either on Plato's part or on the Egyptian's?

Of course, an argument from silence can never be conclusive; but it can carry some weight. Again, Aristotle, in the place mentioned, was taking a uniformitarian position; it could be that he did not want a catastrophic example. Incidentally, in the same chapter, Aristotle mentioned the Greek story of the flood, with which the name of Deucalion is associated. He seems to have believed that there was such a flood, but that it affected only parts of Greece and neighboring regions. So Aristotle was perhaps the first holder of a "local-flood" theory.

Be this as it may, is it not strange what a hold the story of Atlantis has on men's imaginations? The only evidence for it is a story which might well be an allegory; yet many believe in it, and it is a stock in trade of writers of science fiction. Yet the Biblical story of the flood, which is much better attested, is ignored. Is it that the story of the flood speaks of judgement, and ". . . they did not like to retain God in their knowledge . . ."? (Romans 1:28.)

Planets Are Alike; Unlike Earth

Some recent results of attempts to map the surface reflectivity of Venus by radar inter-

ferometry may be of interest.[17] It is reported that there seem to be ". . . circular features (which) have the size and appearance of lunar maria. . . ."

Recent unmanned rockets, which went close to Mars, have shown that the features of Mars are surprisingly like those of the Moon. Also, it may be noted that there are said to be on Mercury ". . . a few indistinct markings which show a curious resemblance to the canals of Mars. However, (the account continues), as far as we know it has never been suggested that there is a race on Mercury irrigating its crops with melted lead."[18]

There seems, then, to be evidence that all the "terrestrial" (which we can now see to be a not very appropriate name) planets and satellites of which we know are rather alike, and very unlike our Earth. Surely this would be a most unlikely thing, if all the planets came about by chance. Surely this shows a difference in design; the Earth was made to be inhabited, the other planets were not.

A Two in One Package

A British journal has reported, in one column, two things which are both interesting and disconcerting.[19]

In some experiments, rats were able to get food in either of two ways. One way caused another rat to get a shock; another way did not. Evidently, rats that had had shocks usually avoided causing shocks to others.

This would seem to show that, to some extent, these animals can feel pity. (And, moreover, do something about it.) Must we not blush, though, to consider that the rats, which were used in this experiment, evidently showed more pity than did the men who arranged it?

Some evidence was reported to show that dreams serve some useful purpose. Certainly it seems to be harmful to be kept from dreaming. Since the analogy of computers is all the fad now, it was naturally suggested that what goes on during dreams is some kind of "re-programming." A more homely analogy might have been "mental cud-chewing."

We believe that God sustains our existence. We believe also that He has, from time to time, communicated with men through dreams. Is it not possible that these two things are connected? That dreams have something to do with God's sustaining action on every one of us, in the ordinary course of events; but that in special circumstances as well as a general sustaining there is more specific instruction?

In the hope of getting more information, it was suggested that people be deliberately deprived of the beneficial effects of dreams—and people with brain damage at that. *O tempera, O mores!*

On Speech and "Evolution"

Apparently Rhesus monkeys and other nonhuman primates are quite restricted in the vowel sounds that they can make.[20] For this reason, it is maintained by some researchers that there is little possibility that they could ever utter good human speech.

Some Christians have believed that speech, as we know it, is a distinct ability of man, and have used this point as an argument against "evolution."[21] The evidence just mentioned would be useful here; for according to evolution the nonhuman primates should be closest to human beings among the animals. But in this matter of speech it now appears that they are not really very close.

Is it not remarkable that the creatures coming closest to human beings in ability at speech are birds such as parrots and some others? No evolutionist would maintain that we are closely related to the birds. Is it to be said, then, that as the birds (or whatever "branched off" from them), "evolved" into primates they evolved a lack of ability to speak, and then as the primates "evolved" into men they evolved the speech ability?

Notice that it is immaterial to this question whether or not the parrots understand what they say; for it is the vocal organs that are being considered. Everyone would agree, though, that pets understand (in some sense) words which we speak to them; why, then, should they not understand words which they speak themselves? Not necessarily all words, of course; children often pronounce words that have meanings they do not know. And some people would be convinced that some of the words which parrots use mean something to them.[22]

There are legends and stories from many parts of the world in which animals are able to converse with human beings. Some people have thought that this was actually so before the fall, and such a statement is found in the Book of Jubilees, an old apocryphal book:

> . . . on that day (of the fall) was closed the mouth of all beasts, and of cattle, and of birds, and of whatever walketh, and of whatever moveth, so that they could no longer speak: for they had all spoken one with another with one lip and with one tongue.[23]

Indeed, such passages as Isaiah 11:6-9 suggest that this state of affairs may be restored in the Millennium. On this point, indeed, various views seem to be possible. But to say that some birds, alone of all creatures except ourselves, have retained some remnant of their primitive ability to speak seems as plausible as any other explanation of their ability.

One more remark on this matter. Is it not impossible that our ability to speak could have "evolved"? For while we were "evolving" (as evolutionists would have it), speech with our fellows, as we know it and as the most primitive tribes with which we are acquainted know it, would surely not have been important for our survival. In fact, we would have to have been men already before speech would have had much value. So how could it have evolved as we were doing so?

On the other hand, if there were first men in existence, in all or most respects except that of speech, there is still no reason why they should have evolved speech. A tribe of hunters, having no more ability at communication than that of a band of monkeys (or, for that matter, a pack of wolves), would likely still be successful enough to survive. Surely, then, the "evolution" of human speech is simply impossible.

On the Sense of Smell

There is some evidence that odors of various materials correlate with their patterns of molecular vibrations in infra-red frequencies." This may be of interest for two reasons. First of all, for my part, I remember seeing, long ago, in some book, the question: "is smell a wave in the air?" The answer given was: "no." Now, of course, it still is not a wave in the air in quite the way that sound is; yet in so far as it has to do with vibration (as now appears), and is borne through the air, perhaps it is a wave in the air, in a somewhat extended sense.

Of more importance is the fact, as mentioned in the article, that this may have to do with the extraordinary sensitivity of the organs of smelling. Apparently, since the mechanism is one of vibration, a tiny amount of the material can affect many of the receptors of smell. For the sample need not be adsorbed; it can pass over or close to many receptors, and excite them all.

This is clearly evidence of very good design; for the sense of smell, if it was to be of any real use at all, had to be very sensitive. As is true in so many other cases, it is difficult to see how it could have "evolved," for the receptors would have had to be just about perfect in function before they would be of any use at all. Again, the odors given off by things had to consist of materials such that it was possible to have a receptor that would detect them–almost another example of symbiosis.

In view of all these things, it is much easier to believe that the sense of smell, and the things to be smelt, were created as parts of one well-organized world, a world that was very good. And despite the fall, we can see that there is still much of the goodness left.

To Have Strife, or Not

Some recent studies show that hermit crabs can recognize individuals.[25] When several crabs were put in one aquarium, they fought at first, but after a while seemed to get along. But if another crab was added, the crabs already there would fight with the "stranger."

Beside being an example of ability which we might never have expected in a fairly humble creature, this may interest readers for another reason. According to Darwinian theory, "Strife is the law of life," because it leads to "survival of the fittest."

But there is more and more evidence that this is not so; that strife, if it occurs, is forced onto creatures by the circumstances of their life. It is said that much the same thing has happened among human being, e.g. in concentration camps. But strife just for strife, no.

Incidentally, a philosopher might maintain that the phrase "strife is the law of life" is nonsense. For "law" is some kind of order; "strife" is disorder; thus to say that "strife is the law of life" is to utter a contradiction.

Aging: Due to Mistakes or Damage?

Some discussion of aging, at a conference held a short time ago, may be of interest.[26] Certain men, such as R. Holliday and L. Orgel, have a theory that aging comes about because of mistakes in the synthesis of proteins, and that after a time the mistakes accumulate catastrophically.

An analogy to these concepts would be if a machine shop had to keep building machines to replace those which wore out. Because of tolerances, play in the machines, etc., each generation of machines would be a little worse than the previous one. At last all inaccuracies would build up suddenly, and the shop would be useless.

Others, such as M. Smith, suggest that what happens is just an accumulation of damage in the "irreplaceable structures," and he offers some evidence to show that much protein remains for the whole span of life. (At least, as far as fruit flies are concerned. It is not clear whether the same theory is supposed to apply to creatures which live much longer.) An analogy to this would be if, when certain especially important tools in a machine shop wore out, there were no way of replacing them.

This may be of some interest to creationists, especially if we hold that, had it not been for the fall, there would have been no death in the world, either among men or among the other animals. One thought, seldom introduced in this connection, seems to support such a view; namely, the fact that, under the Old Testament system, sacrifices of animals could be offered to atone for sins. In effect, the animal died in place of the sinner.

Now this would seem more appropriate if men and animals had originally be on the same footing; i.e., if they would not have died at all had it not been for sin. If this is so, then it would seem that the theory of accumulated damage is more likely. For then God did not make His creatures with a built-in cause of death, which is a logical implication from the theory of mistakes. Rather, they could have been immortal.

There would, no doubt, have been accidents, i.e., damage; but probably God would have repaired such damage as the need arose. For He has done just that, in many of the miracles which are recorded. Or maybe, an interesting thought, He would have had us do it for one another.

There is, perhaps, another argument in favor of the theory of damage. For if mistakes accumulate in a creature, surely some of them would be passed on to the next generation. Thus they would accumulate, not only for a lifetime, but also from generation to generation. In that case, the race would have deteriorated hopelessly even in a few thousand years, let alone in the huge time periods that evolutionists demand.

It might furnish some evidence on this point to see whether the offspring of older parents have any more defects, on the average, than those of younger. I suspect that the answer would be: "Not to any great extent."

"Red Shift" Reconsidered

In talking of cosmogony, people often assume that the theory of the "big bang" can be accepted within question: that everything began with one huge explosion some billions of years ago. Creationists, for the most part, will deny the vast ages of evolutionary theory. However, creationists may "go along" with the theory to the extent of saying that, if anyone insists upon trying to interpret God's work of creation in a purely natural way (in which, of course, he deceives himself), a "big bang" is how it will look to him.

What is often not realized, though, is the immense amount of conjecture involved in these theories. The "big bang" concept seems to be based largely on the notion of an expanding universe; and this, in turn, depends on the Doppler effect, the "red shift," in which distant stars appear redder than, it is believed, they should. Distant stars "shift," according to accepted interpretations, because they are moving away from us, and the more distant stars are moving more quickly.

Now in the first place, the very application of the theory of the Doppler effect here may involve logical difficulties, as Dingle, e.g., has suggested. Also, the distances of the stars, except the closest ones, (and they are not important for the theory), are not measured directly, but are inferred from their brightness, etc. (Or even, possibly, from the very "red shift"). The danger of circular reasoning here is apparent.

It has been suggested[27] that the red shift may be an effect having to do with the propagation of light over vast distances, so that it does not necessarily support the concept that the universe is expanding, nor establish either the "big bang" nor "continuous creation." The argument, in terms of the theory of relativity, is highly mathematical. I myself believe that such an attempt is futile, that physical conclusions can not be derived from mathematical premises, but it is interesting to know what is being thought about in this field.

Is it possible that the red shift is somehow a vestige of creation; that when God made the distant stars with light already on the way to us, for reasons which we should understand if we knew more about the operation, He made that light a little redder?

More on Continental Drift

A recent letter has taken issue with the common opinion that "continental drift" is now an established fact.[28] In fact, it is maintained, that the evidence is not really very strong.

There are difficulties, The drift is supposed to fit in with spreading of the sea-floor. But if the floors of the Atlantic Ocean and of the Pacific Ocean are both spreading, where are the Americas supposed to be going? One might say that the floors pile up at the continental shelves, or slide under the continents. But there is evidence against either notion; and if either be true the spreading has nothing to do with the drift.

It is urged also that, when one talks of "wandering poles," it should be said that any evidence is for changes in the magnetic poles, not the geographical poles.

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BOOK REVIEWS

Old Testament Study Guides (Set of 15), by Darrel Kautz. Published by the Author, 10025 West Nash, Milwaukee, Wis., 53222. Each guide 22 pages (8½" x 11"), 1969, 85¢.

REVIEWED BY JOHN C. WHITCOMB, JR.*

Although this series of 15 study guides will eventually cover the entire history of the O.T. (ten are now available), members of the Creation Research Society will find the first two guides of special interest, for *they deal with the doctrine of creation and the flood in a refreshing and God-honoring way*.

Mr. Kautz received his B.S. from Concordia Teachers College, River Forest, Ill., and his M.A. from Lutheran School of Theology in Chicago. His primary audience will doubtless be Lutheran, but the quality of his work will doubtless gain for him a much wider hearing.

Guide #1— God's Creating Activity

The first study guide deals with the first two chapters of Genesis. The days of creation are accepted as literal, and events of each day are helpfully explained. The second main section, "Seeing Relationships," contrasts the Biblical record with ancient mythology, and some modern myths such as organic evolution and "theistic" evolution. For laymen who are looking for a concise and dependable introduction to such Bible and "science" conflicts, this material will prove valuable.

The reviewer would question the concept that the planets were in existence on the first day, but not the atmosphere (p. 5). In the light of Job 38:7, it should also have been pointed out that angels were created early in the first day. Kautz connects the events of Psalm 104:6-9 with the third day of creation (p. 6), but the 9th verse obviously refers to the rainbow covenant of Genesis 9, thus identifying the three previous verses with the flood of Noah's day.

Guide #2— Man's History from Adam to Abraham

The second study guide begins with the fall of man into sin, concentrates on the universal flood and its geologic effects, and concludes with a study of the age of the earth and of mankind. As in the first guide, a section on New Testament anticipations, thought-provoking study questions, and suggested readings and projects are included. Excellent photographs add to the attractiveness of the publication.

In spite of Gen. 9:6 and James 3:9, Kautz states that the image of God was lost at the fall (p. 4). On the admittedly controversial question of the identity of the "sons of God" in Genesis 6, he holds that they were the righteous descendants of Seth (p. 6).

The reviewer finds it difficult to understand how the "Nephilim" of Numbers 13:33 (ASV) could have descended from those before the flood (Gen. 6:4 ASV), if only Noah's family survived the flood (p. 18). Nor can the rare glandular giants of the present day be examples of the ancient Rephaim (Deut. 2:11, 20 ASV), for the latter were genetic, not glandular, giants.

In each of these two guides, the reviewer found keen insights and helpful documentation to illuminate the sacred page of Scripture. It is to be hoped that many thousands of God's people will benefit from these introductory studies, and will be encouraged to stand firmly against any compromising positions with regard to the full historicity and stupendous importance of the first eleven chapters of Genesis in our day of materialism and unbelief.

The Case for Creation by Wayne Frair and P. William Davis. Moody Press, Chicago, 1967. Paperback, 95 cents.

REVIEWED BY DUANE T. GISH*

This is an excellent little book (about 81 pages). Due to its brevity many areas of evidence are

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only touched upon and ethers are neglected entirely.

What the book does contain is very good, and fulfills the purpose, as stated in the preface, to show that evolutionary doctrine does not constitute an established fact and to present an alternative position designed to challenge concerned persons to discover a more adequate explanation for the origin of living things. The authors have included in the first two chapters some excellent material that is foundational to a discussion of origins.

The approach of Frair and Davis to the interpretation of Scripture is a very sound one, namely, that Scripture must be allowed to speak to man and that man must not presume to dictate to Scripture. They do not attempt to interpret the Bible in such a way that it speaks the language of present day geologists and biologists. They maintain that such an attempt would be merely seeking a graceful way to surrender.

Following the above approach, Frair and Davis feel that the clearest and simplest rendering of appropriate biblical passages is that the days of Genesis were 24-hour days and that these days reflect the temporal order of creation. They show that there is no contradiction between the creation accounts given in Genesis 1 and Genesis 2. I have often pointed out that the order in which I record an experiment in my laboratory notebook (the temporal order) may or may not be used when the experiment is described in a publication, yet there is certainly no contradiction between the two reports.

All of us, when we attempt to present a case on a controversial question, like to emphasize the area of evidence in which we feel most competent or which we feel to be the most important. In the final analysis, I feel that to determine, solely on a scientific basis, whether the origin of living things can be accounted for by an evolutionary process must be decided by an examination of the historical record, that is, the fossil record. All else is supplementary.

When the fossil record is carefully and critically examined, it offers tremendous support for special creation. Frair and Davis share this conviction, stating (on p. 34) that "viewed as a whole, the fossil record reveals one of the strongest supports for creation."

Unfortunately, these authors devote a total of less than four pages of their book to this area of evidence that is so damaging to evolutionary theory. They do emphasize the fact that gaps between major grades of organization are systematic throughout the fossil record, and state their conviction that these gaps exist because a certain limited number of kinds of organisms were created, as recorded in the book of Genesis, These kinds were separated from other kinds by gaps and subsequently diversified to become the numerous organisms we now know either as fossils or living things.

In answer to the argument that similarities among living things indicate a common ancestry and thus support evolutionary theory, Frair and Davis offer the equally credible argument that God created basic phylogenetically unrelated organisms (the "created kinds" of Genesis) that diversified to give rise to the vast array of extinct and living organisms. Similarities exist because of a *common creative plan or design* according to which basic organisms were created.

Also included in the book is a chapter on the question of the origin of man. The authors concluded the chapter with the statement that "the evidence does not indicate a transitional series beginning with the lower primates and leading to human beings."

This book should be in the library of all who have an interest in the problem of origins.

Evolution or Creation, by H. Enoch. Evangelical Press, Fellowship House, 136 Rosendale Road, London S.E. 21. 1966. 172 pp. 15 Fig., p.b. Also available through Puritan Publications Inc., 25 W. High St., Carlisle, Pa. 17013 ($1.50)

Reviewed by GEORGE F. HOWE*

In the introduction to this work, Professor Enoch stresses one goal among others–to produce a scientific argument against the evolution theory for the people of India (his home country.) In the light of the many people of India, the keen interest in origins seen among Indian intellectuals, and the eminent qualifications of this author (M.A., F.Z.S., and retired professor of zoology, Presidency College, University of Madras), Professor Enoch has established a worthy objective. The book begins with a personal touch in the author's stirring commitment to faith in Christ, and the stalwart testimony to God, Scripture and creation presented by the distinguished writer of the foreward, Sir Cecil Wakely.

The book consists of 18 chapters, an appendix, and a bibliography. Each chapter is a short, crisp treatment of some facet of origins study. It consists of matters biological, geological, cosmological, moral, and theological in the wide variety of topics which include such chapter headings as: "Morphology," "Palaeontology, "The Age of The Earth and of The Universe," "Evidences from Blood Relationships," "Origin of Matter," "Evolution and Christianity," and many others. By direct quotation from out-

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standing men of science, the author has attempted to show in each unit that there are many evidences from nature which are not explainable by evolution theory, but which fit well with the Bible record of special creation.

Under "Morphology and Cosmogony" clear analogy is used to demonstrate that "likeness" in biology need not imply "kinship" or "relatedness." Concerning cosmogony, Professor Enoch argues that a universe which is "running down" must therefore have been created. In another "Morphology" chapter such perennial issues as the human coccyx, the human appendix, and the "vestigial limbs" of a boa are evaluated.

A concise chapter on "Palaeontology" asserts that there is an "upside down" condition of strata in many areas and that fossils appear to have been formed rapidly in the flood catastrophe. In this chapter and elsewhere the author adopts a "young earth" and "flood geology" position, defending them coherently.

Concerning the old question of how "light" could have existed before the sun, moon, or stars were created on day four, Professor Enoch inserts a refreshing quotation from John Calvin which suggests that the sovereign God created light before forming either the sun or the moon to show that He can impart light with or without the sun! (p. 42)

Paleontologists often claim that evolution becomes most obvious in the history of the vertebrates, particularly the horse. In language understandable by laymen and students alike, the professor punctures this choice transformist balloon! Furthermore, he asserts that the so-called "links" between amphibia, reptiles, birds, and mammals are in each instance simply members of one group or the other and are not "links" at all.

The experimental or genetic evidence (which is supposed to support evolution) is discussed with special reference to the writing of the geneticist H. Nilsson who concluded that mutations are "cyclic" (reoccurring within the species) and not progressive (leading to new species).

While speaking of disadvantages of the evolution theory, Enoch brings a heavy (but valid) indictment against the theory. Evolutionism, he claims, has led to blind alleys or wasted time and in some cases has led its apologists to practice suppression and falsification of the evidence.

In chapter 13 a clear and orthodox definition of special creation is enunciated–plants and animals were formed rapidly "after their kinds" in six real days. Professor Enoch includes the horse, the ass, and the zebra in the same "kind," and the lion and the tiger are placed together as part of the *Felis* or "cat kind." Although not all creationists will grant this much latitude to the "kinds" of creation, the author's concept is certainly plausible and does not transgress limitations implied in Scripture. The author uses hybridization as his test of where one "kind" stops and another begins:

> Hybrids between these "species" can artificially be produced but hybrids between the basic kinds created by God can never be produced. (p. 106)

In the reviewer's opinion this whole question of where the boundaries of "kinds" may lie is still unsolved, and more research on species hybrids is needed before a thorough creationist answer can be formulated. It is possible, for example, that the horse and the ass *were* two separate "kinds" and that there is some crossing possible (with sterility) between certain of the original "kinds," as Dr. Walter Lammerts has suggested.

Concerning fossil man and the man-like creatures (hominids) the author relates the astounding fact that fossils which resemble modern man are found as deep or deeper than the remains of forms which look more "primitive!" So many times a student will ask, "Where do the cave-men fit in the Bible record?" Professor Enoch's answer is instructive:

> Neanderthal men, etc., if they had any connection with our race, may have been degenerate specimens which devolved from Adam in the centuries between the Creation and the Flood. Or they and the other "hominids" were species which God did not see fit to preserve when He sent the Flood, just as He did not see fit to preserve the dinosaurs. (p. 129)

After the closing sections, the author inserts an appendix entitled, "Darwin's Recantation." Although this addendum will captivate the layman's attention, its documentation is (in the reviewer's opinion) uncertain at best. A quotation from a particular "Lady Hope" (printed originally in the Bombay Guardian, 25th March, 1916, no page number given) tells of Darwin's supposed interest in Christ Jesus, the Bible, and Gospel preaching towards the end of his life.

According to the quoted article, Darwin was also distressed at the implications of his own theory which people had made into a religion. Although this would be a fascinating bit of "Darwiniana," it is puzzling that no mention of such a "death bed confession" appears (to the best of my knowledge) in his autobiography or in various biographies.

Further historical analysis of this item is needed as it is regularly featured in certain tracts, pamphlets on evolutionism, and even in comprehensive books such as this one. If it is a valid glimpse of Darwin's last thoughts, we should verify it; but if not, we should either refrain from using it or hedge it with major qualifications.

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EVOLUTION THEORY AND THERMODYNAMICS

HENRY M. MORRIS*

QUESTION: "Can the theory of evolution be harmonized with the Second Law of Thermodynamics?"

ANSWER: One of the arguments which creationists have used effectively against evolution is that the evolutionary hypothesis of the development of the cosmos and of the present organic world is contradicted by the entropy principle, the Second Law of Thermodynamics. Evolutionists, however, have insisted that there is no contradiction and that both can be true.

Since this article is written from the point of view of Biblical creationism, it is well to let two leading evolutionists define the two concepts. Sir Julian Huxley, probably the world's leading modern evolutionist, has defined evolution as follows:

> Evolution in the extended sense can be defined as a directional and essentially irreversible process occurring in time, which in its course gives rise to an increase of variety and an increasingly high level of organization in its products. Our present knowledge indeed forces us to the view that the whole of reality is evolution—a single process of self-transformation.[1]

Thus evolution encompasses all reality: particles "evolve" into atoms and atoms into molecules and molecules into worlds and stars and galaxies; inorganic compounds "evolve" into living materials and these into more and more complex plants and animals and finally into man, who now presumably can intelligently control all future evolution.

The Second Law of Thermodynamics is also known as the Law of Increasing Entropy. The outstanding Princeton biochemist, Harold Blum, describes this law in the following way:

> The second law of thermodynamics has as one of its consequences that all real processes go irreversibly. . . . Any given process in this universe is accompanied by a change in magnitude of a quantity called the entropy. . . . All real processes go with an increase of entropy. The entropy also measures the randomness or lack of orderliness of the system, the greater the randomness, the greater the entropy.[2]

Thus, according to Huxley, evolution is a universal law requiring that all processes lead irreversibly toward an "increase of order." According to Blum, the entropy principle is a universal law requiring that all processes lead irreversibly toward a "decrease of order.'" Each is exactly the converse of the other! It seems obvious, therefore, that one of them must be wrong.

Since the Second Law of Thermodynamics is universally accepted as a basic principle governing all processes, has been verified experimentally thousands of times, and is consistent with all experience, there can be no doubt whatever that, if there is such a thing as a scientific law at all, this is it! The evolutionary philosophy, therefore, creationists insist, must simply be wrong.

However, evolutionists can point to two possible ways out of this difficulty. One is to deny the universality of the entropy principle.

Since man is quite limited in knowledge, and since he is able to make observations on only a very small part of the vast universe, he cannot be certain that the Second Law applies everywhere in time and space. Empirical measurements can never establish universal certainty.

This stricture is philosophically valid, of course. However, wherever and whenever the entropy principle has been subjected to scientific test, it has always worked, with no exception.

Though we cannot be absolutely sure that the total entropy of the whole universe is increasing, we can say that, wherever it can be scientifically tested, the entropy in any given portion of the universe is increasing. Universal evolution, on the other hand, requires that the degree of order of at least *most* portions of the universe must be increasing, but no scientific experiments have given any quantitative confirmation of this at all.

The other possible escape from the evolutionists' dilemma is to say that the Second Law only applies to so-called "closed systems." There may well be an increase of order in an "open system."

Thus, a baby grows into an adult, two animals may multiply into a population of thousands, man's store of acquired knowledge accumulates to tremendous proportions. Even in the inorganic realm, simple elements may combine naturally to form complex compounds, and molecules may grow into crystals of beautiful complexity.

All of these are open systems and their increased organization is derived from a source outside themselves.

The evolutionist correctly points out that the earth is an open system, continually receiving energy from the sun and that this can provide the basic source of power for maintaining the evolutionary processes and the ever-increasing order which it entails. The same argument could be extended to the entire solar system and presumably to any finite part of the universe. Since the Second Law of Thermodynamics applies only to closed systems, there is no reason why evolu-

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tion cannot take place in an open system such as the earth, This, in fact, is the device Blum himself uses for reconciling evolution and entropy.

The creationist answers, of course, that although this is possible philosophically, it still is contrary to all actual scientific measurements. Although it is true that the Second Law has to be formally defined in terms of an idealized closed system, it always has to be tested on open systems, because there is no such thing in nature as a truly closed system! And wherever the law is tested, it always works.

The entropy law therefore applies to open systems as well as closed systems. This is why no machine or process is 100% efficient, and why perpetual motion machines are impossible. This is why everything eventually wears out, runs down and dies.

Even those systems which seem to show increasing order for a time eventually lose out to the principle of decay. The crystal finally disintegrates, the adult finally dies, the population eventually stabilizes and finally disappears, the species becomes extinct, even great civilizations sooner or later perish due to outside conquest or famine or, perhaps, a nuclear holocaust.

Thus, every apparent increase of order and complexity is, at best, only local and temporary, and at the cost of greater disorder to the environment from which it extracts its ephemeral ordering energy.

And even such a local and temporary increase of order can only be accomplished by means of some intricate process provided for the system for this purpose: (1) The remarkable process of photosynthesis enables plants to utilize the sun's energy and thus to grow. (2) The fantastic processes of blood circulation, digestion, respiration and others of similar complexity enable animals and men to grow. (3) And both plant and animal life require the intricate coding and template structure of the genetic system for the maintenance of the species itself.

The infinitely greater increase of order implied in the evolutionary process must obviously require a far more wonderful and complex mechanism than any of these if it is to be even temporarily successful. But even after a hundred years of intensive study by thousands of scientists spending millions of dollars of research grants, the mechanism of evolution is still elusive.

The pathetic suggestion of (a) mutation (basically a disordering mechanism operating in full accordance with the Second Law), and (b) natural selection (a conservative principle which tends to maintain the status quo in nature) as the driving mechanism for the organic phase of evolution illustrates the desperate extreme to which men will go to escape the clear and satisfying evidence, both in nature and in Scripture, of the fact of a *completed creation*.

Thus evolution can be harmonized with the Second Law of Thermodynamics by *metaphysical speculations*, but all the *solid scientific evidence*, as well as the testimony of the *Word of God*, is against it.

References

[1]Huxley, Julian. 1955. Evolution and genetics (Chapter 8 in) What is science? (J. R. Newman, Editor). New York: Simon and Schuster, p. 278.

[2]Blum, Harold F. 1962. Time's arrow and evolution. Third Edition, Revised. New York: Harper Bros., pp. 14, 15.

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may easily lead to divisions which could hinder our witness.

Specific and detailed studies, such as these by Northrup and Shaw, when supported by an evident familiarity with the data, as these are, are extremely valuable, as long as they are developed within the clear framework of Biblical revelation. We trust that God will continue to raise up Christian geologists, anthropologists and others who can tackle these problems and further illumine God's testimony in the rocks in light of the testimony of His Word.

In the meantime, the future of Biblical creationism looks exciting! I believe we are fully justified in claiming the promise of Ephesians 3:20, 21: "Now unto Him that is able to do exceeding abundantly above all that we ask or think, according to the power that worketh in us, Unto Him be glory in the church by Christ Jesus throughout all ages, world without end. Amen."

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Shortcomings of the book are only minor. Most quotations given have bibliographical reference and page number included but a few do not. It is hoped that subsequent editions will provide complete bibliographic information (including page numbers) for all quotations. Then too, it would be of assistance to the more dedicated students if the bibliography (which lists only author and title) were to incorporate the date and publisher of each work listed.

Such characteristics as readability, compactness, breadth, Biblical orthodoxy, and unquestionable scientific accuracy will make Professor Enoch's book of great value not only to people in India (as was originally intended), but to the entire English-speaking world. Here is an inexpensive volume which combines an exhaustive argument for special creationism with an uncompromising presentation of the Gospel.

LETTERS TO THE EDITOR

These comments are in response to a Letter to the Editor by Emmett L. Williams, *Creation Research Society Quarterly*, 6(3):155. December, 1969.

Early philosophers, *e.g.* Parmenides, said that Being was one and unchanging-which was perhaps the first and most general conservation principle. Later Aristotle considered that something always comes from something else, which is in a sense conservation. In mechanics, we say that the total energy of a falling object is constant–this is another statement of conservation. But of course it goes beyond that when we deal with heat, etc.

Conservation of momentum follows from Newton's second and third laws; when two objects interact they interact on each other. Is this then a clue? There are conservation principles because, generally speaking, we always have action and interaction, so we can find some sum of the two which remains constant.

Could we extend conservation even to entropy and irreversible processes by an argument something like this? We say that disorder is increasing. But we could argue that the past is order, because it is determinate. The future is disorder, because it is indeterminate.

Thus, just by the "flow of time" (I do not believe that anything really flows, but let it pass), there is an increase in order–determinateness. On the other hand, there is an increase in disorder, as usually considered; and if we were to assign suitable weighting functions it might be possible to come up with a constant quantity. Do you think that there are any possibilities along these lines?

Incidentally, this matter of "order" needs to be defined carefully. Possibly not just as "uniformity," but rather as the dictionary has it "everything in its right place," "agreement with rules," in fact, we could mean in a way "resignedness. "

Signed,
HAROLD ARMSTRONG
4 Couper Street
Queen's University
Kingston, Ontario, Canada

A REPLY

Armstrong's comment on action and interaction is interesting; however, I cannot see how this can apply to "after its kind," which concept I mentioned in my letter of December. In fact this is the central problem we are trying to solve. Can "conservation of energy" and "after its kind" be combined into an unified statement?

Armstrong's letter is more concerned with possibly unifying conservation concepts in physical science rather than extending them to biology.

As for the comment on conservation of entropy and irreversible processes, something that is determinant; is not necessarily ordered. If we say that human knowledge is increasing and our knowledge about all things is greater now than it was years ago, we could imagine an increase in information. This is not an increase necessarily in the quality of the information, but just in information.

But this is not an increase in order. Armstrong is implying that order and information are synonymous. Thermodynamic entropy and information theory entropy are not the same. Possibly it can be said that the quality of the increasing information is constant. There is nothing new under the sun (Eccl. 1:9). But I don't believe we should try to combine this with thermodynamic entropy.

I agree that order needs to be defined carefully. Armstrong's idea of "designedness" is good. Order implies a regularly-repeated pattern. I prefer to define order at this point as created order. To me, order would be the way God created everything (Genesis 1:31), before sin entered through Adam and God cursed His creation.

However, this definition may not be useful because we cannot observe this order in a cursed creation. For instance, what would be an ordered arrangement of gaseous molecules? This may be an example where the term order is not properly used. This is a case where order must be carefully defined.

Signed,
EMMETT L. WILLIAMS, JR.
403 White Oak Drive
Greenville, South Carolina 29614

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upon the conflict between the theory of creation and the theory of evolution. If you wish to send gifts that will make this research possible, please send contributions to Professor Richard G. Korthals, Treasurer, 2678 Page Avenue, Ann Arbor, Michigan, 48104. Mark your gift for the "Research Fund."

Respectfully submitted,

LARRY G. BUTLER, *Chairman*
Research Committee

INDEX FOR VOLUME 6 OF CREATION RESEARCH SOCIETY ANNUAL AND QUARTERLIES, 1969-1970

Subscription year for the Creation Research Society begins with publication of *the Annual in June and continues through publication* of *three Quarterlies which usually appear in September, December, and March.*

All pages of the Annual and Quarterlies have been numbered consecutively; hence only the beginning page number is provided for each reference.

All Article and Book Reviews are listed in separate sections at the end of this Index according to titles.

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ment, he *had been absent* from school. He had *never taught the lesson* that set off the Monkey trial. (Emphasis added)

Even more confounding, as to the ethical nature of motives of those who sponsored the Scopes trial, is a much earlier revelation of this "strangest aspect of the case" as published in 1951 in the autobiography *(The Preacher and I.* New York: Crown Publishers, Inc.) written by Charles Francis Potter, an ardent supporter of Scopes and his "defense":

> The day we left, as the train whistled in the distance, Mrs. Potter said: "Johnny, I'd like to ask you one question before we go. You don't need to answer it if you think it would make trouble. But I wonder if you really ever did teach evolution in Rhea County High School?"
>
> Scopes quickly looked up at my wife with surprise and admiration and said, with a broad grin: "In the high school I'm science teacher, or at least I was. Taught chemistry and biology and such. But my hardest job is coach in athletics–football in the fall, basketball in the winter, and baseball in the spring. I was pretty busy. Sometimes we had to use the biology period for planning our plays, and I reckon likely we never did get around to that old evolution lesson. But the kids were good sports and wouldn't squeal on me in court."
>
> On the train I asked her: "How *did* you know?"
>
> And she replied: "Oh, I began suspecting something several days ago when Mrs. Rapp told me she overheard Darrow coaching the schoolboys what to say and what not to say on the witness stand. It took him a whole evening to get them letter-perfect."
>
> Someone has well said that woman's alleged intuition is eighty-five per-cent suspicion. (pp. 293, 293) JOHN N. MOORE

Our Society of research scientists representing various fields of successful scientific accomplishment is 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.

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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 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.**

Dues are $7.00 (Foreign, $8.00 U.S.) per year and may be sent to Wilbert H. Rusch, Sr., Membership Secretary, 2717 Cranbrook Road, Ann Arbor, Michigan 48104. Voting membership is limited to scientists having at least a Masters degree in a natural science. Sustaining non-voting membership is open to those who subscribe to the above statement of belief at $7.00 (Foreign, $8.00 U. S.) per year and includes subscription to Annual and Quarterlies. All others interested in receiving copies of these publications may do so at the rate of the subscription price for all issues for one year: $10.00 (Foreign, $11.00 U.S.).

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