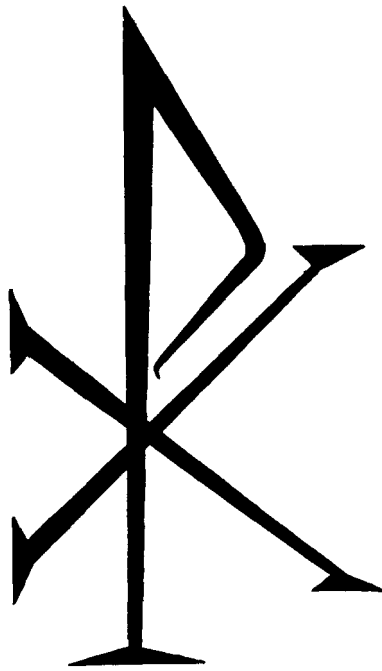


CREATION RESEARCH SOCIETY

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

I

Full-length articles in the first section of this quarterly span a wide range of themes including anatomy, biochemistry, diatoms, color patterns in butterflies, and legal action in Tennessee. It is hoped that these fine reports will encourage others to prepare and to submit creationistic papers for publication.

From a solid basis in both science and philosophy, Dr. Mennega addresses himself to the field of comparative morphology in the first article. He shows that the creationist position provides coherent explanations of such phenomena as homology, embryology, pharyngeal pouches, kidneys, and even the so-called "human tail."

The problem of "missing links" in the fossil evidence for evolution is recognized by evolutionists themselves. Dr. Butler brings notice in the second paper of another problem, one of missing intermediates—this time in the fascinating world of molecular biology! As is true in the realm of fossils, these missing biochemical "links" appear to be truly absent, and there seems to be little reason to expect that future study will fill the gaps.

Uniformitarians consider that the vast beds of tiny diatom fossils are a sure argument for immense intervals of time in their formation. The editor himself believed at one time that the great deposits of diatomaceous earth in southern California presented a serious obstacle to the "young earth" interpretation of geology. In the third paper, however, Dr. Northrup reveals considerable field and research evidence favoring catastrophic and rapid formation of beds of diatom fossils.

From current scientific literature, Professor Armstrong has discovered serious problems confronting evolution theory in such matters as bird metabolism, conditions on Mars, and color in moths. Information he relates in "News and Views" concerning the ionospheric chemistry of water may have some real bearing on the "canopy" view of pre-flood conditions above the earth.

Regarding teaching of biology in Tennessee, readers will find interest in information surrounding the recent demise of the "anti-evolution law." Certain events directly preceding this legal action and helpful comments are provided in a short article by Dr. Henning of Bryan College.

Professor Armstrong reveals some gross flaws in the usual evolutionary explanation of resemblances between a butterfly, which would provide good food for birds, and its poisonous or sickening "model," which causes birds to vomit

and later to avoid both types of butterflies. Evolutionists have assumed that the unsavory butterfly gradually arrived at its sickening status by natural selection and that the edible species also slowly became a "mimic" in color pattern.

Although this explanation in terms of "model" and "mimic" has a superficial tug at human logic, it entails many serious improbabilities for the devout evolutionist. It appears that words attributed to Sir Francis Bacon need to be heeded by evolutionists who would propose glib interpretations of "mimicry:" "Whatever the mind seizes on with peculiar satisfaction is to be held in suspicion."

II

Since many volumes have appeared in recent months on the topic of origins, from the pens of both creationists and evolutionists, the second portion of this issue is intended to provide review coverage for some of these books. As an organization chartered to publish research materials based upon the creation view, Creation Research Society does not as a group act to provide formal "approval" or "disapproval" of books.

Although the society follows a clear editorial policy in close keeping with its statement of beliefs, differences of opinion among members will arise undoubtedly concerning the relative merits of various books. Thus the reviews published here and in other issues of the journal do not necessarily represent either endorsement or criticism of the respective books by the Creation Research Society as a whole. Each review does constitute measured opinions of a particular reviewer, and we do hope that these scholarly comments about the volumes covered will be of value to our readers.

(The editor hereby solicits the assistance of others in analyzing books pertinent to origins—additional review coverage will be provided in future issues as space permits.)

In Letter to the Editor, Dr. Williams opens a dialogue with others who would like to write concerning a unified field approach to the combined topics of creation after its kind and the universal first law of thermodynamics.

It is well to close these editorial remarks by paying unreserved tribute to Almighty God, the matchless Creator. We recognize Him as the omniscient source of all the wonder and design we magnify in these articles or that we encounter in all our scientific study. To God be the glory, great things He hath done!

GEORGE F. HOWE,
Editor

OPEN LETTER

Dear Member or Friend of the Creation Research Society:

Results of the first research project funded by gifts donated to the Society for this purpose have already been published in the *Creation Research Society Annual*, 1969, Vol. 6, No. 1, p. 49. That project demonstrated clearly that evolutionary preconceptions concerning the geological record, at least for part of the Empire Mtns., Arizona, are not in agreement with physical evidences.

A modest sum remains available in the Research Fund to support other creation-oriented projects. Some requests have been received, but other proposed scientific research projects, for which financial support is needed for supplies and equipment, are welcome. Such requests should include a proposed itemized budget accounting for expenditure of requested funds.

We invite our members and friends, many of whom may not have time or facilities to undertake creation-oriented research themselves, to consider financially supporting this unique and urgently needed ministry. Most of us are painfully aware of the high cost of scientific research. As in all other C.R.S. activities, investigators receive no salary for their efforts, but all money donated is used to meet the expenses connected with the research.

Should you feel led to help in this way, please send all contributions to Professor Richard G. Korthals, Treasurer, 2678 Page Avenue, Ann Arbor, Michigan 48104. Mark your gift for the "Research Fund."

LARRY G. BUTLER
Chairman, Research Committee
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West Lafayette, Indiana 47906

COMMENTS FROM PRESIDENT MORRIS

Recently I had the opportunity of participating in a television panel discussion on the theme "Evolution and the Bible." An interesting reaction on the part of one viewer, a university professor, according to a friend who was present, was the incredulous exclamation: "You mean that man" has a Ph.D. and still believes in God!" He apparently was quite sincere in believing, with Julian Huxley: "Darwinism removed the whole idea of God—from the sphere of rational discussion."

A student in the college Sunday School class that I teach passed on to me recently the somewhat disconcerting information that his psychology teacher was referring to me in his class as "that nut in the engineering school who believes the Bible." Of course, various members of the geology and biology faculties here have for some time included me in their lectures—but psychology?

Last spring the instructor of our elective course in "Evolution" here asked me to speak to his class. He was quite courteous, and the 150 students listened with real interest, though with obviously rising blood pressures. The tension was relieved somewhat when I interjected the comment:

One reason I know that evolution is a religion rather than a science is because a lecture on the scientific evidence for creationism always elicits an emotional, rather than a scientific, response from evolutionists in the audience!

After class, I asked the instructor, who was on the graduate faculty in biology, whether a student who was fully qualified for a doctoral degree in biology in every respect, including a thorough knowledge of the arguments for evolution, except that he did not actually believe in evolution, would be recommended to receive his degree. He replied, in substance:

No—regardless of his knowledge of the facts of biology, a student who does not accept evolution is simply not qualified to work effectively in the framework of modern biological theory.

One other recent experience comes to mind. After a guest lecture to a high school honors biology class, an extended discussion followed with three biology teachers. Their argument continually reverted to their conviction that the observed biological variations of the present (industrial melanism, increased resistance of an insect population to pesticides, and the like) proved "evolution" to be a fact.

In antithesis, I continually insisted that the great gaps between the basic kinds, both in the present organic world and in the fossil record, as well as the complex template structure of the genetic code and the deteriorative nature of true mutations, required all such changes to be within highly restrictive limits which precluded any genuine "evolution."

Also, the biology teachers were entirely at a

(Continued on Page 155)

A CHRISTIAN PERSPECTIVE ON CHORDATE MORPHOLOGY

AALDERT MENNEGA*

Structure and function are intimately related, because they are rooted in the structural order of creation. Embryology and anatomy are both based on a basic structural and functional plan. How one interprets the morphologic data is determined by one's basic life commitment. Anatomic and embryologic data can be interpreted from the evolutionistic point of view, but the creationist's explanation provides an alternative which is consistent both with the confession that Jehovah is God, and with the world structure around him. Examination of phenomena such as pharyngeal pouches, kidneys, human tails and homology of organs provide a clear confirmation for biblical creationism.

Introduction

Chordate morphology is a broad study which is concerned with a number of aspects of the form and structure of those animals which have a backbone. Although histology, cytology, pathology, neurology and histochemistry are integral parts of morphology, only gross anatomy, comparative anatomy and embryology will be considered in this paper.

By abstracting certain structural aspects of the whole organism, a student of anatomy (G. *anatemnein*, to cut up) examines the structural composition of the body of an animal or man, at both gross and microscopic levels, while a student of embryology (G. *embryon*, embryo) analyzes development of an individual organism from conception through birth, and thus seeks to establish why and how parts of the body come to be arranged as they are.

Structure, Function are Intimately Related

It is generally recognized that a study of structure of animals and man is inseparable from consideration of the function of parts concerned. The function of an organ or part cannot be understood if its structure is not understood, while structural composition cannot be truly meaningful without understanding function. In other words, the two dynamic aspects, of structure and function, though distinguishable, are inseparable.

This close relationship between structure and function is based on the created structural order.¹ This is also demonstrated by the fact that an organism is not merely the sum of its parts. Each part, however, must be understood in the light of the totality of the organism, which is modally qualified by its biotic function.

Morphology Based on Structural Plan

All vertebrates share a fundamental morphological pattern and therefore resemble each other at least superficially, as, e.g., in the general distinction of the body into head, trunk and appendages. In this we recognize the presence of a basic plan according to which these animals are built, and as a consequence of which we expect

to find, and actually do find, a number of variations.

Gregory, although whole-heartedly dedicated to Evolutionism, speaks of "convincing evidence of the anatomical unity of the entire vertebrate series from shark to man," and again of a "manifestation of a morphological theme that has a thousand variations."² Romer also realizes this when he says, "Even in the early days of zoologic research it was recognized that within each major animal group there was a common basic pattern in the anatomic plan of the body."³

Anatomy Linked with Embryology

Studies of anatomy and of embryology are very closely allied in the sense that embryonic development of organs of an individual explains many conditions and relationships of these organs in the adult organism. Or in other words, embryology is a basis for the understanding of mature structures as they are encountered in the study of anatomy.

Ballard says that "a common basic plan of anatomy exists in all vertebrate embryos," and shows "how the processes of early embryology make sense in terms of this basic structural pattern." He also recognizes that similarities which we observe among the different vertebrate groups are based on variations of this basic plan when he says, "The anatomies of adult vertebrates are shown to differ as the result of trends discoverable in comparative embryology. Their similarities are traced to the common heritage of a basic design."⁴

Romer, too, recognizes that "within each major animal group there [is] a common basic pattern in the anatomic plan of the body," and that "any identity between homologies is based upon the identity or similarity of the developmental processes which produce them."⁵

Perspective on Morphology

Determined by life commitment

Underlying the study of morphology is a vast array of structural and functional similarities and dissimilarities on the basis of which animals are placed in certain taxonomic categories. However, not all biologists have the same interpre-

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tation of these data. Many modern biologists insist on interpreting all data of science from the premise that "organic evolution is . . . an unshakable fact."⁶

Acceptance of this premise is not merely an acknowledgement of a theory, involving only some matters regarding biological detail, and disclaiming any religious or metaphysical presuppositions. It is also a life commitment, an all-encompassing world-and-life view, which determines the outlook on every facet of life. Simpson and Beck show this clearly when they say, "The most general principle of all in biology is evolution. We have tried to make evolution as pervasive as it really is in the world of life. Every topic has its evolutionary background and aspects."⁷

Or, as Romer says, "One cannot make a comparative study of the vertebrates without formulating some general concept of the nature of evolutionary processes."⁸

The reader should understand clearly that Evolutionism is an all-pervasive dogma to which its followers are committed, not on the basis of facts, but as a matter of faith and heart commitment.

Whereas the study of vertebrate morphology is based on observed phenomena and is rooted in the created structures, and not in the mind of man, Ballard says,

The unique and priceless part of science is what comes out of the mind and has no material existence at all. Facts there become linked in significant relationships, and these are expressed in generalizations and abstract concepts. An edifice of internally consistent theory is constructed out of the abstractions, which makes a new sort of sense out of all the observed facts. At this stage there may finally emerge, almost miraculously, the power of prediction and control, which justifies the whole mental effort.⁹

Ballard fails to recognize, however, that our minds can only recognize orderly structure which is already present and that all generalizations and abstract concepts must be based on structures present in the subject of study. What really gives meaning to observed facts is that all aspects of reality are bound together in a coherent structure which unfolds itself subject to the Law set by the Creator.¹⁰

Antithesis evident in morphology

The antithesis between the Christian and the evolutionary position shows clearly, also in morphology, if we recognize that our evaluations, interpretations and perspective, which are determined by our previous heart commitment, have a determining influence on all our scientific activity. That is, our heart commitment will determine

whether we interpret all natural phenomena in the light of either the Biblical principle of creation by God, or the apostate theory of evolution.

The difference between Christian and non-Christian views of morphology also clearly bears out that our basic commitments in life have very much to do with how we interpret the data and in which perspective we see the natural phenomena. Smith says,

The "whole" that renders comparative anatomy greater than the sum of its parts is the pattern and meaning of evolution. However approached, comparative anatomy is in the end a study of the changes wrought in the chordate body with the passage of time, and an analysis of the significance of those changes.¹¹

Obviously he sees all this in the light of his pre-scientific commitment to the theory of evolution.

That observable phenomena are placed in a preferred framework of thinking consciously and intentionally can be seen by such revealing statements as made by L. Hyman: "I have included in the manual such materials as seemed to me to bear most directly on the story of the evolution of the various systems."¹² And,

I have also presented in connection with each system a very brief, generalized, and simplified account of the development and evolution of that system. It has seemed to me essential that such an account precede or accompany the laboratory directions in order to give a significance to the facts revealed by the dissection at the time when the student becomes aware of those facts.¹³

Yet the Christian perspective on these same observable phenomena is radically different from the non-Christian, but is not therefore unscientific. Christian biologists observe the same structural phenomena, and they have God's Word to direct them in giving meaning to all these phenomena.

Christian biologists know from Scripture, and accept by faith, that God created all animals, and that He still upholds them. Christian biologists see many similarities among different groups of animals, and through these recognize the basic pattern by which God makes animals to develop embryologically. And Christian biologists see this same basic structural plan fulfilled in adult organisms.

Rather than being led to think that similarity indicates a genetic evolutionary relationship between different groups of animals, the Christian recognizes the basic plan by which God makes all creatures to develop in their life time according to the laws He created for them, and we acknowledge Jehovah God to be the Designer of this plan.

The creationist position is often ridiculed by apostate scientists¹⁴ but it can be shown very clearly that this position is more tenable, is more in accordance with the actual phenomena, and leaves one with fewer antinomies and insoluble problems than the evolutionist position.

Homology

This advantage of the creationist position can be clearly demonstrated in the difference in perspective on one of the most fundamental concepts in comparative morphology, namely that of homology. Parts of animals are homologous when their anatomical structure and relations to other body parts are similar and when they have developed by similar processes from similar embryonic origin.

A classic example of homology is that of the arm of man, the wing of a bird, and the front leg of a horse, each of which develops similarly in the embryo, and in the adult stage has a number of bones, muscles, nerves, etc., which show great similarity in position and in structural detail. Although the functions of these forelimbs are quite variable, i.e., for fine manipulation, for flight, and for running, respectively, they are said to be homologies because they meet the above requirements.

Although recognition of these phenomena of the created world structure is quite universal, the perspective in which they are seen is very strongly colored by the basic commitment of the individual scientist.

Non-Christian perspective

Ballard, while agreeing with the above definition of homology, says,

The contemporary zoologist is ready to suppose that the homology is a product of divergent evolutionary trends from a structure in a common ancestor, and in exceptional cases he may see a direct confirmation of this in a sequence of fossils.¹⁵

This supposition, of course, is not based on the observed similarities, but is meant to give meaning to these similarities. But this meaning can be derived only from one's basic beliefs and broadest life experience. That Ballard is not unaware of this is evident when he says,

The entire science of vertebrate morphology rests on the concept of homology. It is an interesting situation therefore that this concept resists a strict definition in any known terms, and the detection of homologies involves some subjective elements of personal decision and some frankly insoluble problems.¹⁶

This coloration by basic commitment is more obvious when Romer says,

With the acceptance by biologists of the principle of evolution in the 60's and 70's of the last century, real significance was given

to the concept of homology: the thesis that specific organs of living members of an animal group have descended, albeit with modification, slight or marked, from basically identical organs present in their common ancestor,

while he realizes that "any identity between homologies is based upon the identity or similarity of the developmental processes which produce them."¹⁷

Whereas Romer sees that homology is rooted in the structural order of the organisms, Simpson and Beck seek the cause for homology in genetic relationship: "Homology is correspondence between structures of different organisms due to their inheritance of these structures from the same ancestry."¹⁸

Still more dogmatic than the above is L. Hyman in her assertion that

the concepts of *homology* and *analogy* . . . are understandable only in terms of the principle of evolution. Homology is intrinsic similarity indicative of a common evolutionary origin.¹⁹

Although most authors are committed to Evolutionism in their interpretation of data, they are unable to deny that the real substance of comparative morphology is based on the observed structural order.²⁰

Implications of this view of homology on taxonomy will now become evident. In taxonomy there are two basic ways of making use of the principle of homology in classifying the vast array of different animals. The evolutionistic assumption is that the structural and developmental similarities between groups of animals are an indication of the genetic relationship through descent from a common ancestor, indicated by the term *phylogeny*.

Ballard says, "The members are considered to be relatives of each other because they possess in common certain structural features and developmental stages not shared by animals of other phyla."²¹ And again he says, "All modern systems of classification of vertebrates incorporate the conclusion that biological evolution has taken place."²²

Hyman, too, thinks, "that all animals are related to each other by descent and have become differentiated into distinct groups only through a gradual process of change."²³ Simpson and Beck put the cart before the horse when they say, "Modern systematics has learned that they have the same anatomical pattern because they belong to the same biological evolutionary population or group of populations."²⁴ At the same time, however, they hold that, "Homology is the anatomical evidence for degrees of relationship among organisms."²⁵

Christian perspective

When Christian biologists look at the animal kingdom they do not see the animals as genetically related through common descent but as created according to a basic plan, with a rich variety in which each animal is suited best for its peculiar environment. Because Christian biologists know that each animal group has been created after its kind,²⁶ the concept of phylogeny, which is a necessary corollary for the evolutionist, has no place in the views of Christian biology. Therefore, in the Christian perspective, in taxonomy classification of animals should be on the basis of their structural and functional similarities, much as Linnaeus saw it, and correctly so, in the 18th century. Such a classification will be rooted in the structure of creation, rather than be dependent on some concept which is the product of theorizing.

Recapitulation Theory*Apostate foundation*

In the study of embryology we find that some of the same problems and basic attitudes are encountered. At the basis of much modern embryologic thinking is the theory of recapitulation, sometimes called the biogenetic law of Muller-Haeckel,²⁷ which is often expressed in the epitome, "ontogeny recapitulates phylogeny."

The intent of this theory has been that "an individual in the course of its development passes through successive stages that approximate the series of adult ancestors from which it descended."²⁸ Many have seen that this is an untenable position. Arey concisely puts it as follows, "this doctrine goes beyond the facts."²⁹ Rugh goes further, and says that there are "innumerable exceptions to the general law of recapitulation."³⁰

Patten modifies the above theory to state, "In essence the law is that an animal in its individual development passes through a series of constructive stages like those in the evolutionary development of the race to which it belongs."³¹ Admitting its limitations, he tries to salvage the theory by saying that "if the biogenetic law is broadly interpreted, with due recognition of innovations and modifications, it is still valid and can be of great help in understanding both embryology and comparative anatomy."³²

Simpson and Beck say, "It is now firmly established that ontogeny does *not* repeat phylogeny. Ontogeny repeats ontogeny, with variations." But they add, "Phylogeny is a series of ontogenies. What is passed on from one generation to the next is a developmental mechanism. It is also the developmental mechanism that evolves."³³

Use of homology

Many so-called evidences are adduced in an attempt to strengthen the unifying theory of recapitulation, and much emphasis is given to the evolutionistic concept of homology, i.e., of similarity in structure and similarity in embryonic origin and development because of descent from a common ancestor. For example, the human "tail," the pharyngeal pouches (often called gill pouches), and the kidneys are said to be proof of phylogeny on the basis of homology. Patten says,

It is interesting that at this stage the human embryo has every bit as well developed a tail as the pig. The tail in our own later development normally undergoes regressive changes that leave us with only our symbolic coccyx. Occasionally, to the discomfiture of anti-evolutionists, this regression fails to occur and a human infant is born with a sizable and unmistakable tail.³⁴

And in regard to the pharyngeal pouches, Balinsky says, "their formation can only be explained as an indication that the terrestrial vertebrates have been derived from aquatic forms with functional gills."³⁵

Ballard points out that

Many elementary biology texts perpetuate an idea from the previous century, that the earliest vertebrates had only a pronephros, which now appears fleetingly in the embryos of all modern species but only remains functional in very primitive fishes; that there then evolved a mesonephros which superseded the pronephros in the modern forms and remains the adult kidney of present-day fishes and amphibia; and that finally there evolved a metanephros in the amniotes, which supersedes the mesonephros, the latter having been relegated to the minor function of a fetal kidney. This simple theory acquired its popularity at a time when embryological investigations, particularly of the anamniote groups, were not far advanced.³⁶

Proves unsatisfactory

These examples show that the concept of homology is used in the context of evolutionistic principles in order to explain the above mentioned phenomena. That this attempt proves unsatisfactory is indicated when Ballard says further,

The detailed record now shows that most if not all vertebrates have continuous kidney strips in which waves of differentiation and change of pattern occur. Time gaps and space gaps sometimes make convenient the description of particular sections as pro-, meso-, and metanephros, but often they allow other di-

visions. There are no phylum-wide diagnostic criteria that can define a pronephros, or a mesonephros, or a metanephros, though such definitions can usually be written for a species or an order or a class. Functional differences between kidneys may or may not be correlated with these subdivisions, and may occur between two kidneys which would be assigned to the same morphological category. There is not yet any adequate theory of the evolution of the vertebrate urinary system.³⁷

Rugh says, "The repetition of structures in various embryos indicates, then, the essential natures of the particular structures rather than necessarily a recapitulation of ancestral development." And again he says, "Modern embryology recognizes the similarities during early development. Whether these are circumstantial evidence of recapitulation or repetition is debatable."³⁸

Better account available

Arey shows that an embryologic explanation other than the evolutionistic explains the human "tail" very well:

The embryonic tail is at its relative maximum at the end of the fifth week when it is one-sixth the length of the embryo. During the succeeding four weeks it disappears from external view, partly through actual regression; moreover, the coccyx, which represents the remnant of a tail, recedes to a higher position in relation to the buttocks.

The embryonic tail has been known to persist and grow. Specimens as long as 3 inches have been recorded in the newborn, and one was reported to have become 9 inches long at 12 years. Most of these tails are soft and fleshy but a few have contained skeletal elements. Some tumors of the coccygeal region are attributed to the abnormal activity of residual primitive-knot tissue (the end bud).³⁹

Creationist alternative

If, then, the evolutionistic explanation of these observed phenomena is inadequate, do creationists have a better explanation? My contention is for the affirmative.

We need to recall the recognition of the basic plan which we discover in the development of most of the vertebrates. God has made all Vertebrata to perpetuate from generation to generation by means of the zygote, i.e., the single cell resulting from the union of the male and female gametes of the parents.

Each zygote must progress from the single-celled stage to the many-celled stage by means of cell division. This cell division occurs according to the structural laws which are part

of the created structure of the individual, and these structural laws, with possible variations, hold for all vertebrates.

Not only must the individual achieve the many-celled stage, but he must also differentiate into a particular individual which is basically the same as its parents. This process of differentiation tends to make the embryos of individuals from different taxonomic groups increasingly more different as they progress in their ontogeny (i.e., in their individual life development) toward the definitive adult form. This was already clearly recognized by K. E. von Baer in 1829. Unfortunately, his work has been obscured by Haeckel, who superimposed the evolutionistic presuppositions upon von Baer's findings. (Editor's note: Readers will find documentation of this point in *Creation Research Society Annual, 1969*, "Ontogeny Recapitulates Phylogeny" by Wilbert H. Rusch, Sr., pp. 27-34.)

When we compare, then, embryos of different species at different stages of development, we find that they change from the nearly identical initial stages, in which they consist of one or a few cells, to successive stages in which their appearance increasingly diverges and during which they increasingly take on the specific features of the definitive adult organism.

When we find, therefore, that the chick embryo at first develops a pronephros, which remains nonfunctional in terms of excretory function, we are not surprised to see that the pronephros does have a very definite function of a different nature. It has been clearly established that if the pronephros is experimentally prevented from developing, further development of the mesonephros and metanephros can not ensue, thus indicating the essential nature of the presence of the pronephros in the development of the normal kidney.⁴⁰

By the same token, the antievolutionist need not be discomfited by the appearance of a tail during the 6 mm. stage of the development of the human embryo. We readily grant the resemblance to the pig tail at a corresponding stage, but we cannot see any necessity at all to conclude on this basis that therefore the one must be descended from the other.

As Arey indicates,⁴¹ the appearance of the human "tail" is merely due to the fact that during the fifth week of development the vertebral column is at a more advanced growth stage than the surrounding tissues, and that as these other tissues develop, the tail bone is resorbed so that it is no longer very noticeable. This process is normal and must take place for normal development of that part of the body to occur. Inductors, cellular environment and genes are among the factors which are responsible for

regulation of this development. Consequently, if something goes slightly wrong at an early stage of development, anomalies may be expected, and they occur in many other parts of the body (just think of the limbless thalidomide babies).

Pharyngeal pouches are structures which are present in all vertebrates during early stages of development. In fish these pouches subsequently develop into respiratory organs of the adult fish, *i.e.*, the gills. In the embryos of reptiles, birds and mammals, however, these pouches do not develop into any structures resembling gills at all, but develop into organs which are structurally, as well as functionally, completely different from gills. Nor do these pouches in most cases become connected with the outside as gill slits of fish do. In the few instances where the branchial plate does perforate (as it does quite often in the first three pairs in the chick⁴²), the opening to the outside promptly closes again.⁴³

The presence of pharyngeal pouches during early developmental stages is essential for normal development, since in their absence a number of adult structures fail to develop. Ordinarily, the first pair of pharyngeal pouches develop into the middle-ear cavity and the Eustachian tube, the branchial plate forming the tympanic membrane. The second pair of pouches develops

into the tonsils. The third and fourth pairs of pouches give rise to the parathyroid glands and the thymus gland, and also to the postbranchial bodies which become imbedded in the thyroid gland.

Thus it is clear that pharyngeal pouches do not constitute any so-called proof for evolution, but confirm the theory, based on Biblical revelation, that a basic plan is used by God in which he makes use of similar embryonic structures which develop into various different adult structures, according to the structural laws which guide their development.

Conclusion

The Evolutionist tries hard to be consistent in his work with his basic starting point that there is no God. The Christian, on the other hand, starts with the confession that Jehovah is God, and then tries to explain the world in a way which is consistent both with this confession and with the world structure around him. We need not feel compelled to take over any part of the evolutionistic interpretation of data obtained. Should the creationist accept evolution as a fact because he feels that he is forced to do so in order to retain scientific respectability, he will someday find himself in the predicament of finally having accepted a theory which the unbeliever must eventually discard for lack of scientific evidence.

References

- ¹Torrey, T. W. 1967. *Morphogenesis of the vertebrates*. Wiley & Sons, Inc., New York, p. vi.
- ²Gregory, W. K. 1963. *Our face from fish to man*. Hafner Pub. Co., New York, p. 26.
- ³Romer, A. S. 1962. *The vertebrate story*. W. B. Saunders, Co., Philadelphia, Pa., p. 9.
- ⁴Ballard, W. W. 1964. *Comparative anatomy and embryology*. Ronald Press Co., New York, p. iv.
- ⁵Romer, *Op. cit.*, p. 9.
- ⁶Smith, H. M. 1965. *Evolution of chordate structure*. Holt, Rinehart and Winston, Inc., New York, p. 3.
- ⁷Simpson, G. G. and W. S. Beck. 1965. *Life: an introduction to biology*. Harcourt, Brace and World, Inc., New York, p. vi.
- ⁸Romer, *Op. cit.*, p. 10.
- ⁹Ballard, *Op. cit.*, p. 33.
- ¹⁰Van der Laan, H. 1966. *A Christian appreciation of physical science*. Association for the Advancement of Christian Scholarship. Available from Tomorrow's Book Club, P. O. Box 10, Station L, Toronto 10, Canada, pp. 17-21.
- ¹¹Smith, *Op. cit.*, p. 1.
- ¹²Hyman, L. H. 1962. *Comparative vertebrate anatomy*. University of Chicago Press, Chicago, p. vi.
- ¹³*Ibid.*, p. v.
- ¹⁴The entire book of Gregory (*Op. cit.*) is permeated with ridicule. See also Simpson and Beck, *Op. cit.*, p. 491, where the theistic approach of Linnaeus is criticized from the viewpoint of modern evolutionism.
- ¹⁵Ballard, *Op. cit.*, p. 43.
- ¹⁶*Ibid.*, p. 45.
- ¹⁷Romer, *Op. cit.*, p. 9.
- ¹⁸Simpson and Beck, *Op. cit.*, p. 494.
- ¹⁹Hyman, *Op. cit.*, pp. 3-4.
- ²⁰Cf., *e.g.*, Ballard, *Op. cit.*, p. 43; also Simpson and Beck, *Op. cit.*, p. 495.
- ²¹Ballard, *Op. cit.*, p. 23.
- ²²*Ibid.*, p. 38.
- ²³Hyman, *Op. cit.*, p. 5.
- ²⁴Simpson and Beck, *Op. cit.*, p. 493.
- ²⁵*Ibid.*, p. 495.
- ²⁶Cf. Genesis 1:21, 24, 25.
- ²⁷Balinsky, B. I. 1963. *An introduction to embryology*. W. B. Saunders Co., Philadelphia, Pa., p. 9.
- ²⁸Arey, L. B. 1963. *Developmental anatomy*. W. B. Saunders, Co., Philadelphia, Pa., p. 7.
- ²⁹*Ibid.*, p. 7.
- ³⁰Rugh, R. 1964. *Vertebrate embryology: the dynamics of development*. Harcourt, Brace & World, Inc., New York, p. 520.
- ³¹Patten, B. M. 1964. *Foundations of embryology*. McGraw-Hill Book Comp., New York, p. 8.
- ³²*Ibid.*, p. 10.
- ³³Simpson and Beck, *Op. cit.*, p. 240.
- ³⁴Patten, *Op. cit.*, p. 275-276.
- ³⁵Balinsky, *Op. cit.*, p. 9.
- ³⁶Ballard, *Op. cit.*, p. 542.
- ³⁷*Ibid.*, p. 542.
- ³⁸Rugh, *Op. cit.*, p. 520.
- ³⁹Arey, *Op. cit.*, p. 203-204.
- ⁴⁰Cf. Arey, *Op. cit.*, p. 7.
- ⁴¹Arey, *Op. cit.*, p. 203.
- ⁴²Cf. Romanoff, S. L. 1960. *The avian embryo: structural and functional development*. MacMillan, New York, p. 440.
- ⁴³Cf. Patten, *Op. cit.*, p. 474.

A PROBLEM OF MISSING LINKS AT THE ULTIMATE PRIMARY STAGE OF EVOLUTION

LARRY BUTLER*

Often evolutionary theory has been criticized on the basis of missing links, but in rather imprecise manner. Research in molecular biology results in quantitative contradictions of chemical and genetic theories. A rationale for replacement mutations is now under serious strain due to detection of complete absence of intermediate forms of two alleles, i.e., missing links. Again ambiguity of evolutionary hypotheses is exposed in as much as such theories lack predictive value and thus are not truly scientific.

The concept of missing links is one of the oldest criticisms of evolutionary theory. In the past the criticism has perhaps been overused, with the result that those who wish to evade this issue have been able to ignore it or dismiss it because it is not presented in a rigorous scientific manner.

However, the validity of the criticism has not been successfully challenged, and is recognized by at least some evolutionists. A recent report¹ of missing links on the most fundamental, biochemical level of evolution recalls the criticism in a form which leads to an apparent contradiction of chemical and genetic theories concerning mutational mechanisms of evolution. Moreover, at this level the question of missing links can be stated in exact quantitative form.

The elegant studies of Neurath and his collaborators on the structural details of bovine carboxypeptidase A have demonstrated two different types of heterogeneity in the highly purified enzyme protein. The first type, with which we are not concerned here, is called the activation form, which arises due to cleavage of the zymogen precursor at different sites, yielding products which differ in the length of the polypeptide chain.² The other type of heterogeneity, allotypic forms, is a heritable trait which follows Mendelian genetics³, and the two alleles, which occur in approximately equal amounts, bear upon the question of missing links.

The Val and Leu forms, as the allotypes are designated, differ at three positions in the single linear polypeptides chain of the carboxypeptidase A molecule. The different amine acids which occur at these positions in the two forms are shown in Table I. The salient point of the observation, from an evolutionary point of view, is the critical fact that these replacements are linked; that is, each molecule possesses either all three amino acids of the Val set, or all three amino acids of the Leu set. There is no evidence for the existence of molecules which possess different mixtures of the replacement acids at the three sites.

Evidence Involves Protein Biosynthesis

The significance of this finding can be comprehended only with reference to evidence from molecular biology concerning the biosynthesis of proteins and the chemical basis for mutations. Present knowledge of these processes indicates that every amino acid in a protein molecule is ultimately specified by a sequence of three nucleotide bases in chromosomal DNA. The genetic code is now known, i.e., the amino acid specified by each triplet of bases has been determined.

A replacement mutation such as those observed here is a chemical event which alters one base in the DNA so that the resulting new triplet specifies a different amino acid at that particular position. Thus the proximal result of a replacement mutation is the replacement of a single amino acid in a particular position in a particular protein by another amino acid. The ultimate result may be death of the organism due to loss or alteration of some critical functions of the protein.

Although the code has some redundancy, not all amino acids can replace each other as the result of a single mutation; i.e. two or even all three bases of some triplets must be modified for certain amino acid replacements to occur. All three of the differences in the carboxypeptidase A allotypes, however, are single-mutation replacements.

Note that the current rationale accounts for one amino acid replacement at a time. Evolutionary theory presupposes that if the protein which has a single amino acid replaced (forming a new allele) confers some advantage upon the organism in which it occurs, it will eventually replace the original allele. Subsequent mutations could then eventually lead to alleles which differ from the original protein at additional sites, if they each conferred some further advantage.

There is no reason to doubt the validity of this process, since it seems to fit with observed facts and admirably explains minor variations within a species, although complete replacement of an allele might be obtainable only under severely selective breeding, as is done with domesticated animals.

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Table I

Allotype		Position	
179		228	305
Val	isoleucine	alanine	valine
Leu	valine	glutamate	leucine

Required Intermediate Forms Absent

However, when this process is applied to the observed alleles of carboxypeptidase A, the question of intermediate forms immediately arises. The two alleles differ at three sites, and according to this rationale a minimum of two intermediate forms must have occurred. One of these intermediate forms would be changed at only one site, and the other at two sites. Additional intermediates would be required if conversion were not direct, but involved an entirely different amino acid at any or all of the sites. However, the required intermediates have been definitively shown to be absent by recent work by Neurath.

Neurath and his colleagues have suggested in 1969 several alternative explanations for the evolutionary origin of the alleles, acknowledging that none of them adequately account for the two missing intermediates. For instance, they are forced to postulate that the three (or more) mutations occurred essentially simultaneously early in the supposed evolutionary development of the species. This postulate implies that after that original burst of mutational activity, no further alterations occurred even though the bovine species was supposedly evolving further by incorporating many other mutations.

The postulate further requires that there are absolutely no functional differences in the two alleles, so that there would be no population pressure for selection of one over the other. Both of these possibilities are extremely unlikely.

Other attempted evolutionary interpretations of the observed absences of intermediate forms are sufficiently criticized by the authors themselves.

The discomfiture of evolutionary theory at this fundamental level by precise, experimentally verifiable facts appears to this author to be devastatingly complete. As stated earlier, "micro-evolution" or variability at this level appears not to conflict with Biblical creationism, since limited changes are observed within a species, so the finding of missing links of this class was unexpected. The full significance of the observation may await further studies to determine whether it is a common occurrence. At any rate a new evolutionary "explanation" of the observation will no doubt be forthcoming, for past experience has demonstrated that evolutionary hypotheses can be made sufficiently imprecise to explain any conceivable situation, no matter how implausible. The ambiguity of such theories robs them of any predictive value and thereby renders them unfit to be classified as truly scientific.

References

- ¹Petra, P. H., R. A. Bradshaw, K. A. Walsh, and H. Neurath. 1969. Identification of the amino acid replacements characterizing the allotypic forms of bovine carboxypeptidase A, *Biochemistry*, 8:2762-8.
- ²Sampath Kumar, K. S. V., J. B. Clegg, and K. A. Walsh. 1964. The N-terminal sequence of bovine carboxypeptidase A and its relation to zymogen activation, *Biochemistry*, 3:1728-32.
- ³Walsh, K. A., L. H. Ericsson, and H. Neurath. 1966. Bovine carboxypeptidase A variants resulting from allelomorphism, *Proceedings of the National Academy of Science of the United States*, 56:1339-44.

THE SISQUOC DIATOMITE FOSSIL BEDS

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This paper provides a first hand report of diatomaceous earth beds located in the Lompoc area of Santa Barbara County, California. Although historical geologists have maintained that these beds formed gradually over vast periods of time, they actually provide striking evidence of catastrophic origin.

Here billions of delicately sculptured glass cell walls of diatoms have been deposited in such a way that fish were entombed with bones and even body organs intact. Some fossil fish studied were trapped so that they lie parallel to the bedding plane of the diatom matrix but many other fish extended across the bedding plane. The latter fish (standing partly "on end") must have been buried quickly or else the part not buried at first would have decayed long before it could have been covered by a diatom "snow." Fossils of various fish, sea birds, and whales also indicate that the diatom material was deposited rapidly and catastrophically rather than by gradual and uniform activity.

It is postulated that the original diatom supply was first formed in cool waters after the flood. A mechanism is proposed whereby the original diatom supply was redeposited at the Lompoc site during a postulated post-flood catastrophe involving continental movement in the days of Peleg (Genesis 10:25).

Introduction

One of the evidences commonly used in the classroom to imply necessity of extended geological chronology is the remarkable accumulation of diatomaceous earth in the Lompoc area of Santa Barbara County, California. Recently the author investigated these very extensive deposits to make a critical examination of the field evidences, suspicious that uniformitarian dramatization, oversimplification and distortion may have misrepresented the facts.

The student is usually told that these extensive beds, built up of the skeletons of microscopic, silica-collecting algae of the sea, are the normal result of the long, still, silent rain of death that is constantly taking place in the oceans today.¹ For this remarkable deposit (which extends from 200 feet below sea level² to more than 1,500 feet above sea level in places) to have attained this thickness, historical geologists estimate an accumulation period of from 33,000 to 1,500,000 years. This is estimated to have been between two and five million years ago.³

These estimates are based upon argument from the present rate of deposition, without any consideration of indications that this deposit is not at all an accumulation at present rates. It is simply a calculation based upon ocean basin deposition, which is variously estimated to be taking place at a rate from 1/500 of an inch per year to as much as 1/2 inch per year. On this basis, 66 foot samples from the Atlantic Ocean floor have been estimated to represent as much as 1,500,000 years.⁴

The deposition estimate for the Miocene Sis-

quoc formation, as these diatom deposits are called, is undoubtedly also based upon assumptions concerning fairly stable ocean temperatures and currents. Neither does it appear to take into consideration such factors as the diatom's recently observed reproductive spurts, reproducing by division among ice crystals in frigid sea water at -1.75° Centigrade.⁵

While the number of diatoms in the great oceans may reach as high as 100,000 per quart, this is dwarfed into insignificance by the noteworthy discovery of a phenomenal 6,330,000 diatoms found in a liter of sea water in the Kiev Canal in Russia.⁶ This multiplication in cold waters is one reason for the abundance of whales in the Arctic, since the diatom and the chain of life supported by it provides much food for the great creatures.⁷ (Editor's Note: Obviously, if during the ice age following the flood reproduction of diatoms were at the rate of those in the Kiev Canal, then the mentioned estimate of 1,500,000 years would be reduced drastically.)

It would be impossible, of course, for one to field-check abundance of diatoms in sea water of the Miocene epoch during which the bulk of the Lompoc deposits were supposedly made. Neither is it possible to estimate water temperatures during those deposits nor at the time the diatoms lived. These must be differentiated, for the diatom ooze was undoubtedly built up long before the event which brought this onshore deposit into being. Probably a good paleontologist could evaluate the types of diatoms found, and together with the evidences presented by the fossilized herring mackerel, perch, whales and even sea birds contained therein, form a reasonable estimate of water temperatures during both growth and redeposit.

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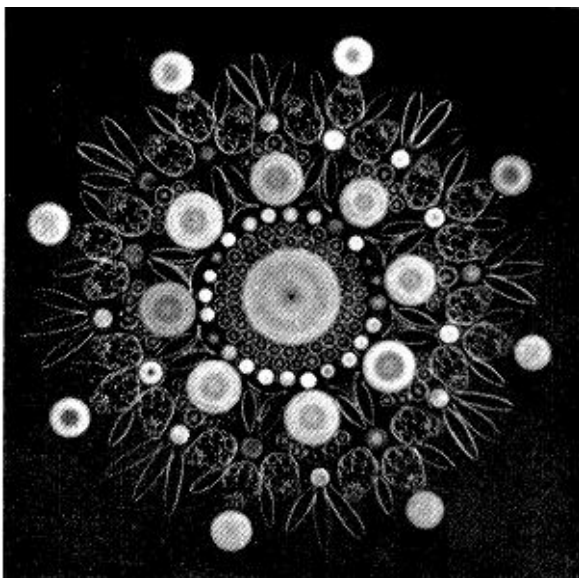


Figure 1. Enlargement of remarkable arrangement by J. Rinnbeck of 266 diatoms, scales and spicules (pin head sized). (Courtesy of Karl Dern.)

A field trip demonstrated that evidence was entirely and indisputably out of harmony with the normal classroom presentation, so much so that it reminded one of the story of Plato's cave.

According to the sage, an observer was fixed with his back to the mouth of a cave, knowing only those truths about the world outside which he could deduce from the shadows on the inner walls of the cave.⁸

I am convinced that reality in geological time has been grossly misrepresented on the walls of the contemporary science classroom by the deceptive shadows of evolutionary uniformitarian time values.⁹ At Lompoc this distortion is remarkably evident. The fossils that were trapped in the abrupt deposition which left this unique graveyard tell a story violently contradictory to the classroom interpretation. Every fossil found supports a denial that it had been buried at a geological "snail's pace."

Diatomaceous Beds Described

These deposits at Lompoc contain some of the world's most beautiful examples of fossilization. The researcher finds it easy to forget that entire mountains under his feet, glistening white, dull grey, very soft pink or occasionally nearly jet black in veins, are entirely composed of fossils. Because of their microscopic size, these little cell wall skeletons of purest glass, massed together inestimable quantities, simply appear to be a delicate chalk-like clay. Yet this dia-

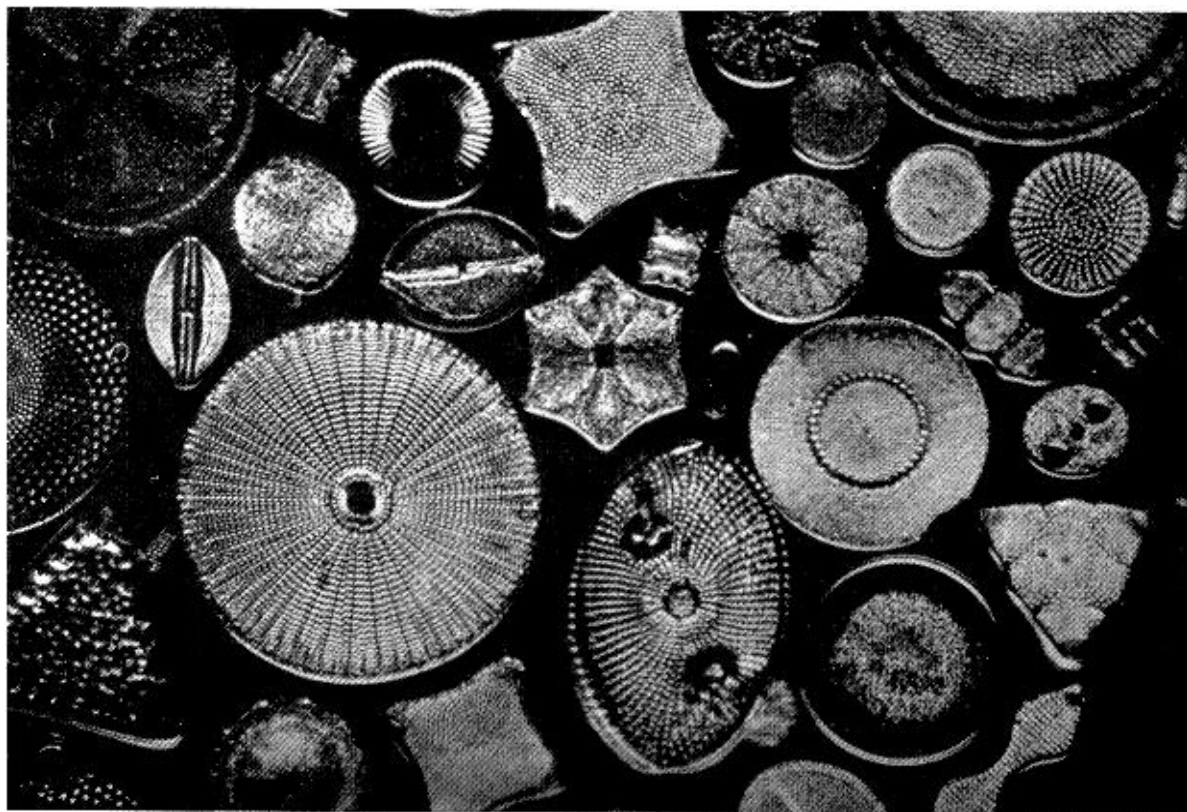


Figure 2. Photomicrograph of a collection of diatoms. (Courtesy of Horace Nelson.)

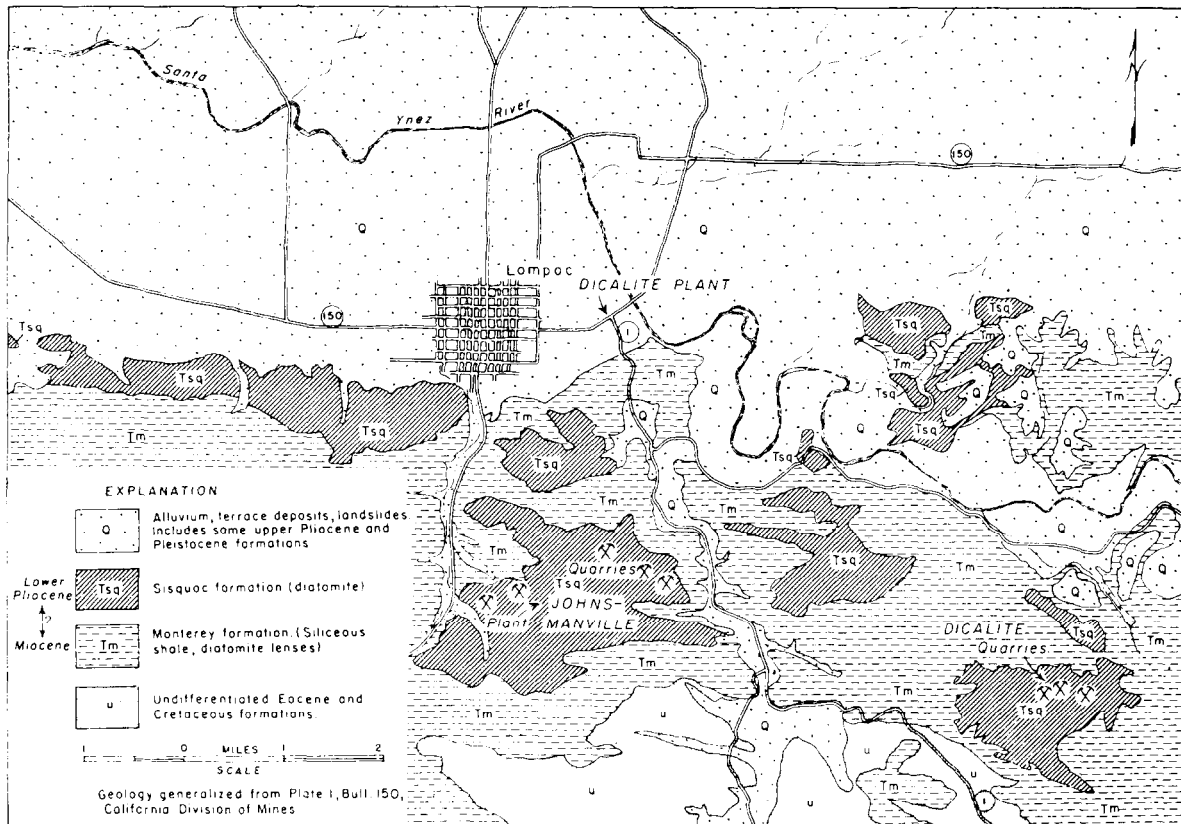


Figure 3. Geologic map of Lompoc area, Santa Barbara County, showing distribution of diatomite-bearing Sisquoc formation. From "Mineral Commodities of California" by O. P. Jenkins. Bulletin 176, California Division of Mines, December, 1957. Used by permission.

tomaceous earth is of a gently compacted mass that is often in the form of almost absolutely pure opal fossils.

The delicate individual size of diatoms is shown by photomicrographs of a diatom arrangement in Figure 1 (which also includes some scales of sea urchin and sponge spicules). This remarkable arrangement by Rinnbeck includes 266 separate items, although it is actually the size of a pinhead. It was among a series of microscope exhibits displayed at the Philadelphia centennial years ago. The original microscope slide is in the possession of Karl Dern, a retired employee of Johns Manville, who now lives in San Mateo, California. (See also Figure 2.)

Strangely, in the pure beds of silica, both in Johns Manville's deep quarry and on Dicalite's high Brush Ridge, there are obsidian-like streaks of dark brown to black bands of thoroughly cemented opal. (See map, Figure 3). Though rarely of soft gemstone quality, they display conchoidal fractures when shattered. No meaningful explanation has been found for this veining phenomenon.

It is easy to speculate that these thoroughly hard veins resulted from subsurface percolation of mineral saturated waters. That later crustal movement has compressed and heated these, perhaps by means of escaping subterranean gases, has been proposed. The veins, however, seem to follow no particular pattern. Sometimes they are many inches thick, yet diminish to disappear when traced across the face of a cut.

At times they are so common that they render the quality of the product so poor that it has to be stored on a temporary dump awaiting such a time that processing would become profitable.¹⁰ These hard bands, of course, were useless for the filtration, adhesive, bulkage, abrasion and other products which are the ultimate destiny commercially for these diatom skeletons. So also are the fish fossils when too many of them are embedded in the diatomite.¹¹

Materials from the three quarries which I have visited are marketed in an astounding number of forms from floor sweepings to filters to fine silver polishes. A vast proportion of this remarkable industry stems from the purchase of a five cent sack of common table salt on September 27,

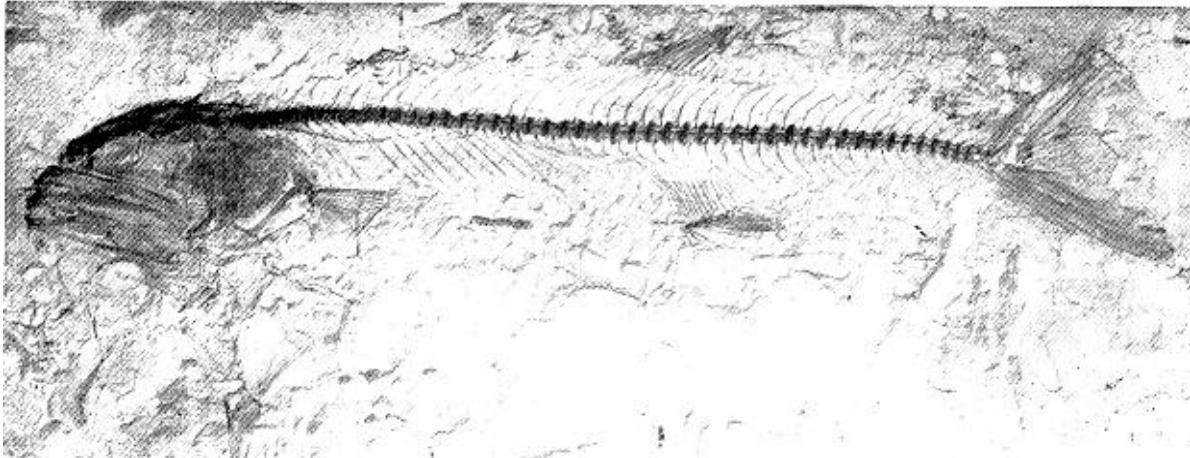


Figure 4. *Xyne Grex* fossil. (Courtesy of Karl Dern.)

1922 by a laboratory employee of the Celite Company (purchased in 1928 by Johns Manville Company). I have a dated copy of my friend's handwritten laboratory report on the experiment which first transformed diatomite (silica) into sodium silicate, or "Hy-Flow," as it is called in the industry today because of its new filter flow characteristics. This transformed the industry.

But it was not in the economic history or its values that I was interested particularly. Contained within these marine contoured rolling hills of diatomite are beautifully preserved biological forms so perfect that individual scales, bones, fins, even veins, upon occasion, may be studied. This is possible by the fineness of the particles of diatomite in which they were buried. Perhaps the very nature of the diatomaceous material contributed to the preservation of the soft parts and controlled decay.

These fish fossils are not mere carbonaceous impressions. In a number of specimens which the author opened, intestinal materials were still preserved as fine red dust which lay loosely in the body cavity. Often the delicate form of an eye was completely observable.

Frequently every scale was in place, and the only distortion visible was that of dislocation in the spinal chord and the pressing of the delicate rib bones and the lower fins out of alignment as the body was compressed to a few thousandths of an inch in thickness. In one case, a slight fault had displaced the head of a herring in two planes by one half of an inch. The distortion otherwise leaves the physical form well preserved in every way.

As a rule these fish were found lying in the bedding plane of the diatomite, which fractures easily along this plane. This made recovery of the fish fossils a fairly simple matter, except for the fact that diatomite is somewhat to exceed-

ingly brittle, particularly after weather exposure. As a result, many of the blocks on which I worked were beginning to crumble on the surface, and did not fracture as well as those in other areas.

Mr. Bob Hendy, the geologist at the Johns Manville's "Celite" quarries, kindly escorted me in a four wheel company vehicle throughout their extensive quarries. He remarked that fossil fish finds have become rather uncommon, and that the company now somewhat regretted giving their very large collection of fish and bird fossils to Stanford University. A display at the gate and in an administration building is rather small, but it does include a fossilized bird and some ear bones of whales, along with herring. A superb example of mackerel is on display in the Lompoc Chamber of Commerce offices.

Normal Deposition Questioned

It is deposition of fossils in the normal bedding plane of the diatomite that first suggested that these fishes and birds had simply fallen to the bottom after death, to be slowly covered by the slow "rain" or "snow" of diatom structures from the waters above. There are several factors, however, that make this simple uniformitarian explanation impossible.

First, the perfect condition of the bodies of the fossilized fish repudiates slow deposition (Figure 4). Frequently the fish were recovered with every scale in place. The supposed gradual deposition of millions of carcasses, untouched by other bottom feeding fishes, and their painfully slow burial by the postulated 1/1500 to 1/2 inch per year deposition rate simply is not possible. The body structures of these fossils were preserved without any indication of deterioration and putrefaction. This proposed gravecloth of silica could scarcely cover a needle. How could

it preserve the body of a fish an inch or more thick? Or how could a whale carcass be buried?

Secondly, there are fossils found which show that the rate of deposition was extremely rapid. Some are clearly deposited by a violent action which has torn scales and even removed fins from the body. In other fossils the scales lie in the diatomite layers around, **below** and in layers **above** the body. This requires exceedingly rapid burial! The typical fish, whether still alive or not at the time of deposit, was tumbled into position while surrounded by moving diatom ooze above and below. Its scales were torn loose by violent movement; they were deposited almost simultaneously with the fish.

Furthermore, there were places where fossils were found partially matted against each other. This made it impossible to recover either fossil whole, and they were unwisely discarded in many cases, for their specimen value was not recognized immediately. One workman, who spent some time with me in the office of Mr. Don Goodhue,¹² told me that he has found layers high on a ridge where thousands of fish fossils were heavily matted together in a layer more than a foot thick. These were so well preserved that they actually retained a distinct odor of fish when a fragment was broken off to expose unoxidized surfaces.

As a rockhound he was particularly interested in whalebone which is found occasionally. At least two specimens are known, one of which has been removed to the Santa Barbara museum. Presence of these large marine vertebrates is also significant evidence against slow burial. Long before uniform deposition could have buried them, their bones would have been scattered and then dissolved.

Very large quantities of whalebone have been found about 100 miles to the north, behind the first coast range, near Paso Robles, in the elevated valley followed by highway 101. One vertebra which I have noted from alluvium deposits there is more than 12 inches in circumference, and is quite well petrified. The bone structure is clear, and one pad is still observable on the end. A rancher friend there has a large horse trough filled with ribs and vertebra. Many other specimens have been carried away.

A Mechanism Proposed

It would appear that a violent upheaval had transformed the long Salinas Valley from an ideal breeding and calving ground for whales into a trap for such giant mammals. They now make their annual visits to remote Scammon's Lagoon in Baha California.¹³

When that uplift occurred in geological history I do not know, but I have observed that wave terraces and deltas are beautifully pre-

served along many sections of this unusual valley. Thus one may assume that they are Pleistocene, realizing that Pleistocene strata in the catastrophist's view is within historical times. An uplift that was sudden enough to trap whales in the Paso Robles area may have been involved in the Pleistocene uplift that left temporary beaches above Lompoc and lowered the sea level as much as 1,300 feet below very evident beach terraces in the area above Los Angeles.¹⁴

It is possible that a catastrophic intrusion of massive Arctic currents was an important factor in transporting the diatom ooze to Lompoc. If, as the author believes, the Miocene and the Pleistocene epochs are nearly contemporary steps in an extremely brief and violent crustal movement and upheaval in early historical times, then it may be that the diatom beds are, indeed, remains of arctic life forms swept down the coast by a moving coast line.

If one assumes that the so called "Cenozoic era" was actually a short catastrophic period, then it is possible also that a chain of events in rapid sequence swept Miocene diatoms ashore, trapped offshore life in "milk of Silica" (diatom ooze), and then soon killed the Paso Robles whales thereafter. The catastrophic nature of this uplift may be indicated by presence of fossilized sand dollars of remarkably modern form in water wells hundreds of feet deep in beds of sand.

Entombment of multitudes of shallow water fish with larger marine animals at Lompoc is in itself fascinating. That fossilized ear bones of whales are found in the same beds is significant evidence of catastrophism—that is, mixing of creatures such as shallow water fish (still alive) with remains of whales which had died previously. These whale ear bones would come from bottom deposits. They are portions of dismembered and decayed skeletons which are most resistive to dissolving processes which destroy bone in ocean depths. One may propose that these had been carried into place with the diatom ooze from the continental shelf at least. Their presence in beds containing undecayed, almost undistorted fossils of soft bodied fishes and birds which could never sink to deep water deposits without being torn apart and dissolved is most significant evidence for catastrophe. This combination of the two extremes could only speak of abrupt, violent burial.

A further indication of extreme violence is the fact that among the *Xyne Grex* specimens there are many indications that these fish were trapped in terror while they were yet alive. These herring, now apparently extinct, exhibit their terror by their mouths, often wide open as if gasping for their last breath in suffocation. Their fins lie widely spread and their backs are fiercely arched

at the gill case and the body is twisted as if in agony. Indeed, this position of the head, thrown back as if the neck were broken, is characteristic of the Brush Ridge specimens and is found in many of them. Sizes of specimens at this site varied from an inch long minnow of unknown species to small "sunperch" and herring of a size comparable to those living today.

It is obvious from a careful examination that these fish were suddenly and violently trapped. They apparently suffocated in a strange, misplaced medium which unexpectedly overcame them, engulfing them in a solution that was at least as dense as milk of magnesia. Very possibly this was diatom ooze, disturbed from a large ocean basin, which had been literally scooped from its resting place—possibly from the continental shelf, possibly in some now forgotten arctic basin. If what the geologist calls Cenozoic was, as I believe, characterized by rapid continental movement to the west, it is likely that basin-scouring tsunamis waves would form and sweep on to the rising coast.

If the Cenozoic era was a fearsomely rapid and abrupt series of events, as postulated presently, then the Mesozoic "era" was already in the throes of the oncoming final ice age, the Pleistocene epoch. This may account for the vast deposits of diatoms, which thrive in arctic seas. Perhaps a comet or meteor struck the earth after the flood causing the land mass to divide. Collision fallout from this event may have changed the albedo of the earth and the "ice age" may have followed soon after, scouring the newly lifted Alps, Rockies, and of interest here, the Coast Range.

But in accounting for the remarkable quantities of diatoms, one should not forget that there is evidence that polar regions of an ancient continent were possibly still covered by a vast ice sheet left previously ("Paleozoic era") by the Noahic flood. Absence of Paleozoic deposits in the Canadian Shield might be used to support this contention. Such an icy condition after the flood would contribute ideal conditions for the phenomenally abundant multiplications of the diatoms in the seas of the world. In any case, it seems clear that there were vast quantities of diatom ooze available at the time of this catastrophic deposit. Ocean pockets of ooze were suddenly redeposited near or on shore as the result of violent crustal movement. No uniformitarian explanation can account for all factors involved at the moment of death and burial of fossil fish.

(It should be noted that George M. Price presented similar data regarding the diatomaceous beds, and he too regarded them as evidence for catastrophism.¹⁵)

Perhaps the most remarkable feature contradicting uniformitarian deposition is occurrence of many fossil skeletons that simply do not follow the bedding plane in the diatomite. The bedding plane evidently represents a temporary surface. Not all fish lie flat, as would be expected if they were slowly and uniformly covered. Of course a fish which was deposited slowly, standing on end, would decay long before it could possibly be covered by the diatom "snow." Such a fossil, commonly found at Brush Ridge, had to be covered instantly.

Repeatedly I was disappointed in my search for "perfect" specimens which would exhibit the entire fish laterally on the bedding plane. Rather I found instead that only part of the fish lay in the bedding plane which had split open so easily. In my eagerness to find a nice display piece, I discarded numerous fossils which crossed bedding planes, as would be expected according to my contention that these had been catastrophically deposited. "They have their heads and tails a million years apart," commented a puzzled plant workman, who helpfully spent some time with me when I was first orienting myself to the area and the situation. He, like myself, was unable to reconcile field fact with classroom theory.

Conclusions

In the light of all of these factors it is presently concluded that the diatom deposits were formed by material forced on shore by westward movement of the continental shelf with accompanying compressions and faults which elevated these ranges which traverse Point Arguello. They were deposited conceivably in unconsolidated ooze form on the Pacific Ocean bottom after the Noahic flood. Their delicate bodies may have been among final sediments which precipitated out of the quieting flood waters. Or, as I have suggested, their affinity for cold waters may have brought a tremendous spurt of reproduction after the flood when combined factors of icy waters and silica filled waters made this possible.

It is true that the diatom has not been identified in deposits older than the Jurassic period of the Mesozoic era, but this is simply the old argument from silence. If these are extremely abrupt periods, as proposed, following close after the creative week, there is no problem. The disturbance of the diatoms into solution (out of ocean basin deposit) and their transport through the fish-filled waters of the continental shelf I attribute to an abrupt movement of the continent following the very extensive separation of the continents.

This event, which I identify with Genesis 10:25, would involve abrupt overriding of the East Pacific Rise by the continental shelf. This

would literally scoop up these deposits and hurl them into the coastal waters. Their compression and uplift would be completed in the final stages of the Pleistocene Epoch about 2,000 B.C.

(Editor's note: Some will interpret Genesis 10:25 (as Matthew Henry does) to refer to a division of nations politically (in keeping with Genesis 10:32 even though a different verb for "division" is used) rather than to a physical partitioning of an early continent into several fragmentary continents. Furthermore, some creationist workers envision only one great earth catastrophe since creation—the Noachian deluge. Perhaps such readers will be interested to suggest a mechanism for tying all this excellent evidence, which Dr. Northrup presents regarding fossils in diatomaceous beds, into one related event.)

This view of the formation of the Lompoc diatomite deposits finds agreement in an isolated comment on deposits of microflora ooze found in Von Engeln and Caster:

The peculiar significance of the deep sea deposits is that they do not appear, except under very special circumstances as constituents of this thick series of sedimentary marine strata that constitute the bedrock over most of the land areas of the earth. They are never lifted to make continental tracts. Where found, *extreme local diastrophism is responsible*.¹⁷

It is presently postulated that this compression series which affected Point Arguello in this way was at the same time completing the entire coastal range, trapping vast basins behind San Francisco's Golden Gate Ridge and the small range now cut by Carquinez Straits which drains the Great Central Valley of California.

Presence of fossil sand dunes high above the San Francisco Bay in the new Sierra Monte development south of the city is one of many evidences used to support this. These recent channels now drain the entire basin from Redding to the Grapevine south of Bakersfield. The shoreline of this enormous lake is plainly visible along the new Freeway 5 miles south of Tracy, where delta fans are evident below erosion valleys high above the valley floor.

It is significant that diatomite of low grade may be found scattered from King City far north of Lompoc to well south of Los Angeles, as well as in the Great Valley west of Bakersfield.¹⁸ Here the presence of many fossil shark's teeth in "Sharkstooth Hill" bears mute testimony to the dramatic changes in the western continental shelf in those tumultuous times. Today a large folded range stands between Bakersfield and the coast.

It is the author's opinion that California is a fertile area for a Christian geologist studying the weaknesses of uniformitarian theory. The diatom itself bears mute testimony to this weakness. Furthermore, the Christian biologist should find the reproductive traits of the diatom significant. The fact that over 25,000 varieties of the diatom have been classified, and that fossil and modern forms are identical, though supposedly separated by millions of years and countless reproductive divisions,¹⁹ should provide a check on the postulates of biological change. The stability of these 25,000 created varieties of this microscopic plant which flourishes invisibly to the human eye is an exquisite testimony to their infinite Creator.

References

- ¹An example copied from the Lompoc Chamber of Commerce map follows: ". . . Diatomaceous earth—a soft powdery substance created from the fossilized remains of microscopic plants which grow beneath the water and built up layer after layer of 'sea snow' for thousands of years."
- ²Bob Hendry, Geologist at the Lompoc Johns Manville plant, in private discussion, August, 1968.
- ³"After 50,000 centuries research puts the diatom to work." A booklet published in 1941, from the series, "Research at Johns Manville," pp. 7-8.
- ⁴Von Engeln and Caster. 1952. *Geology*. McGraw and Hill, New York. "It will be appreciated that, although foraminifera, Pteropods, Radiolarian and diatom remains fairly rain down through the oceanic deeps, their accumulation over the ocean floor in the sense of thickness of deposit, is at an extremely low rate because of microscopic size of the organisms and because some of the remains dissolve as they sink." (pp. 324).
- ⁵Meguro, Ito, and Fukushima. 1966. "Diatoms and the ecological conditions of their growth in sea ice in the arctic ocean." *Science*, 152:1089-1090.
- ⁶Lane, Ferdinand C. 1947. *The mysterious sea*. Doubleday and Co., New York, p. 87.
- ⁷*Ibid.*
- ⁸The Dialogues of Plato, *The republic*. Book 7, Great Books of the Western World, Encyclopedia Britannica, Chicago. Vol. 7:388-389.
- ⁹Northrup, Bernard E. 1968. *Harmonizing geology with Genesis*. The author has available a four page chart and the explanative sheets displaying his conclusions concerning precise relationships of Historical Geology and Biblical accounts of creation and catastrophes (\$1.00.)
- ¹⁰According to Bob Hendry, Geologist at Lompoc Johns Manville Plant.
- ¹¹Superintendent Don Goodhue and interested employees of Grefco's Dicalite plant during an extended conversation, August, 1968.
- ¹²*Ibid.*
- ¹³Gardiner, Earl Stanley. 1960. *Hunting the desert whale*. Morrow, New York.
- ¹⁴Moore, Raymond C. 1958. *Historical geology*. Second Edition, McGraw Hill and Co., New York, pp. 474-477.
- ¹⁵Price, George M. 1923. *The new geology*. Pacific Press Publishing Association, Mountain View Calif., pp. 200-201.
- ¹⁶Matthews, William H. 1968. *Fossils*. Barnes and Noble, p. 1990.
- ¹⁷Von Engeln and Caster. *Op. cit.*
- ¹⁸Moore, *Op. cit.*
- ¹⁹Reference #3 above.

COMMENTS ON SCIENTIFIC NEWS AND VIEWS

HAROLD ARMSTRONG*

Some studies of the metabolism and bodily conditions of birds in flight¹ have led to some remarkable conclusions. Pigeons and other birds were studied in a wind tunnel, under conditions as like as possible to those of free flight.

During flight, body temperature for some birds rose to about 113°. Heart beat for some birds was as much as 20 times per second. Under such conditions, a bird would circulate twice its weight in blood per minute, and its metabolism is 12 to 15 times basal metabolism.

Since thermodynamic efficiency is probably only about 20%² (which, it should be noted, compares very favorably with that of any power plant which we could install in an aircraft), much excess heat must be dissipated. About 85% of this cooling, it appears, is done by air cooling through the feathers, rather than by evaporating water (i.e., perspiration.) As is remarked:

This has the advantage of greatly reducing dehydration in long migratory flights but raises the problem of how this is accomplished in a heavily feathered bird . . . the heat loss must be so precisely related in flight that it is relatively independent of environmental temperatures. How this is accomplished is still a mystery.

A wise man of old included among things which were too wonderful for him, which he knew not, "the way of an eagle in the air."³ How right he was!

Do these facts not point out how impossible it is that the (extremely) warm-blooded birds could have evolved gradually from cold-blooded reptiles? For as soon as the birds were to act as birds they had to have means of cooling much better than anything which the reptiles ever had. One percent, say, of present cooling ability of birds would have been useless. Like so many other things it had to be perfect before it would be of any use at all. This is certainly a great difficulty for evolutionists, and more important than superficial (literally!) problems of how scales might have become feathers.

Mammals: Hot and Cold

As was mentioned above, evaporating perspiration is not a very important means of cooling for birds. For many mammals, on the other hand, it is very important, and, of course, it is the only way of cooling if the temperature of the surroundings is above the body temperature.

Here, again, is a state of affairs which could not possibly have evolved. For as soon as mammals began to be mammals, they would have required some means of cooling much better than anything which the reptiles ever had. This would be especially so if, as is commonly supposed, the climate then was rather like that in the tropics nowadays. Under such conditions, one per cent of a mammal's present ability to cool itself would have been useless; it would have died the first hot spell that came along. Again, the ability would have to be perfect before it would be of any use at all.

Incidentally, it is sometimes said that mammals survived over the reptiles because they were better adapted to the cold. Presumably we are to believe that at the same time they were developing the ability to perspire because they were better adapted to the heat!

The fact, which evolutionists consistently overlook, (or do they find it embarrassing and ignore it?) is that any kind of animal has many peculiarities; and many, or all, of these peculiarities fit together with its way of life. It may not be so hard to imagine conditions especially favorable for one of these peculiarities, under which, it may be said, it evolved.

But a little consideration will show that the supposed conditions would have been unfavorable for some other of the peculiarities. Thus it is hard to see how the animal, as a whole, could have evolved. But, of course, this diversity of peculiarities causes no difficulty for creationists; rather it shows the skill of the Creator.

An Iron Compound and Mars

For some time, Mars has been the subject of much speculation as to whether there might be some living creatures on it. The fact that some parts seemed green, and that the green appeared to change from season to season naturally stimulated speculation about vegetation.

Some recent information makes this seem rather unlikely. It has been suggested⁴ that, in fact, Mars is covered with a fine powder, or extremely porous rock, largely goethite, a compound of iron, the light (i.e., red), and dark, (i.e., "green") parts being similar chemically. The difference, it is suggested, is that particles are larger in the dark parts, and thus reflect differently. In fact, it is maintained, the dark parts are also red, but not as red as the bright or light parts.

By contrast with the bright parts, the dark

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parts may have seemed green, a complementary colour. In a sense, this is not to say that the planet is totally "dry;" there may well be some water of hydration in the material.

Changes with the seasons, it is suggested, are due to changes in the size of particles, due, presumably, to their being moved by wind, and are not chemical changes, let alone biological. The atmosphere, it is suggested, has very little effect, except, perhaps, in so far as wind is concerned.

Some very recent (beginning of August, 1969) information from an unmanned rocket which flew close to Mars seems to support this, and to show that Mars is not a likely place for living things of any sort.

All evidence seems to show more and more that, in the Solar System, living beings, of the kind we know at least, are found only on Earth. As for the more distant parts of the universe, we simply do not know.

But we can see how narrow is the range of conditions under which things can live. It becomes harder and harder to believe that it is by chance that our Earth is so suitable a place in which to live. Surely it was designed as Scripture says, "to be inhabited."

On Rock Layers

The phenomenon of Liesegang bands, in which certain chemical reactions in a suitable medium make a series of coloured bands, has been of lasting interest ever since discovered by R. E. Liesegang in 1896.

A special reason for interest in them is the possibility that banded structures and laminations in rocks, commonly taken to indicate annual deposits or something of the sort over vast ages, might actually be examples of the Liesegang phenomenon. If so, they might well have been formed in a few years, or even less.⁵

For these reasons, a recent account of the phenomenon might be interesting, the more so because it includes instructions for demonstrations.⁶ Such demonstrations could be very useful in lectures, projects, etc.

Materials mentioned most are silica gel and photographic gelatin. There may be some examples of limonite in basalt, which happened maybe when ground water, with chemicals in solution, soaked into cracks in the rock. Something similar may happen when molten material hardens. (This may be connected with the segregation of impurities when a material hardens, which is applied in purifying silicon and germanium for uses in electronics.)

Also, something similar can happen in a vapour. Striations which sometimes occur in an electrical discharge in gases immediately come to mind as something that looks somewhat sim-

ilar, but very likely it actually works in quite a different way.

Maybe some of us can experiment with setting up a Liesegang reaction in concrete while it is hardening, and see what can be found out. (It might also show us a way of producing a new and unusual decorative effect.)

Bacteria—Small, Few; Why?

The *New Scientist* quotes Dr. J. A. Boycott as writing in *Lancet* that microbiology, as taught to medical students, is useless. It is remarked,

Bacteria are not the simple, asexual organisms described in some textbooks . . . they have a sex life much more varied and interesting than that of *Homo sapiens*, and their internal structure is much more intricate than can be appreciated by soaking them in crystal violet.⁷

It is certainly true that in too many cases teachers use their position to force useless learning upon students; and in particular to inflict pointless theory on students who are not at all concerned. Evolution furnishes an example; to use the three old divisions of learning, evolution is neither theoretical, nor practical, nor productive.

Clearly, evolution does not help anyone to produce, nor to practise anything; and theoretical knowledge is knowledge only in so far as it is certain. But evolution is emphatically not certain, in the manner of the theorem of Pythagoras. Rather, the more one looks at evolution critically, the more it reminds him of a net: a lot of holes fastened together with "maybes."

We may notice with interest the fact that bacteria are not simple. They are not, as seems sometimes to be supposed, just bags of liquid; they are probably in their own way as complicated as anything else. So to claim that they came first of all living things still does not explain how all the complexity came about. Nor, seeing that bacteria are quite successful, does it explain why creatures of many cells came about, nor why there are only a few kinds of organisms of just a few cells.

From a Creationist viewpoint, it is easy to see reasons for these things, God likes diversity, if we may say so. Now the obvious way to make a very small creature is in one cell; otherwise too much of their bulk would be wasted in partitions, etc. Thus a very small building will likely have only one room. A large creature, on the other hand, must be made differently. A single cell as big as a man would be just too vulnerable.

We can see the same principle in balloons. A fairly small blimp is just a gas-bag with some things attached to it. A large dirigible, on the other hand, such as the "Akron" or the "R-100" or the "Hindenberg," is divided into

many compartments. But once this division is determined, the possibility of division of labour is introduced.

One man, living by himself, could not spend all his time making shoes, for example; but in a town of one thousand he might. And with the division of labour among different organs, it is possible to do things which a single cell would never accomplish.

A few cells, however, do not provide so much opportunity for division of labour, and for diversity. Thus there are not a great number of creatures of a few cells, but there are some.

The Eye, Colour, and Evolution

The process of seeing has always been of great interest to both philosophers and physiologists. Yet the big problem, how a picture of the outside world becomes, somehow, part of our consciousness, seems no nearer to a solution than it ever has been.

Perhaps the fact is that there is no problem, that the matter is something to be experienced, not to be discussed theoretically. Be that as it may, some recent work on the subject may be of interest to us for several reasons.⁶

Nerve signals move from the eye to the brain. In the brain the signals are handled, and, apparently, combined, compared, etc., the brain acting as a sort of telephone exchange. To suppose, though, that there is nothing beyond the brain would be to make a mistake as great as that of the old materialists, who said that "the brain secretes thoughts as the liver secretes bile."

Clearly there is something beyond the brain—call it soul, consciousness, or what you will. Any theory which denies this runs into many absurdities.

It now appears that, in some creatures, some of the work—the "switching," so to speak, which might have been expected to occur in the brain is actually done in the eye, among the various receptors, nerves, etc. The amount done in the eye differs widely, and

. . . the degree of retinal transformation (of the image—the 'switching') does not parallel the evolutionary development of the vertebrates . . . the retinae of primates . . . is simpler . . . than the retina of the frog. On the other hand, some mammals, such as the rabbit and the ground squirrel, have retinae that are almost as complex as the frog's . . . It is remarked also that frogs and pigeons have remarkably similar retinae!

Another point for which evolutionary theory provides no rhyme nor reason is colour vision. It is said that ". . . among mammals only man and some of the Old World monkeys have complete colour vision as we know it; some New World

monkeys, the tree shrew and the ground squirrel have partial colour vision . . ."

It might be remarked, first of all, that of course experiments can only tell whether the animals are interested, in some sense, in colour; we can not, of course, tell directly how colour looks to them. Again, while nothing is said about animals other than mammals (evolution again—they have to be considered together!), yet it would seem that if insects cannot tell colour, then flowers have wasted a lot of time in putting on brilliant hues. And it seems generally to be believed that the colours of butterflies have to do with hiding them (or otherwise) from birds and from one another.

The notion of partial colour vision may have been influenced by the hypothesis that in colour vision only three colours are received, and everything else is built up from them. Now while such a system works quite well in colour photography and colour television, it by no means follows necessarily that animals work in the same way.

In fact, there have been hints that the trichromatic hypothesis may be hindering our understanding of colour vision. Something along these lines has been written e.g., by Sir C. V. Raman, a very careful observer. Information about his work is available through the Indian Academy of Science, Bangalore, India.

As for colour, can we say that God provided what would be useful to the various animals? The world of a cow, for instance, is likely mostly green; she would gain little by distinguishing many colours. Other creatures, including ourselves, have wider needs.

As for the way in which the visual signals are handled, we use the eye together with touch, and other senses, in what philosophers have called "common sense." This means, not prudence, but the power of sensing such things as shape, motion, etc., by information which may come from two or more of the five senses.

It seems reasonable that the clearing-house, so to speak, for information which may have to do with the common sense should be in some central place, as in the brain. Aristotle, indeed, suggested that the reason that we have several senses is so that we should not fail to notice the "common sensibles:" motion, shape, etc.

Other creatures, especially those which do not make as much use of touch as we do, may not use the common sense so much; for them it may be best to deal, at least partly, with sight close to the source, i.e., right in the eye. Notice that, although much is done in the eye of, e.g., a frog, nobody would confuse the eye with the consciousness. By the same reasoning, the brain must also be distinct.

Memory, Learning, and Soul

Sometimes the location or "seat" of memory, or other "psychic" powers in the sense of "having to do with soul") is debated. Some experiments on the protozoa *Spirostomum* seem to show that it is not, as might have been expected, in the nucleus, or at least not exclusively so.

The test of memory or learning seems to have been: the protozoa were touched with some suitable instrument a number of times. At first they contracted, but soon they "became used" to being touched, and then did nothing about it. Even those protozoa without micronuclei and some cytoplasm learned or remembered just as well as intact protozoa.

Peripatetic and Scholastic philosophers, assigning the powers of learning, etc., to the soul (in the philosophical sense, which is included in the Christian sense), said that the soul is actually one (and, in a sense, distributed throughout the creature), but potentially many. That is, it is like a line, which is one line, but can be divided into many parts.

In unicellular creatures which divide, in plants of which cuttings are taken, and to a certain extent in earthworms or starfish, we can suggest an application. Each separate part lives, and has the soul (i.e., the principals of life), just as fully as the whole did. Higher animals, of course, can ordinarily not survive such a treatment, for the division of labour requires all the organs.

It is interesting to notice how this might relate to God's method in making Eve. He did just what a gardener does when he wants to get another apple tree of the same stock: He took a cutting. No physician on earth could keep such a cutting living long enough to develop all the the organs, but God could and did.

The experiments mentioned, then, support the belief that the soul is, in some sense, distributed throughout the creature, and, moreover, that it is the principle, not only just of life, but also of memory, learning, etc.

Water "Clouds" in Space

It is found that "water-cluster ions," the ions H_3O^+ , H_5O_2^+ , H_7O_3^+ , etc., are important constituents of the D layer of the ionosphere, 30 or 40 miles up.¹⁰ They seem to be formed or maintained by reactions involving the ions O_2^+ or NO^+ , and these, in turn, are formed by sunlight or other radiation.

These facts may have a bearing on consideration of the canopy, which we think may have surrounded the Earth before the flood. A charged canopy might have been supported by means of electrostatic repulsion, and one containing enough such ions could be charged.

A very rough calculation might be worth while. Suppose that the amount of water in the canopy amounted to a shell of liquid water one kilometer thick; there would be 10^5 grams of water for each square centimeter of canopy. If a spherical shell, considered thin for simplicity, has a charge of σ electrostatic units per square centimeter of shell, the magnitude of the outward force of repulsion acting on each square centimeter of shell is $2\pi\sigma^2$ dynes force.

In this example we need 10^5 grams force, about 10^8 dynes. Thus σ would need to be about 5×10^3 electrostatic units of charge per square centimeter of canopy. This is about 10^{13} electronic charges. Since 10^5 grams of water would be about 5×10^3 moles, it would contain about 3×10^{27} molecules, so there would be enough charge if one molecule in 10^{14} were ionized.

Of course, the problem might remain how neutral molecules would be supported. But the action of the ions might affect the whole mixture, and, besides, different molecules might be ionized at different times.

This suggestion is, of course, very speculative; and it may not even be needed. However, it is offered for any interest that anyone may find in it.

On Black or Grey Moths

Black and white or grey moths have been a favourite "exhibit" of the evolutionists. Of course, they really prove nothing; there may well have been both kinds from the beginning. The fact that present conditions may favour one more than the other does not prove that one evolved from the other. Sparrows are probably more common, and bluebirds less so, than they were years ago, because of conditions under which they live; but nobody would claim that bluebirds evolved into sparrows.

Some studies of the moth *Phigalia titea* have recently been reported.¹¹ This moth may be either black or grey, and it is said that the ". . . black form is generally regarded as an industrial melanic . . ." At Leverett, Mass., where the experiments were conducted, it is stated that there is no visible evidence of industrial pollution, yet about 20% of the moths are black. This would bear out what was suggested: that there have been black ones from the beginning.

What was unexpected was that both colours of moth seem to prefer a light-coloured background on which to sit. On such a background the grey ones are hidden quite well (to our vision, anyway), the black not very well. Thus it is concluded that, as for the black ones ". . . success of this form is being achieved in the face of a considerable cryptic disadvantage. . ." In fact, since both colours are succeeding fairly

well, it would appear that "natural selection" is not at all effective on these moths.

It is said that black moths of other kinds do prefer a dark resting-place. Again though, the fact that they "know" what is to their advantage by no means proves that they have evolved from something else. Indeed, it may be that this whole matter of colour is a "red herring;" it may be that their worst problem is not hiding at all, but something quite different.

References

¹Hart, J. S. April, 1969. Science dimension. The National Research Council of Canada, Ottawa, Ontario, p. 28.

²Private Communication.

³Proverbs 30; 18 and 19.

⁴Pollack, J. B. and C. Sagan. 1969. *Space Science Review*, 9:243.

⁵Whitcomb, J. C. and H. M. Morris. 1961. The Genesis flood. The Presbyterian and Reformed Publishing Company, Philadelphia, Pa., p. 428.

⁶Strong, C. L. and R. Sassen. June, 1969. *Scientific American*, 220:131.

⁷*New Scientist*, 10 April 1969, p. 54.

⁸Michael, C. R. May, 1969. *Scientific American*, 220: 105.

⁹Applewhite, P. B., E. A. Lapan, and F. T. Gardner. 3 May 1969. *Nature*, 222:491.

¹⁰Fehsenfeld, F. E. and E. E. Ferguson. 1 May 1969. *Journal of Geophysical Research*, 74:2217.

¹¹Sargent, T. D. 1969. *Nature*, 222:585.

SPECULATION VS. TRUTH

WILLARD L. HENNING*

Familiar to many people is the background of the anti-evolution law passed by the Tennessee legislature in early 1925 prohibiting the teaching of the origin of man by a process of evolution in contrast to the account clearly stated in the Book of Genesis. The law was challenged and upheld in the rather controversial William Jennings Bryan—John T. Scopes Trial in Dayton, Tennessee, in 1925 and has since been the subject of continual controversy.

Most of the controversy, no doubt, stems from difficulties in interpreting the law correctly, its intention, whether or not it deprives school teachers of academic freedom, and also whether a school teacher has the right to complete authority in his or her classroom. These questions, obviously, are not easily answered and their answers differ widely among various people.

In spite of all the controversy the anti-evolution law (code section, 49-1922) stood on the statute books of the State of Tennessee for 42 years and was a testimony to the people of America, along with a similar law in two other states, that the general sentiment of the people is opposed to the atheistic theories of man's origin from lower beasts, and the effects such would have in drawing the minds of young people away from the Holy Word of God. The word "atheistic" is used by the author to refer to those who do not believe in a personal, miracle-working God.

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The Bible a Myth?

During the spring semester of 1967 Gary Scott was teaching general science at Jacksboro (Tennessee) High School in Campbell County when one of his students asked him, "Do you believe in evolution?" He replied that he could not answer this in a few minutes but if the class agreed they would make a study of evolution "for a few weeks" (according to the account given in "An Interview with Gary Scott" by Charlene Sanders, published in *Phoenix*, Spring, 1967, Vol. 8, No. 5, The University of Tennessee Publishing Association.)

Scott's lectures began with "the evolution of evolution theories," starting with the Bible, presumably as the most primitive account, and then going to Aristotle and Darwin. However, "the class got fixated on the Genesis account" and "did not want to accept much else." Scott pointed out "that there was no need for the scientific account to conflict with the Biblical account, but that they would have to admit a non-literal interpretation of the Bible to avoid conflict with factual evidence." He apparently used the word "mythical" in reference to the Bible. All of the above quotations are from the *Phoenix*.

Like a Fairy Tale

It is obvious that he used the word *evidence* to support evolution with the implication that he favors this in contrast to the Biblical account. According to the testimony of one of his students Gary Scott labeled the Biblical account as "allegorical" or like a fairy tale, and this stirred up considerable controversy which grew worse.

Probably this explains why "the class got fixated on the Genesis account" as stated in the *Phoenix*. It is not clear whether or not he claimed as factual the origin of man from a lower form of animals, but complaints indicate that he was teaching Darwin's theory of evolution in his class.

The controversy over his teaching continued; details of all that happened will not be included in this paper since they are quite lengthy. Some high points, according to *Phoenix*, are as follows: Students discussed the controversy of science and Genesis with their ministers; ministers formed a committee to deal with the situation; parents complained to the principal who in turn told Gary Scott, "go back to the text." Scott replied that he "would think about it." He was later given a copy of the Tennessee anti-evolution law.

Some time later Scott claimed that he was not informed that his job was in jeopardy until the day prior to the night meeting of the Board of Education when he was fired. He was officially notified of this action the next day at 3 p.m., according to the *Phoenix*. Accounts of the meeting indicate that it was a quickie-type, when, under emotional stress, Scott was fired without discussion of the case, nor was he given an opportunity for a hearing.

Avoid Another Trial

After being fired, Scott filed a lawsuit in Federal District Court in Nashville in which he "sought to have the anti-evolution code section declared unconstitutional." The suit was against the Board of Education and was backed by rather strong groups as the American Civil Liberties Union, NEA, and National Service Foundation. Realizing the tremendous costs and involvements in what would amount to another "Scopes Trial" in 1967, the Board of Education considered it the wiser decision to reinstate Gary Scott.

During this time the anti-evolution law had been before the Tennessee legislature and was repealed the day following the filing of the suit. Possibly the growing strength of sentiment favoring Gary Scott and against the anti-evolution law may have been factors.

Organized Opposition

It is obvious that public sentiment was much more strongly in favor of both the anti-evolu-

tion law and prohibition in Tennessee in the 1920's than in the 1960's. Has the influence of the Bible and genuine Christianity diminished because of lack of cooperation on the part of Bible-believing, God-fearing Christians? Or are the opposing forces better organized, more influential, and more strongly supported?

The real truth regarding the origin of all things, the Creator and Designer of all, the limits of change that are possible within any of the Genesis kinds (Chapter 1) cannot be changed by teachers, philosophers, or discoveries of scientists. The Bible speaks with authority. It only needs to be properly understood, interpreted and accepted.

An editorial in the *Chattanooga News-Free Press* (Nov. 13, 1968) says:

The overruling of the anti-evolution statute is considered by some to be a defeat for Christian fundamentalists. But that reasoning is strange, to say the least. Faith that "In the beginning God created the heaven and earth—and all that is within them—does not rest upon a court ruling or require the passage of a law and is not dependent upon any so-called scientific theory or upon the posturing personal debate of two brilliant windbags at a county courthouse.

Sad to say, man's statutes favoring both the spread of atheistic theories, as well as consumption of alcoholic beverages, have been adopted because of groups having much wealth as well as propaganda influence.

* * *

The author of the above article wrote a booklet entitled "How Valid is the Theory of Evolution" several years ago, which was published by William Jennings Bryan College, and has been widely circulated. The booklet points out many serious flaws in the theory of evolution and defends the Bible and the viewpoint of "Special Creation."

A copy of this booklet was mailed personally, to John T. Scopes in Louisiana, to Susan Epperson who fought to overthrow the anti-evolution law in Arkansas, and the same publication was given to Gary Scott who was instrumental in the repeal of the same type of law in Tennessee. No reply of any type or rebuttal has been received from any of them.

ARTICLE REVIEW

HAROLD ARMSTRONG*

"Ecological Chemistry," L. P. Brewer. *Scientific American*, 220, no. 2, February, 1969, p. 22.

First of all, I question the appropriateness of the title. It concerns chemistry only in the sense that everything does so, since anything may be analyzed chemically. Or else in the sense that the study of drugs and poisons may be considered as a branch of chemistry; but in that case "Pharmacology" would have been more specific. From our viewpoint, the matter is better considered as a special kind of symbiosis.

Now symbiosis furnishes one line of evidence against the theory of evolution. When two kinds of organisms live together, being in some sense adapted to each other, it is just too much to believe that they evolved separately (whether gradually or by jumps does not affect this part of the argument), until one day they met and found themselves suited to each other.

If, on the other hand, it is asserted that their respective ancestors also lived in some kind of symbiosis, well, no one believes that the original living organisms did so. So there must have been a beginning of the cooperation, and then one is back on the first horn of the dilemma.

Symbiosis, of course, can take many forms. In some cases it is essential to some of the organisms involved; in others, only convenient or customary.

While it is perhaps an extension of the term, the happenings to be discussed here might be called a form of symbiosis, involving four kinds of organisms: two butterflies, a bird, and a plant.

The situation in which we are interested occurs especially in Trinidad. The larvae of Monarch butterflies commonly live on milkweed. The milkweed contains a chemical, something like the drug digitalis, which persists in the adult butterflies. To them it apparently does no harm. But if a bird, such as a bluejay, should eat one of these butterflies, the bird becomes ill. Usually it vomits, and then soon recovers; but thereafter it avoids the butterflies. At the same time, related Queen butterflies usually have not eaten milkweed and are not poisonous; but the birds avoid them, since they look much like Monarch butterflies.

Consider this matter first from the point of view of the milkweed. Why does it provide the drug, anyway? (Or, in terms which an evolu-

tionist would use, why did it develop the ability to make the drug?) There is no evidence that it receives any benefit at all in return, as flowering plants do for the nectar collected by bees. By any utilitarian viewpoint, (which is what Darwinian evolution is), they should long since have quit producing the drug; or, indeed, never have started.

Next consider things from the viewpoint of the Monarch butterflies. Why can they eat the milkweed without harm? The article says that "... the ... butterflies ... must have developed the ability to feed on the poisonous milkweeds ...". But why must they? They could have turned to another kind of food; or, for that matter, could have become extinct, as other kinds of organisms have done when their sources of food disappeared.

And is it supposed that the butterflies developed their immunity at the same time as the milkweeds were developing their poison? But this theory is open to objections mentioned earlier to simultaneous development of ability to live together.

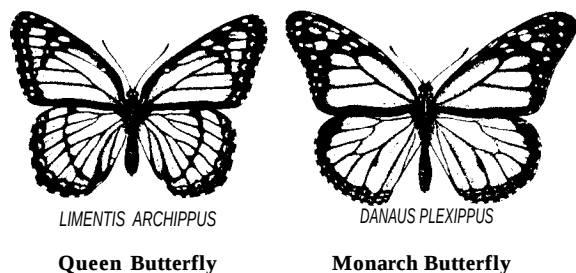
Or did butterflies find the milkweed already poisonous, and build up a tolerance to it? But why? There was other food available, and if they were eating only a little milkweed while they built up the tolerance, that would not afford them much protection from the birds.

Now consider the Queen butterflies. They are not poisonous, but resemble the monarchs. But if it was safety from the birds that they were after (whether by conscious plan or by "natural selection," if there be such a thing, makes no difference to the argument), surely they could have turned to eating milkweeds just as well as the Monarch butterflies.

And since no creature has all the advantages, surely the Queen butterflies would find that their resemblance to the Monarch butterflies made them vulnerable in other ways. An illustration in the article shows what is claimed to be the original form which developed into something resembling the Monarch butterflies; but surely this is pure conjecture and no one has seen such a thing happen.

Finally, consider the birds viewpoint. If the butterflies could develop an immunity to the milkweeds, why could the birds not develop one to the poisonous butterflies? Again, if the naturalist can distinguish the two kinds of butterfly, why can the bluejays not do so, and then protection to Queen butterflies would disappear? No one doubts that the birds have good eyesight.

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As is usual, many high-sounding terms are used. Thus, for the non-poisonous butterflies to resemble the poisonous ones is Batesian mimicry. (Incidentally, we are told "... the mimic must not become too common ... or the system would break down ... the predator would frequently encounter palatable mimics." How considerate of the mimics thus to restrain themselves!

Then it is called Mullerian mimicry if two unpalatable kinds look alike, the idea being that it is then easier for predators to remember and avoid them. Again, how considerate of them to help the predator avoid overstraining its memory! On these grounds, if two palatable kinds should resemble each other, as may well happen, it would be mimicry of some kind; for by Darwinian theory they must have some advantage, or they would not be thus.

The author introduces also the term "automimicry." This means that while the Monarch butterflies are not necessarily all unpalatable (some of them having lived on other plants), the birds avoid them all. This seems reasonable enough, but should it be called mimicry? We could equally well call it automimicry that I walk on two feet, and that enough other people do so to make it worth while for the store to have shoes which I can buy.

Facts presented in the article are interesting. It is a pity that the aim seems to be not so much to present the facts as to preach a dogma. It was rather sad to read about some of the experiments, which included grinding up butterflies by the pound for chemical analysis; and starving bluejays until they were hungry enough to try to eat butterflies which might make them ill.

What can we Creationists say about these matters? Does it not seem likely that God, in His wisdom, arranged protection for the Monarch butterflies, because, being rather spectacular, they would otherwise be quite vulnerable?

Moreover, accomplishing several purposes at once, He arranged that they should also provide some protection for similar butterflies. Also, in His mercy He arranged that the effect of eating a "treated Monarch butterfly would not be to kill the bird, as it might well have been, but merely to cause a brief, though presumably unpleasant, illness.

There is, it might be suggested in conclusion, another field in which these ideas may provide some evidence. Since the butterflies that look alike to us also look alike to the birds, their perception would seem to be like ours. Philosophers have, sometimes, wondered whether that is so.

Again, if the birds are not very hungry, they will not eat the butterflies which, they believe, will make them ill; but they will do so if they are hungry enough. This suggests that they are capable, to some extent, of deliberation; of asking themselves: "Am I hungry enough that I shall try to eat this butterfly, even though I fear that it will make me ill?". This question, too, is of some philosophical interest, and the facts mentioned here may help in finding an answer.

* * *

FURTHER NOTE ON ASSUMED MIMICRY OF THE MONARCH BUTTERFLY

Brewer's concept that the Monarch butterfly survives because 25% or more of the individuals in a population are unpalatable, hence leaving the others protected by automimicry, omits from consideration other features in the life history of this lovely butterfly.

Thus the chrysalis of the Monarch butterfly is jade green, suspended by a black stalk, with a black and gold line half around the largest portion, highly ornamented with spots of burnished gold. It is a most beautiful object and very conspicuous. Even the caterpillars are a bright yellowish green marked with bands of black. Surely these are either parasitized or eaten by birds.

Much more needs to be known before we can be certain as to how much of the population control is due to death of the immature stages as compared to the adult. Only then can the possible importance of automimicry be determined.

W. E. LAMMERTS,
Research Editor

BOOK REVIEWS

The Great Monkey Trial, by L. Sprague de Camp. Doubleday, 1968, 538 pages. (\$6.95). Reviewed by P. William Davis and Karen Y. Davis.*

L. Sprague de Camp is best known as a writer of imaginative literature, but he has written also in the field of popular science—the kind of romantic biology pioneered by Willy Ley and others. Experience as a writer of fantastic fiction makes him peculiarly suited to report on the bizarre events surrounding the Monkey Trial at Dayton, Tennessee, and he has done so in scrupulous and fascinating detail. His research on the subject is obviously thorough and extensive. Nevertheless, his biases are disappointingly evident and his approach often one-sided.

In 1925, John Henry Scopes, a young science teacher in the Rhea County school system in Tennessee, was tried for violating the state's "anti-evolution" statute which established that no one was to teach "any theory that denies the story of the Divine Creation of man as taught in the Bible, and to teach instead that man is descended from a lower order of animals."

Scopes Did Not Teach Evolution

Scopes claimed to have taught just that, and participated voluntarily in the events leading to his own indictment, with the end in view of making a test case which could be appealed on the grounds of constitutional law. Ironically, Scopes privately admitted after the trial that he had not actually taught evolution, due to lack of time for it in the school term.

Nevertheless, the case became of national importance, and attracted even international attention. At last people were made to face the irreconcilable conflict between traditional Biblical Christianity and Darwinian evolution. This conflict in turn raised two related but opposing issues.

For some, the central question was whether a teacher could be jailed for telling the truth (as they believed it to be). For others, the question was whether teachers on the public payroll had the right to attack the religious beliefs of children or the Scriptures upon which those beliefs were based.

Such divergent viewpoints are bound to arise in a pluralistic society committed to the idea of public education. Manifestly, one cannot please everyone. Either some are offended, or

teaching is reduced eventually to the lowest common denominator of our culture. Either we take a stand, or we remain supposedly neutral, and on many issues neutrality is obviously impossible.

Intellectual Schizophrenia Common

A common response is to avoid controversial issues entirely and to omit them from the curriculum. One wonders, though, whether such a truncated curriculum is worth teaching at all. Such intellectual schizophrenia is all too characteristic of our nation in 1969 even as in 1925.

Won or lost, the Scopes trial has done nothing to resolve the basic issue involved. We are left with the long-range question of whether public education, which is to serve minority as well as majority opinion, is ultimately possible in a country without religious or moral consensus.

In any case, Scopes lost the case on legal grounds, as was expected. At the intellectual level, however, fundamentalism was dealt a severe blow. It is disheartening to realize that the prosecution could not find a responsible scientist in 1925 who would testify against the theory of evolution.

It gives us considerable pleasure to reflect that today several could be invited to do so—men who hold to the verbal plenary inspiration of Scripture, and yet possess doctoral degrees in the sciences from fully accredited universities; men who even now are publishing in respected scientific journals.

Trial Focused on Protagonists

In large part the Scopes trial focused not upon its defendant, but upon two great protagonists—Clarence Darrow (American Civil Liberties Union Counsel for the Defense) and William Jennings Bryan, representing the prosecution and the fundamentalist cause. The climax of the trial transpired when Darrow called upon Bryan to testify as a Biblical expert. Bryan was eloquent, but no scholar, and was not a match for his aggressive cross-examiner. Furthermore, he was not given the opportunity to question Darrow as he himself had been questioned. Scopes was found guilty, but Bryan lost.

That the verdict was correct is scarcely open to debate, as even G. G. Simpson admits, but what of the trial? Was it correct? One can scarcely write a book about a verdict. Not surprisingly, de Camp excels in his description of the trial, the participants, and above all, the local color. For example:

Thus quiet, conventional Dayton, almost overnight, was transformed into a madder tea party than anything Lewis Carroll ever im-

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agined. It was as if the armies of bats that whirled up and down Market Street in the twilight had suddenly assumed semi-human form; or as if all the monsters and spectres from Gothic romances and tales of fantastic horror had erupted into Dayton's shady streets from some forbidden dimension.

This passage (which would have been at home in any Conan epic, or upon Michael Moorcock's turgid pages) purports to describe a class of people seldom painted in such colors—the fundamentalists, the creationists, those who believe the Scriptures and pray to a personal God whom they fancy to exist! How odd, that in the decades of “enlightenment” following 1925, they have not been dispersed by the sun of liberalism to the “forbidden dimension” from which the Scopes trial conjured them!

Author Shows Bias

Mr. de Camp's “urban-intellectual, anti-bourgeois bias” is evident throughout the book in his often sarcastic treatment of the prosecution and in his selection of historical evidence. He makes much, for example, of Aimee Semple McPherson, but almost nothing of J. Gresham Machen. Fundamentalists are for him mountebanks and ignoramuses; conservative scholarship receives scant mention.

For him, what is sauce for the fundamentalist goose is not always sauce for the liberal gander. For example, he dwells extensively on Bryan's ignorance on the subject of evolution, but what of Malone's, who never studied the subject of evolution (p. 151)? Surely Malone's prejudice *in favor* of evolution is much less reasonable than Bryan's bias against it based on Scripture.

Mr. de Camp treats arguments much as he treats persons. A chapter is devoted to an exposition of the multidocumentary hypothesis of the origin of Genesis, but one looks in vain for a discussion of the opposing view. We are left wondering why spiritual and intellectual giants of the past who possessed as much of the Bible as Mr. de Camp, were such imbeciles as not to see the numerous “blunders and inconsistencies” (p. 365) in the Bible which Mr. de Camp explains so glibly for us. There is a brief section in which he “demolishes” the infallibility of Scripture—implying that he reflects the views of all Hebrew scholars and that there is no legitimate response to his sweeping statements.

Contrary Opinion Simply Ignored

Indeed, the contrary opinion throughout the book is neither discussed nor dismissed; it is **simply ignored**. Mr. de Camp seems to be seeking to create the impression that it simply does not exist. Occasionally one must conclude that either his scholarship is shoddy or facts are deliberately distorted. On page 480 he states that “the science teachers at Bryan (College) get around the conflict between biology and Genesis by teaching the theory of special creation—that whereas all other life evolved, man was specially created by God.”

Our communications with those science teachers and with the Academic Dean of Bryan brought us replies, including a letter from Dr. Donald G. Scott, that the statement is “grossly inaccurate.” It is hard to understand why Mr. de Camp did not inquire at Bryan College before publishing such a misleading statement.

Mr. de Camp brings his book up to date by tracing the faint ripples of anti-evolutionary sentiment in our society today. Yet he makes **no mention of the most** significant anti-evolutionary groups of the last century—the Victoria Society of England, the American Scientific Affiliation, and the Creation Research Society. These are the three most significant and scholarly. He apparently prefers to discuss long-defunct organizations that make far more satisfactory “strawmen” for his attacks. (Editor's Note: The over 100 year-old Victoria Society and the over 25 year-old American Scientific Affiliation have been strongly influenced by theistic evolutionary thinkers in recent years.)

Scholarship with Malice?

Let us make ourselves clear. We do not doubt the bulk of Mr. de Camp's scholarship. Kirtley Mather, writing in *Science*, described him as “an impeccable and trustworthy historian.” In light of this, it is difficult to place any other interpretation upon his omissions and distortions than of deliberate malice.

And yet the most disturbing thing about this book is not that it is prejudiced or distorted, but that so much of it, alas, is true and just. Much of fundamentalist scholarship has been shoddy, many of our colleges starveling and sophomoric, many of our leaders rancorous and anti-intellectual, and much of our apologetic naive. The evangelical church, it often seems, has known but two alternatives in the face of challenge: obscurantism and abject compromise.

SCIENCE, DARWIN AND NAKED PRIMATES

The Christian Stake in Science, by Robert E. D. Clark. Chicago, Ill.: Moody Press, 157 pp., 1967. (\$3.50)

Darwin: Before and After, by Robert E. D. Clark. Chicago, Ill.: Moody Press, 187 pp., 1967, (\$.95)

The Naked Ape, by Desmond Morris. New York, N. Y.: Dell Publishing Co., Inc., 197 pp., 1969. (\$.95)

Reviewed by LARRY BUTLER*

All three books can be read with benefit by Biblical literalists, but Dr. Clark's sympathetic offerings stand in sharp contrast to the provocative worldwide best seller by Desmond Morris.

The value of the latter book is its graphic revelation of the ridiculous lengths to which evolutionary suppositions are employed to "explain" human behaviour and morphology. To cite a single example, Dr. Morris considers and rejects several imaginative theories as to how the distinctive condition of hairlessness evolved, and what survival advantage it conferred upon the species who managed to acquire it.

He then invokes the process of neoteny (prolongation of infantile characteristics into adult life) in the conversion of the hairy ape into a naked ape. He suggests that the survival value of the condition lay in reduced overheating during the vigorous chases by which our presumed hunting ape ancestors must have acquired their food.

In response, it may be pointed out that one criterion by which alternative theories were rejected was that other species did not solve their various problems by this adaptation, but curiously the same criterion is not applied to his own suggestion. That is, none of the other predatory carnivores overcame the problem of overheating by loss of hair, so what justification is there for claiming that we did?

The book appears to have been deliberately written to "shock its readers by viewing them as simply another species of animals to be investigated and described. Anti-religious bias is revealed in the expression of surprise that religion has been so successful. The religion toward which the most progressive naked apes are developing is considered to be based on scientific understanding and appreciation of aesthetic phenomena.

Conventional religion is categorized as a strange pattern of animal behaviour. Formalized religious rituals, seen as submissive responses

zoologist, take on a ludicrous perspective. This might lead us, with profit, to re-examine worthwhileness of those highly stylized and cere-through the eyes of an evolutionary behavioral menial aspects of our worship services.

"Luckily" we have evolved a potent curiosity to counteract our tendency toward imitative learning; the development of vocal communication is so advantageous that the failure of other species to evolve it is puzzling.

In addition to the strong evolutionary flavor there is another emphasis which deserves mention. Like many modern authors, Dr. Morris seems inordinately preoccupied with sex. It is rumored that a movie is to be made of the book, though it is difficult to see how anything except the titillating title could be used. At any rate it is unfortunate that Dr. Clark's books, less sexy though they may be, seem destined for a far smaller circulation.

Unlike many evangelical commentators upon science, Dr. Clark is never anti-intellectual and is seldom openly anti-evolutionary. This makes his books eminently suitable for presentation to evolutionists who have been "turned off" by the crudeness of other authors.

He stoutly resists the impulse to make dogmatic statements. His assertion, "It can no longer be claimed that the biological evidence supports evolution; rather the contrary," is a notable exception which endears him to our hearts. It must be noted, however, that Dr. Clark apparently accepts the concept of a vast geological age for the earth. He is at best in historical and philosophical, rather than scientific matters. Scientists may be distressed by his somewhat censorious attitude toward us as a group.

The Christian Stake in Science is a challenge to what is called the prevailing Christian attitude that science and religion are independent disciplines. By comparing the ability of science and Christianity to explain events and predict the course of scientific development, Dr. Clark demonstrates that there is a connection.

A particularly illuminating section concerns the distinction between true predictions on the basis of physical laws, and after-the event "explanations." The latter can superficially account for all phenomena, though only on the basis of experience (after-the-event), not understanding (predictive).

Dr. Clark uses evolution as a prime example of after-the-event explanations. Natural selection tells us why a cat has a tail, but it would just as readily tell us why a cat had no tail, if such were the case, and it could not have predicted that cats would develop only one tail, not two or more as with their other paired limbs.

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Dr. Clark shows why there is no cause for intellectual distress if on rare occasions scientific results appear to conflict with Christian faith. He asserts that science has never been more favorable to Christian belief than today. Though the truth of Christianity cannot be scientifically proved, when it successfully and repeatedly predicts what can be objectively measured, faith is strengthened and confirmed.

Darwin: Before and After is a fascinating historical examination of the development of evolutionary theory, and its influence on the world. Of particular interest are the agonizing conflicts suffered by Darwin as a result of his rejection of his Christian beliefs, and the disastrous results of application of evolutionary theory to social institutions.

Dr. Clark concludes that evolution stands primarily for a dangerous and ugly frame of mind, a substitute god. This is a view with which many of us will agree.

The Age of the Earth and Chronology of the Bible, by A. M. Rehwinkel. Adelaide, South Australia: Lutheran Publishing House 1966 and 1967. 51 pp.

Review by HAROLD ARMSTRONG*

Chronology is a subject which some people hold in disrepute. Anyone who denies the accuracy of Scriptures may as well give up chronology, of course, for there is no other chronicle which even claims to give a reasonably complete account.

But even many Christians, who believe the Bible, avoid the subject. Often their reason is fear of falling into some of the extremes to which, in the past, a few have gone in the name of chronology. But if we are to avoid every subject in connection with which excesses have been committed in the past, we shall study nothing at all, Scriptural or secular.

Moreover, as the author points out, chronology, being part of Scripture, ". . . is given by inspiration of God and is profitable . . .". If, then, we neglect this part of God's word, we shall surely deprive ourselves of something.

Also, chronology has other uses besides that of satisfying our curiosity. It has its use in the strengthening of belief, and in the defense of the Faith. For if we can determine the date of

some event by Biblical chronology, and independently by some other means, and the dates agree, the accuracy of Scripture is established in the part concerned at least.

And, other things being equal, accuracy of an account on one point is reason for believing that it is likely to be accurate on other points. Again, it is only with Scriptural chronology that this is possible. If, for example, we could by some means learn the date of the fall of Troy, we could still not use our information to check Homer's chronology, for he has none. Here, as in so many other ways, Scripture is unique.

The main part of Rehwinkel's book may be put under three headings: The uniqueness of Scriptural chronology; some difficulties and possible solutions; and some of the places at which Scriptural chronology may be compared with the determination of dates from other evidence.

It is pointed out that it is quite easy and straightforward to get from the Scriptural account a series of dates which is at least not far from the truth. Almost any attempt, taking words in their ordinary meaning, will give a list not very much different from Ussher's. But there are points on which a difference of opinion is possible, and these differences will introduce differences of some years into the chronologies.

About these matters, the author tries first of all to depend on the plain words of Scripture in their ordinary meaning. There is no attempt to use years of 360 days, or to distinguish times when Israel and Judah were or were not "my people." On the other hand, times taken from the Septuagint, rather than from the Masoretic text, are preferred. The effect of this is to extend the intervals between the Creation and the Flood, and especially between the Flood and Abraham's time.

At the very beginning of Scripture two important questions arise; viz.: whether the days of Creation were ordinary days, and whether there is a gap between the first and second verses of Genesis. The book presents many arguments to show that the days were, indeed, ordinary days of ordinary length. The question of the gap is not discussed.

Reasons why introduction of dating by radioactive carbon need cause no real difficulty for Biblical chronology are discussed briefly.

In summary, this book has something to say both in explanation and defense of Biblical Chronology. It should be of especial interest to a pastor or a Sunday School teacher, and is worth reading by anyone who reads and tries to understand Scripture.

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The Scientific Enterprise and Christian Faith, by Malcolm A. Jeeves. Tyndale Press, 39 Bedford Square, London WC 1. 1969. 166 pp. Also reprinted by Inter-Varsity Press, Chicago, Ill., Cloth, 168 pp. (\$4.50)

Reviewed by GEORGE F. HOWE*

Dr. Malcolm Jeeves, Professor of Psychology, University of St. Andrews has attempted in this short work to summarize some of the major themes from a conference of The Research Scientists' Christian Fellowship held in Oxford, England, August, 1965, in which he and 35 other scientists from 10 countries participated for one week. Dr. Jeeves expressed the hope that this book would be useful in relating the interaction of science and faith to such people as thoughtful students, leaders of Christian groups, and local ministers (p. 7-8).

It is my opinion however, that he has failed to fulfill this stated objective. Although some of the statements and shorter passages are quite helpful and have a ring of true orthodoxy, all too often there are assertions which degrade the scientific character of Scripture and direct the student away from Bible inerrancy. This book should not be recommended to anyone who is uncertain in the areas of Creation, Bible authority, or miracles because key conclusions in each case are scientifically and Biblically inadequate.

Although it was intended to present a balanced Christian approach to science, I believe it will serve largely to confuse and to subvert the faith of the uninitiated reader. On the other hand, the book may be of some interest and limited value to Christians deeply engaged in the philosophy of science and for that reason it is presently reviewed.

Although the book claims to report conclusions of renowned evangelical Christians in science, it has effectively abdicated Christian apologetics to the Liberals in at least three major areas:

1. it reemphasizes the importance and role of miracles in Bible history and personal salvation (pp. 29-34),
2. it presents evolution as a palatable option for Bible-believing Christians (p. 103),
3. and it detracts from the absolute inerrancy of Scripture in matters where science and Scripture overlap (p. 155, and elsewhere).

Chapter One

Chapter one deals with the Hebrew-Christian view of nature and provides a penetrating analysis of some philosophical trends which have shaped modern science. The Greeks erred in

equating Nature itself with God and placing undue importance upon human reason apart from experiment and observation.

The Judeo-Christian faith envisioned Nature as created by God and sustained by Him but not as actually equivalent to God Himself. Dr. Jeeves wisely argues that this outlook led science finally to recognize the need of experimental testing and of humility in the face of observational data.

Dr. Jeeves portrays "fixity of species" as an Aristotelian concept. Dr. Frank Marsh has shown that the concept of "fixity of kinds" was undoubtedly part of the Jewish faith and likewise property of the early Christian Church. Dr. Jeeves misrepresents the fixity view as a cold, machine-like product of Newton which faced inevitable change to a "dynamic and progressive process" under Darwin's influence (p. 19).

The author goes so far as to allege that some aspects of Darwin's view of man recapture a Hebrew-Christian emphasis (p. 19)! By this he means that Darwin helped overcome an "absentee-landlord concept of God which came from a Greek tendency to separate man from the rest of Creation. In this instance the learned Professor Jeeves has succeeded not only in criticizing the ideologies of the Greeks, but in casting grave doubt upon the Scripture itself.

It was in fact the Holy Spirit (through Moses) who first proposed man as absolutely separate from the animals—Genesis 2:7. It was not the word of Aristotle but the record of Genesis which originally maintained that God formed each organism "after its kind," and man distinct from Nature though dependent on natural causes and processes! Rather than recapturing a Hebrew-Christian emphasis on the nature of man, Darwin drove science and theology away from the Christian view of man's origin and true nature.

Chapter Two

In chapter two the author attempts to establish a view of natural law such that miracles would be adequately explained and providence would be viewed as God's continuing activity on our behalf. Some have tried to imagine God's relationship to His handiwork as something like a Craftsman or Artist who views a masterpiece which He has once and for all created. Based on the papers of Dr. MacKay and Dr. Pinnock, Dr. Jeeves correctly sets these two "models" of God's work aside for what he feels is a more comprehensive picture in which God is recognized as somewhat like an owner-operator-producer-author of a cosmic television program!

In a very limited sense the owner-operator-author and producer of the production that we have been observing on our television

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screen has similarities with God's creative sustaining activity of the events in the world around us, since if the transmitting station were to stop, there would be nothing left for us to go on observing. (p. 28)

This Model is helpful in that it accents God's activity in providence as well as in miracle and concurs with the emphasis of Col. 1:17. This model further leads the reader to understand that "natural laws" are God's own means of sustaining His handiwork, and that miracles (reversals of the normal observation expected by man) can occur as God chooses.

Even in this valuable second chapter, however, certain serious shortcomings emerge. On page 32, Dr. Jeeves writes: "It is sometimes not realized how relatively scarce the miracles are within the biblical narrative as a whole." Such a statement is regrettable in that it reemphasizes the wonder works of God which begin in Genesis 1 and continue periodically until Revelation 22! The author's suggestion that "... miraculous events are surprising scarce" (p. 31) stands in contrast to the bold evaluation of the late and great Dr. B. B. Warfield:

When our Lord came down to earth He drew heaven with Him. The signs which accompanied His ministry were but the trailing clouds of glory which He brought from heaven, which is His home. The number of the miracles which He wrought may easily be underrated. It has been said that in effect He banished disease and death from Palestine for the three years of His ministry. If this is exaggeration it is pardonable exaggeration. (Miracles: Yesterday and Today, True and False," reprinted in 1953 by Wm. B. Eerdmans Publ. Co., Grand Rapids, Mich., p. 13)

According to Dr. Jeeves there exist only three major periods of miracle in Scripture: 1.) the exodus, 2.) the lives of the prophets, 3.) and the ministry of the apostles. Perhaps his devaluation of the number of miracles stems from the fact that he has obviously failed to enumerate three other important periods of miraculous activity: 1.) the Creation Week, 2.) the life of Christ, 3.) and the tribulation period.

Of more profound concern for us, however, is the fact that Dr. Jeeves sets aside the value of miracles as "proof" for the authenticity of the Bible message: "It should also be pointed out that it is difficult to provide a strong case from the biblical records to suggest that miracles should be used in any sense as knock-down arguments or incontrovertible proof." (p. 31).

Such a statement stands in open conflict with the words of Jesus who said (after having performed many miracles): "Believe me that I am in the Father, and the Father in me: or else be-

lieve me for the very works' sake." John 14:11.

Dr. Jeeves goes further to imply that one need not believe in miracles to become a Christian: In presenting the Christian message there seems very little constraint from within the biblical record itself to adopt the reverse order to the one outlined, for that would be to insist that a person must believe that this, that, or the other miracle occurred before he can become a Christian. In fact such an approach would by experience seem to be patently self-defeating. (p. 34)

Although it is true one need not understand and believe *all* the Bible miracles in order to profess saving faith in the Christ, personal salvation does hinge on the acceptance of Jesus Christ as the Son of God (I John 4:15). Belief in several key miracles is therefore essential *before* one can become a child of God (the virgin birth, the perfect life, and the bodily resurrection of Jesus Christ). Also we must remember that the miracles were performed by Him to prove that He was indeed the Son of God. And for many they accomplished this purpose.

Chapter Three

Chapter three is a reasonably valuable analysis of the scientific method. Dr. Jeeves has much of interest here regarding the virtuosity of the scientific method (it defies all popular stereotypes). He deals with the subjectivity of science (a "knower" or subject-man—is always involved in the process.) He stresses the personal appeal of science—it is self-vindicating, and he mentions the universality of science—it can be subject to consensus opinion.

The author draws a parallel between religious and scientific knowledge. Like science, religious knowledge is based upon (a) data (givens), (b) it demands personal involvement, and (c) it provides a consensus opinion. Once a particular person has come to Christ, he experiences self-authentication and self vindication at a personal level. Yet his faith is amenable to sharing in a consensus situation of fellowship with other believers.

Chapter Four

In chapter four we are told that an explanation of a given subject may be traced by several levels or modes of analysis, no one of which may exclude the others. An example is drawn from biology in which we realize that a worker may attempt to explain an event along several different lines:

1. "how?" mechanism-biochemistry,
2. "what for?"- function,
3. or "how did this come about?"-history or diagnosis.

A thorough explanation may thus include several modes and no one mode is completely exhaustive.

All of this leads the author to conclude that scientific and Biblical expressions of the same topic are actually different modes and should not be regarded as logical alternatives or competitors of each other (p. 65). Furthermore, Jeeves says that scientific explanations should not ". . . be regarded as necessary competitors with the various biblical affirmations which we find concerning creation." Such statements seem quite harmless on the surface but they are the first steps toward asserting later that evolution theory will fit somehow with the dicta of Scripture!

To avoid the direct conflict which emerges between Genesis 1 and neo-Darwinism, Dr. Jeeves attempts here to convince the reader the Bible account speaks in some entirely different "language" than science and therefore presents a completely different mode of explanation. In contrast to the clear, objective, and scientific statements of Genesis 1 and 2, Jeeves' low view of Scripture at this point does disservice to science and to Christian apologetics.

To conclude this treatment of chapter four, Dr. Jeeves scornfully rejects any system which stresses the "gaps" in our present knowledge. While it is certainly true that God is not "God-of-the-gaps" alone, it is likewise possible that many gaps are real and demonstrate the discontinuity and non-evolutionary character of God's Creation. For example, evolution theory by its very nature has obscured the study of origins in that it deliberately overlooks the gaps between various "kinds."

Rather than cheerfully trying to fill all such gaps (as MacKay suggests on p. 70) the Christian would serve science better by affirming the gaps and thereby helping those blinded by evolution to face implications from the fossils squarely. For an extended treatment of the reality and persistence of "gaps" in the world of paleontology, the reader may consult many papers in the *Creation Research Society Annuals* and *Quarterlies*.

The effect of chapter four then (whether it was intentional or unintentional on the author's part) is to remove the Bible from the domain of scientifically credible books. Such an effect is lamentable even if based upon the best of intentions.

Chapter Five

One particularly misleading statement in the first paragraph of chapter five sets an unfortunate tone which prevails throughout the entire unit: ". . . we do not regard the evolution issue as

necessarily presenting serious problems for Christian belief, any more than the other two issues of cosmological theories and theories concerning the origin of life." (p. 80) The author rejects the Bible as a suitable basis for physical models of the universe, arguing that the Bible would recommend a solid firmament and an earth which stands on literal "pillars." (pp. 80-81)

Many students of Bible apologetics (myself included) have indicated that in the original languages each of these Bible passages mentioned is in keeping with the facts of science and is a splendid basis for building models of any kind—be they physical or spiritual. But simply because certain people have developed ridiculous cosmologies based on the English translations, Dr. Jeeves concludes that the Bible may not be used as a textbook of physical science. (p. 81)

In this same analysis of cosmology, Dr. Jeeves failed to show that the Bible leads unerringly to a correct view of the earth's sphericity and position—consult Isaiah 40:22 where reference is made to ". . . the circle of the earth," and Job 26:7 where we discover that God ". . . hangeth the earth upon nothing." Certainly such passages would have provided excellent basis for cosmologists in any century.

Even certain puzzling verses with obvious figurative reference (Isaiah 11:12—"The four corners of the earth and Job 9:6 where the "pillars of the earth are shaken) do not indicate that the Bible seriously entertained either a flat earth or an earth support! Taken in total perspective, the Bible statements regarding cosmology are accurate and in clear keeping with fact. All of this has apparently escaped Dr. Jeeves for he recommends that Scripture be ignored as a basis for scientific prediction.

The number of serious problems in chapter five begins to mount on page 89 where the author continues to wrest Scripture—this time in argument against the doctrine of "creation from nothing" or "*ex nihilo*" creation. Although Dr. Jeeves does not overtly deny the concept of "creation from nothing" originally, his treatment weakens and revises it beyond recognition. Yet the most elementary analysis of God's Word shows beyond shadow of doubt that God is "before all things," and that "In the beginning, God created the Heavens and the earth."

In chapter five the author concludes that evolution can be God's tool—an actual abandonment of Special Creation as taught in Scripture. He further asserts that God's purpose can be produced in Creation by randomness—a reemphasis of God's direct role in the Creation Week whereby "God said . . . and it was so." Finally,

regarding the entire issue of origins, Dr. Jeeves argues that God's Word is not "... in any sense a text book of twentieth century scientific knowledge." (p. 106).

He continues: "The attempt to read and interpret these early chapters of the book of Genesis as if they are modern scientific statements is a classical example of the point of view which we have endeavored to avoid." Because the Bible patently disagrees with certain geological and biological conclusions (scientific theories), Jeeves suggests that we ignore the scientific content and implications of Scripture! Perhaps the noted author has forgotten the words of Paul, "Let God be true and every man a liar."

Dr. Jeeves clearly understands the problems which exist between historical geologic theories and the Genesis record: (1) plants before the sun (Gen. 1:11), (2) birds before creeping things (1:20 and 24), and (3) great sea monsters before the beasts of the earth (1:21). Rather than suggest that the reader re-analyze the basis of geologic theory in the light of the great flood (Genesis 6-8), Jeeves advocates that Christians simply abandon all scientific implications of Genesis. Here is another instance in which theories of men have been esteemed more highly by the author than the plain statements of God's Word.

On page 108 and elsewhere in chapter five, Dr. Jeeves implies that we should receive the deep "truths" of Genesis 1 and 2 without paying particular respect to the historical or scientific content of the narratives. At this point I am reminded of Christ's own words: "If I have told you earthly things, and ye believe not, how shall ye believe, if I tell you of heavenly things?" (John 3:12)

If we cannot trust the historicity of Genesis 1 and 2, how should we in good faith believe the "theological truths" it may contain? If the Bible is inadequate and uncertain where it deals with matters subject to scientific scrutiny, why should one be particularly inclined to believe it accurate on matters which must be received entirely on faith?

Dr. Jeeves' approach to these issues is particularly abortive in lieu of recent developments in scientific creationism. The Bible record is quite valuable if it is indeed taken literally and used as a basis for building scientific models of origins. It appears that the author was either totally oblivious to current developments in creationism (Creation Research Society publications, Evolution Protest Movement pamphlets, and Bible-Science Association Newsletters, to mention only a few), or else he deliberately chose to ignore them.

Oddly enough, Jeeves maintains that the author of Genesis did not intend to reveal to us

the "how" of God's creation or to explain any traces we shall find in the rocks." Yet in Genesis itself one finds much of the "how," the "science," and the "mechanism" of creation:

1. creation is by miracle ("God said and it was so.")
2. creation is rapid ("evening and morning were the day.")
3. many distinct types are formed ("after their kinds.")
4. man is completely distinct from other forms ("dust of the ground.")

Near the end of this chapter Dr. Jeeves rightly bemoans "evolutionism" as a false and apostate religion. (p. 109) He is accordingly disturbed to find that some who believe the biological theory of evolution commence to apply it in the realms of philosophy and religion. Yet neither Dr. Jeeves nor his readers should be surprised in the least that this occurs.

Man is responsible to God for sin only if man was **first** formed **good** - as Special Creationism provides. But if man has evolved by imperceptible changes from an animal ancestry, then he was never really "good," is in no sense responsible for his misdeeds, and is certainly not in need of "personal salvation" on God's terms.

If one grants evolution in biology he should not be appalled when the same false theory bears evil fruit in the realms of ethics, morality, and religion. Using the Biblical test ("by their fruits ye shall know them") we do well to reject evolution in biology and elsewhere. The author has failed to grasp this issue or to deal with it effectively.

Two Final Chapters

Dr. Jeeves provides his readers with two more chapters—one on psychology and cybernetics and another in retrospect. These final units, like those reviewed here in detail, present some worthwhile concepts mingled with much that is objectionable.

Since the book (with the exception of chapter six on psychology) contains snatches of material put together from the many authors at the conference, one is frequently at a loss to know whether it is Dr. Jeeves who deserves the criticism or some other participants in the meetings whom Jeeves is quoting.

One is also at a disadvantage to know if this work represents a balanced synopsis of views presented by all participants or if certain preconceived notions of the author have found amplification in quotation of selected lines from certain papers. A more helpful account of the symposium would have presented whole papers (or at least larger excerpts) from each participant so that the thoughtful student could ful-

ly perceive the arguments of such men as Dr. Pinnock, for example, in their original contexts.

If this book represented the opinions of Dr. Jeeves alone, it would be disturbance enough. Unfortunately, it appears to be a consensus report of papers from 36 Christian men of science. As such it indicates the development of an unwholesome trend among professed evangelicals to treat God's Word as less than science and to embrace theistic evolution as God's *modus operandi*.

These are perilous days for Christendom and the question Christ posed to His disciples takes on more urgent meaning for our times: "... when the Son of man cometh, shall he find faith on the earth?" Luke 18:18.

Darwinism Comes to America, Edited by George Daniels. Blaisdell Publishing Company, Waltham, Mass., 1968, 137 pages.

Reviewed by EMMETT L. WILLIAMS, JR.*

This little paperback is part of the Blaisdell series on Primary Sources in American History. Included in its contents are excerpts of essays written by various American scientists and theologians who defended and attacked the modern evolutionary hypothesis when it was introduced into this country. These excerpts cover the period 1856-1902.

The editor's interesting commentary makes the book very readable. The purpose of the book is stated on the back cover:

Professor Daniels' purpose is to show, through the articles and his own section introductions, the process by which a new concept such as Darwinism gradually becomes accepted. He offers an original thesis on this process of intellectual adjustment, beginning with a study of the nineteenth century's gradual acceptance of evolution and moving to an examination of the general problem of intellectual change.

The editor assumes the evolutionary hypothesis to be proven and states that paleontological, embryological, and other evidence have confirmed it. (p. 39) However, in presenting fairly both the pro and con views, the editor makes no attempt to cast aspersions at those who chose to differ with Darwin. To the contrary, he is very kind to the opponents of evolution.

The editor's statement of the general theory of evolution is interesting:

Clearly, if time is not limited, and if variation is indeed infinite, Darwin's theory could ex-

plain the entire biological past—from the one-celled organism all the way through man. (p. xiv)

Immense amounts of time are a necessary postulate of the theory of evolution. It is a shame so many Christians who believe in creation are willing to accept the geologic time table. It is the reviewer's opinion that such a person has swallowed one-half of the poison (billions of years), while vigorously refusing to swallow the other half (infinite variation).

A person who accepts the modern evolutionary time table is certainly in a weaker position to defend creation and attack the weaknesses of evolution, for he has already yielded to the adversary unnecessarily. Dr. Henry Morris makes a very pointed observation concerning this compromise:

It is high time that Christians face the fact that the so-called geologic ages are essentially synonymous with the evolutionary theory of origins and that the latter is fundamentally the anti-God conspiracy of Satan himself! The theory of evolution is the only possible means of explaining the universe without a Creator and thereby of rejecting His sovereignty. And the hypothesis of vast geologic ages is the absolutely indispensable condition for a viable theory of evolution. Thus any attempt to distort the clear teaching of Scripture concerning the basic framework of history in order to accommodate the geologic ages can only lead to eventual apostasy—as it already has in the past hundred years, for great numbers of schools, churches, missions and Christian institutions of all kinds.¹

The editor is very perceptive in seeing what those who are willing to fit the Biblical account of creation into an evolutionary framework do to the inspired word of God. He uses excerpts from two men (McCosh and Warring), and then makes the following observation concerning Warring's essay:

Most modern readers will be inclined to think that if the Bible is as wondrously plastic as Warring interprets it, there is little meaning in the claim that it is inspired truth. (p. 96)

From this statement it is obvious to the reviewer that theistic evolutionists and men so inclined are doing more harm than good in their effort to seek the praise of men more than the praise of God.

When the evolutionary hypothesis was introduced into this country, many apparently Christian men were instrumental in its acceptance. Asa Gray was "a devout Presbyterian, certain that science and his faith could not clash." (pp. 1-2) It appears that many who defended evolution did not have the foresight to realize it was

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a world view in direct opposition to Christian belief.

The editor comments that one scientist, who was won over to the evolutionary viewpoint, never thought the establishment of the theory would prove dangerous to religion. (p. 122) Indeed, when men such as Huxley can state that the whole of reality is evolution,² then evolution is a religion!

Many perceptive theologians and scientists saw the danger and weakness in the new materialistic theory and fought against it reasonably and intellectually. Agassiz and others realized that the theory (natural selection) failed in explaining the origin of anything new, particularly the origin of life. (pp. 15, 42, 70, 98) Thompson realized that the transformation of phenomenal laws into self-evolving powers was a result of faulty reasoning. (p. 37)

Excellent scientific evidence was offered against the theory; in fact, Daniels states, the most significant arguments against Darwinism were in the realm of science. (p. 39)

The battle was also waged in the area of philosophy where the evolutionary hypothesis properly belongs. It is certainly beyond the scope of the scientific method to prove or disprove it. (p. 73)

In an address before the American Association for the Advancement of Science in 1873, the president of the society, T. Lawrence Smith, referred to Darwin as a philosopher and a metaphysician. (p. 64) My, how times have changed in AAAS! W. N. Rice saw in the Darwinian theory another attempt of scientists to narrow the domain of the supernatural. (p. 45) Other men also saw this tendency, and the editor comments:

Now, Darwin by bringing all of organic nature under the operation of the same set of causal laws, independent of the whim of any Deity had apparently written the final chapter in the removal of God from nature. (p. 34) Although Darwin may never have intended this, it is the logical conclusion of his theory.

Rice comments that the only alternative to the theory of evolution is the doctrine of special creation. (p. 57) Possibly this is why many scientists prefer evolution.

It is redundant to say that evolution has invaded every area of modern thought. LeConte stated that evolution (organic) is as certain as the law of gravitation. (p. 91) Thus the accommodation to the theory began. The "survival of the fittest" terminology pleased many Americans especially in the areas of economics and social structure. (pp. 111-112) This has been discussed

in a previous *Creation Research Society Quarterly*.

One writer explains his theology in terms of the survival of the fittest. (p. 113) Those who get to heaven are the fittest; the others go into everlasting punishment! What happened to the grace of God?

This is an interesting little book and it is recommended to those who are interested in the creation vs. evolution battle, and to those who are interested in the history of science. There have been those who have stood against the satanic theory and stood well, Lord willing, may we be more successful.

References

¹Morris, Henry M. November, 1968. The chronology of Genesis 1-11 and geologic time, *The Biblical Viewpoint*, II:98-106.

²Huxley, Julian. 1955. Evolution and genetics (in) What is science, edited by J. R. Newman, New York, p. 278.

³Tinkle, William J. March, 1969. Immorality in natural selection, *Creation Research Society Quarterly*, V, (4): 148-150. See also: Davidheiser, Bolton. March 1969. Social darwinism, *Creation Research Society Quarterly*, V, (4): 150-152.

Heredity—A Study in Science and the Bible, by William J. Tinkle. St. Thomas Press, Houston, Texas, 1967.

Reviewed by JOHN W. KLOTZ*

Intended chiefly for junior high school students as supplementary reading, the general purpose of this book is to relate the science of genetics to the Bible and to Christianity. The chief purpose is to show that modern genetics does not support evolution, and in this objective, the author is eminently successful.

Dr. Tinkle deals also with practical problems: plant breeding, human heredity, the relative importance of heredity and environment.

The author quotes from widely recognized scientists. There are a number of illustrations to develop and explain the text. The book should appeal not only to junior high school students, but to all young people of a high school age.

Rural youth should be interested in the extensive section of plant and animal breeding where Dr. Tinkle discusses his own research and experiences. All young people are very much interested in human heredity; the section on this topic is well done.

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Prehistory and Earth Models, by Melvin A. Cook. Max Parrish and Co. LTD, London, 1966, 353 pp.

Reviewed by THOMAS G. BARNES*

Prehistory and Earth Models encompasses a broad scope of topics ordinarily associated with evolutionary concepts. Conventional geological chronometry and other domains of evolutionary doctrine are considered and alternative interpretations are given, based on the *same* evidences.

The author is a physical chemist (Ph. D., Yale, 1937) with a career in explosives, high velocity impact, solid state, surface chemistry and related problems in chemistry, physics and metallurgy. He takes advantage of his own areas of specialization to develop this treatise from that scientific base. Although he identifies himself as "an outsider" in the realm of geology he is obviously well versed in that field also.

He states that his interest in problems concerning earth science became strong after the discovery that the earth's atmosphere may not yet be in steady state as far as radiocarbon is concerned even though it takes only about 30,000 years to establish steady state. His studies lead him to conclude "that there really are no reliable time clocks despite an almost overwhelming contrary opinion."

The author proposes an ice cap model and reinvestigates the continental drift theory (the formation of the present continents by the splitting up of one single original continent). The Wisconsin ice cap is assumed to have been sufficiently deep and extensive so as to produce the required stresses to rupture the earth's crust.

Europe and Africa are on one side of the split-up and North America and South America on the other side with the Mid-Atlantic Rift considered as additional evidence of separation. A second ice cap is assumed for the southern hemisphere as a factor in the world wide catastrophe. The Wisconsin ice cap is considered to be the source of water for the Atlantic and Arctic Oceans.

The author considers the age of the earth to be indeterminant. On the other hand he contends that the sedimentary rock formations and

their included fossils are relatively young. One reason given for the indeterminacy in dating the total history of the earth is the erasure of surface features by catastrophes, such as that proposed in the ice cap model.

The book gives an extensive treatment of geological chronometry. The novelty developed by the author is that the geochronological interpretation may be replaced by a geochemical interpretation. He associates the geochemical interpretation with deposition patterns of uranium-thorium-potassium in the solidification of the complex silicates of the mantle and crust.

Much of the text is developed from a strong analytical point of view employing calculus and chemical equations where needed. Also included are chapters on "Rank and Occurrence of Coal," "Origin and Geology of Oil and Gas," and "Life, Evolution and the Fossil Record," which exposes weakness of conventional theories of organic evolution.

The discussion on definitions of life is noteworthy, wherein the author labels as "counterfeit" those definitions which would call life simply a process such as crystal growth, osmotic swelling, etc. It is stated that life is no mere freak of the universe nor happenstance. The author exposes the folly of those who consider the creation of life in the laboratory to be imminent.

Total scope of the book is so great that one would not expect a critical reader to agree with every opinion expressed in the text. To do so would place it in the category of dogma, the very thing the author is trying to avoid. This reviewer does not subscribe to some things in the book, such as, for example, the assignment of an infinite age to the universe, but this is only a passing opinion of the author and not the main thrust of the text.

The courage of the author in putting forth a new model and attempting to explain such a complex background of evidence in a relatively short time frame is commendable and a real challenge. He supports his thesis with valid quantitative analysis. The book may also serve as a source book. It represents many years of research.

The author concludes his book by pointing out an interesting paradox: "The catastrophic character of continental drift in an ice cap model is probably the key to major extensions in terrestrial life; survival not extinction becomes the paradox in the catastrophic model."

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LETTER TO THE EDITOR

Dear Dr. Lammerts, Research Editor:

At the Annual Creation Research Society Board of Directors meeting Dr. Morris, Tom Barnes, Harold Armstrong and I discussed the possibility that the Society might develop a general scientific conservation principle to encompass energy conservation (first law of thermodynamics) and biological conservation (Biblical statement of "after its kind").

Can the two be combined into some reasonable, verifiable, general principle? Conservation principles are the cornerstones of modern physics and chemistry. General acceptance of the doctrine of evolution has prevented development of a conservation principle in biology. Evolutionary thought is now penetrating physics and chemistry and many evolutionists would like to overthrow the first and second laws of thermodynamics.

Creation Research Society members need to do some original work in this area. It would be appreciated if members would send in letters or papers in this general area. What are your ideas on this subject? Let's get started with some exchange on this issue. We have enough scientific potential in the Society to do this.

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(Continued from Page 120)

loss to suggest a mechanism enabling the supposed evolutionary principle to overcome the disordering tendency required by the Second Law of Thermodynamics, but on the other hand I was unable to convince them that there was any contradiction between the two. The discussion ended in an impasse, with a mutual recognition that we were cognizant of the same facts, but viewing them from two points of view which simply pre-determined our interpretations of those facts.

To the evolutionist, a creationist is a complete anomaly, "living in an earlier century" and completely out of touch with modern thought. Furthermore, creationism (and, for that matter Biblical Christianity in general, and even conservatism in almost any field) is increasingly being subjected to restrictive pressures of varied kinds, sometimes including outright suppression, in the interest of "progress" toward some kind of *unified world culture*.

But as the Scripture says: "God hath not given us the spirit of fear, but of power, and of love, and of a sound mind." (II Timothy 1:7) In the deepest sense, it is only the believing Christian who is equipped to think rationally about the great themes of origins and destinies, for "the fear of the Lord is the beginning of wisdom." (Proverbs 9:10) The believing Christian has been "transformed by the renewing of his mind." (Romans 12:2)

The unbeliever, on the other hand, has his "understanding darkened." (Ephesians 4:18) He does "not like to retain God in his knowledge"

(Romans 1:28), and so must push God as far back in time and as far away in space as he possibly can. "The god of this world (i.e., Satan) hath blinded the minds of them who believe not." (II Corinthians 4:4)

The evidence is abundant and powerful in support of the truth of God and His Word, but the natural mind simply rejects it. "The carnal mind is enmity against God." (Romans 8:7) The one who refuses the truth of God's creation is "willingly ignorant" (II Peter 3:5) and "without excuse." (Romans 1:20)

For those whose minds (really, whose hearts) are open and who truly are seeking the truth, the evidence is abundant and satisfying. As usual, this issue of the *Quarterly* provides still further support for the doctrine of special creation (e.g., the articles by Mennega and Butler) and diluvial catastrophism (e. g., that by Northrup) as taught in Scripture. It should be of real help to many.

However, for the true evolutionist, no amount of mere evidence will cause him to change his mind (i.e., literally, "repent"). A spiritual problem requires a spiritual remedy. This is why our scientific research and publication efforts in creationism must continually be undergirded with prayer.

For the weapons of our warfare are not carnal, but are mighty through God to the pulling down of strongholds, casting down imaginations and every high thing that exalteth itself against the knowledge of God, and bringing into captivity every thought to the obedience of Christ.

(II Corinthians 10:4,5)

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.

We propose to re-evaluate science from this viewpoint. Beginning in 1964, we are publishing an annual yearbook of articles by various members of the Society and thereafter a quarterly review of scientific literature. Our eventual goal is the realignment of science based on theistic creation concepts and the publication of textbooks for high school and college use.

1. The Bible is the written Word of God, and because it is inspired throughout, all its assertions are historically and scientifically true in all the original autographs. To the student of nature this means that the account of origins in Genesis is a factual presentation of simple historical truths.
2. All basic types of living things, including man, were made by direct creative acts of God during the Creation Week described in Genesis. Whatever biological changes have occurred since Creation Week have accomplished only changes within the original created kinds.
3. The great Flood described in Genesis, commonly referred to as the Noachian Flood, was an historic event worldwide in its extent and effect.
4. We are an organization of Christian men 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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