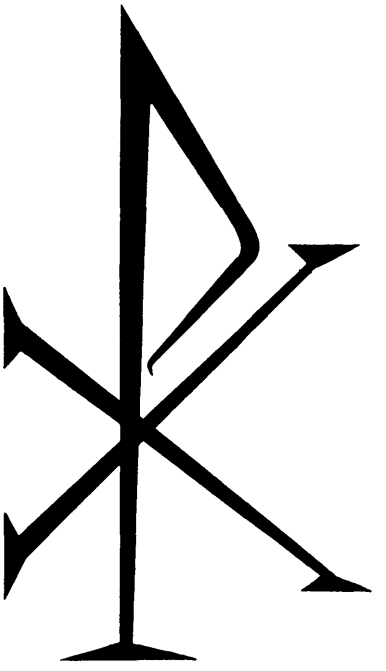
CREATION RESEARCH SOCIETY

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 COMMENT

By now you have all received the plea for contributions for the Textbook Committee. This work under the able direction of Dr. Barnes continues to progress.

Dr. Howe, who has just finished his research work at Cornell University, is writing the chapters on botany which will about conclude all the manuscripts needed. Dr. Klotz is in El Paso, Texas, helping Mrs. Ward integrate these into a well ordered presentation.

Already serious criticism of the expensive ($8,000,000.00) BSCS series is under way as may be noted by reading an article in the June issue of *Bioscience* entitled, "The Accidental Century and Biology." by William G. Houk (June, 1966, pp. 393-395.)

Anyway we have a need to fill and your help is needed both financially and from the viewpoint of helping with illustrations. If you are good at photography please contact Mrs. Rita Ward, 3600 Alturas Avenue, El Paso, Texas, 79930, and she will give you lots of work.

After hearing so much about the marvelous adequacy of the evolution theory as regards explaining anything and everything that walks, runs, swims or flies, it is refreshing to read Dr. Klotz's article and realize how really inadequate, philosophically, this theory really is.

Dr. Harold Clark does a fine job in presenting some idea of the vast extent of the sedimentary rocks of the Colorado Plateau. This article ties in very well with the one written by Clifford Burdick (1966 Annual). This should be read in conjunction with Burdick's paper to get a clear picture of just why this area, so often appealed to by evolutionists as being a marvelous proof for their theory actually is a marvelous proof of the Flood.

The paper by Dr. Gentry on polonium isotope halos certainly puts some severe restrictions on those who wish to theorize about how the earth was formed, particularly, those who like to think in terms of billions of years with the granitic structure undergoing formation during periods of millions of years.

Several fine papers reached the galley proof stage before we realized that so many other items of news were scheduled for this issue that we have run out of space. So they will be held until the October issue.

Walter E. Lammerts,
Editor

THE PHILOSOPHY OF SCIENCE IN RELATION TO CONCEPTS OF CREATION VS. THE EVOLUTION THEORY

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Evolution is defined as the theory that all forms of life are descended from one or a few ancestors by natural processes operative today. As an adequate scientific theory it should (1) be verified by experimentation, (2) be fruitful in terms of promoting useful research and (3) have predictive value. Evolution, as defined, cannot be verified by experimentation or observation, has shown little predictive value, and has led to many incorrect phylogenetic conclusions, as well as sterile embryological concepts such as Haeckel's. Geological science is shown to be returning to LOCAL *catastrophic theories in order to try and explain many observed facts. Similarities in the plant and animal kingdoms do not necessarily indicate descent as shown by the innumerable* PARALLEL *variations in unrelated organisms. The lack of favorable mutations occurring under natural conditions is a serious difficulty in explaining evolution by natural selection. Fossil evidence for evolution is very meager and limited at best to micro-evolutionary change, or what might more properly be called simply variation within limits. This is particularly true as regards the study of human fossils.*

I should probably begin by defining what I mean by evolution. I do not equate evolution with change. It is obvious that change has taken place in the past and is taking place today. Organisms become extinct; new species develop. I am not suggesting a static world in which the species on our time level have existed unchanged since creation: nor does Scripture teach this.

By evolution I mean the idea that life came into existence by purely natural processes according to the principles which we find operative on our time level, that given the conditions which existed in the primitive world life might come into existence today, that no special supernatural activity or intervention was necessary, that all of the forms of life we know today have descended from a single, or at most a few, common ancestors, and that man is descended from

animal ancestors.

It is my conviction that life came into existence by God's almighty power in a miraculous way that does not lend itself to scientific description or scientific study and examination, that life from the beginning existed in a wide variety of forms, some relatively simple, others extremely complex, and that all human beings are the descendants of Adam and Eve, who were not the descendants of animals.

I believe that the observational evidence gives no more support to evolution than it does to special creation. I believe there are observations which fit better the theory of evolution than they do special creation, but I also believe there are observations which do not fit the theory of evolution.

In order to see evolution in its proper perspective it might be desirable to explore first the nature of the scientific method, how the scientist proceeds, what his objectives are, what his assumptions are, and what he believes that he achieves. Modern science is a relatively new phenomenon. It developed when the logical methods of the Greeks were wedded to the experimental methods of the alchemists and metallurgists. The Greeks were competent individuals and in a real sense competent scientists, but they failed to employ some of the techniques of modern science, particularly the experimental method, and consequently did not make the progress that modern science has made.

Let us recognize at the outset that science has contributed immensely to the society of which we are members. No Christian can be antiscientific, for science has been a means God has employed in bringing blessings to us. Science is a gift of God. Through it God has enabled us to exercise greater control of the environment than He has given to any previous generation. To reject evolution is not to reject science.

Controlled Experimentation in Science

The chief technique of the scientist today and the technique which he has used successfully in developing modern science has been the experimental method. If we examine the science of the ancient Greeks and modern science, this seems to be the only significant difference. The Greeks were certainly our peers and possibly even our superiors in their intellectual equipment; they made careful observations, but they failed to use the technique of the controlled experiment, for they were prejudiced against the use of experimentation.

It is generally agreed that controlled experiments are of critical importance in the progress of science today. Ideally the experiment enables the investigator to assign a given effect to a given cause. He is able to eliminate causes which are irrelevant and in this way he seeks to determine the correctness of the explanation which his theory presents.

It is at once obvious that experimentation can only be used with phenomenon on our time level. It is simply impossible to conduct controlled experiments regarding the past. This is also true of direct observation. Since evolution is supposed to be a process requiring long periods of time, it is not possible to observe changes of the magnitude required for the development of the higher categories. And it is in this area–the past–that the difference of opinion between those who accept special creation and evolution arises. Dr. Conant discussed this is his *Science and Common Sense* (Page 259 ff) and calls attention to the fact that there is no basic controversy between science and the Church on our time level. He says that these controversies deal chiefly with the phenomena of the past. I am convinced that the reason for this is the impossibility of using experimentation and direct observation in discussing most aspects of the theory of evolution. We simply do not have available to any appreciable extent these very important tools and resources. We cannot test the theory and therefore we lack the reasonable certainty we have in dealing with phenomena on our time level.

The Scientific Method

How does the scientist work? In most cases he begins by gathering his facts. He may do this by carrying on observations or he may set up experiments of discovery which will assist him in "getting the facts." After he has gathered his facts, he arranges them in a logical order through correlation, classification, mathematical manipulation, and the like, Next comes the great leap of the scientific method, the formation of a hypothesis or a theory. Once the scientist has gathered his facts, he tries to relate them and to explain them. This is the function of a hypothesis or a theory—to relate facts to one another and to explain them.

After the theory or hypothesis has been formulated the scientist works deductively and asks himself this question: If my theory is correct, what are the logical consequences of the theory? He then proceeds to test these logical consequences by means of a second type of experiment, an experiment of confirmation. If his experiments confirm his theory or hypothesis he is happy. If they do not, he restructures his theory or hypothesis to fit these additional observations which he has made.

It is at once evident that the scientist deals with two kinds of "things''-facts and theories. A theory is never a fact, and it cannot be a fact. This does not mean that theories are unimportant: they are of the utmost importance. Evolu-

tion cannot be dismissed because "it is only a theory." As a matter of fact it is generally agreed that progress in science comes not by gaining new facts but by developing new theories. Theories are also of immense practical importance. George Washington died because of a wrong theory. He lived at a time when disease was explained according to the humoral theory and it was thought that disease was due to imbalances in the body humors, one of which was the blood, and he was treated accordingly, with fatal results. Let me say then that while I would argue evolution is not a fact, I am not saying it is unimportant.

Characteristics of a Good Theory

What are the criteria by which we judge the adequacy of a theory? It is generally agreed (1) that a theory must be testable by experimentation, (2) that it must be fruitful, and (3) that it must make possible predictions. Gruenberger in his discussion of the scientific method *(Science* **145 :** 1414) lists the various criteria, putting these three first and indicating points that are to be assigned to the different criteria. The fact of the matter is that the theory of evolution does not meet these three most important criteria.

The theory of evolution cannot be checked by experimentation and direct observation.

In addition, it cannot be used to predict to any greater degree than the theory of special creation. Very often evolutionists point to the similarities either in structure or in physiology that can be predicted from the theory of evolution. But it is possible to predict these same similarities from what we might call the theory of special creation. There are at least as many instances in which predictions from the theory of evolution break down as there are instances when the predictions from special creation break down.

In addition the theory of evolution has not been particularly fruitful in stimulating biological research. It has stimulated some research but not nearly so much as some of the other theories.

Therefore, the theory of evolution fails to meet three of the most important criteria for a good theory: capability of being examined by controlled experimentation, predictability, and fruitfulness.

Assumptions of Science

The scientist makes a number of assumptions and imposes a number of limitations on himself. One of his assumptions is the assumption of uniformity. He assumes that the natural laws and principles which he discovers in his laboratories hold throughout time and space. He believes that matter is the same everywhere in the universe and behaves in the same way. He also assumes that matter has always been constituted in the same way and has always behaved in the same manner throughout time. He assumes that this has been true of the past and that it will be true of the future.

Actually it is only by making this assumption that the scientist is able to work at all. Were he to assume that matter did not obey the same general laws and principles there would be no point in his carrying out his work. If matter were erratic and chaotic, if the scientific laws and principles which we have been able to discover do not hold throughout time and space there would be little purpose in carrying out the scientific enterprise.

At the same time we must recognize that the principle of uniformity is an assumption and nothing more. What is even more interesting is that some scientists and philosophers of science have been inclined to question it. William S. Beck in this *Modern Science and the Nature of Life* says,

> When all is said and done there seems to be evidence that even the 'laws of nature' are changing. Modern physics suggest the possibility that changes are taking place in the speed of light and in the rates of chemical reactions. In other words the universe is changing, and it becomes hazardous to attempt calculations concerning the very remote past and future. It appears that eternal natural stability is as improbable as its psychological corollary, eternal truth. This should worry no one except the seeker of eternal certainty. It may turn out that fundamental change and uncertainty are the nearest things we have to eternal principles. (Page 170.)

Closely associated with the principle of uniformity is the principle of uniformitarianism. Uniformitarianism started among the geologists. Perhaps its greatest exponent was Charles Lyell who argued that the present is the key to the past. His particular interest was the rate of deposit of sedimentary rock and the formation of the various rock strata. He was arguing against the theory of catastrophism promulgated by a number of his contemporaries who believed that the rock strata and the fossils which they contained were the products of sudden catastrophes rather than of slow gradual processes. Lyell argued that the strata were the products of the gradual processes which he and other geologists were able to observe on their own time level. Lyell greatly influenced Darwin.

Actually uniformitarianism is something different from uniformity. It deals with rates rather than with fundamental physical processes and Beck points out there is good reason for believing that rates at which processes take place may change. Uniformitarianism has come under con-

siderable attack among geologists since the end of World War II. Norman Newell of the American Museum of Natural History was recently quoted as saying,

> Geology suffers from a great lack of data and in such a situation any attractive theory that comes along is taken as gospel. That is the case with uniformitarianism. Geology students are taught that 'the present is the key to the past' and they, too, often take it to mean that nothing ever happened that isn't happening now. But since the end of World War II, when a new generation moved in we have gathered more data and we have begun to realize that there were many catastrophic events in the past, some of which happened just once.

Dr. Newell went on to say,

> I am in favor of junking both of the terms, catastrophism and uniformitarianism, completely. They are just too confusing.

The scientist assumes that his senses do not deceive him, that the picture they present is true and correct. Once more it would appear that this is a reasonable assumption and one that is necessary for the existence of any body of scientific knowledge. It does not necessarily follow that the interpretation of these observations is correct. It is important that we recognize this in considering the evidences for evolution.

Sometimes the argument is advanced that evolution must be true since there are so many evidences which seem to support the theory of evolution and God would certainly not deceive us. It is argued that if we deny evolution in the light of its acceptance by unbiased observers we are implying that God is a god who plays at cat and mouse games with us, teasing and tormenting us with things which appear to us to be true but which are not. Actually the situation is somewhat different.

True, God does not deceive us, but we may misinterpret the evidence of our sense organs. The fault lies not with God but rather with the limitations of the human mind. Who would argue that God is a god who deceives because He created a world which appeared for thousands of years to be geocentric but which seems actually to be heliocentric. Would we say that God deceived because the world which He created appeared to the best scientists of the day to be geocentric? Rather would we not argue that the men who studied the solar system were deceived because of the limitations of the human mind?

Hanson, in writing on "Galileo's Discoveries in Dynamics," says something quite similar:

> Facts are always facts about or with respect to or set out in terms of some theoretical framework. Should the framework deliquesce, the objects, processes, and facts will dissolve conceptually. Where are the 'facts' of alchemy, of the phlogiston theory? Or must we grant that no observations ever really supported such frameworks of ideas? . . . They are actually once-descriptive references whose supporting rationale has disappeared. Their articulators were, in their way, dedicated empiricists, groping, struggling, to delineate *the facts* concerning intricacies of a near incomprehensible world. May not the solid acquisitions of our own laboratory performances yet grow pale before the chilling winds of new doctrine–doctrine opposed to our presently accepted theories? *(Science* 147:472 ff.)

Perhaps "the facts" which are supposed to support evolution are not so overwhelmingly impressive after all.

Paradigms in Science

In this connection it is worth calling attention to a recent article by E. G. Boring, Professor Emeritus of Psychology at Harvard *(Science* 145:680-5). Boring speaks of changing paradigms in science. Paradigms are essentially fundamental hypotheses or points of view. He cites as an example of a paradigm the Ptolomaic point of view which was supplanted by the heliocentric system of Copernicus; and the creationist point of view which was opposed by evolution. He says that paradigms are fundamental to the thinking of men until something better comes along, They work best for the time being, and their influence is profound. However, he points out, they are not permanent and inevitably they are replaced by another paradigm.

Now what I am saying is that science on any time level does not have the certainty which is popularly assigned to it. Science is an ever-changing thing and the fundamental paradigms —and evolution is one of these—are likely to be replaced, even though at the time they may seem permanent and may answer many questions and provide many explanations.

Science and Faith

Many people make much of the fact that acceptance of special creation is based on faith, whereas the acceptance of the theory of evolution, they believe, is based on observation. We must recognize that all science is based on a great deal of faith—faith in the correctness of basic scientific assumptions, faith in the integrity of other scientists, faith in the accuracy of their observations. It is not true that the Christian walks by faith and the scientist by sight, It is very obvious that also the scientist walks much of the way by faith. Aldous Huxley writes,

All science is based upon an act of faith—faith in the validity of the mind's logical processes, faith in the ultimate explicability of the world, faith that the laws of thought are laws of things. In practice, I repeat, if not in theory, such conceptions are fundamental to all scientific activity. For the rest, scientists are opportunists. They will pass from a commonsense view of the world to advanced idealist theories, making use of one or the other according to the field of study in which they are at work. Unfortunately, few scientists in these days of specialization are ever called upon to work in more than one small field of study. Hence there is a tendency on the part of individual specialists to accept as true particular theories which are in fact only temporarily convenient. *(Ends and Means* page 258.)

The Objectivity of Science

Another point that requires comment is the supposed objectivity of science. The scientist is often pictured as a cold, unemotional, objective person who accepts facts and lets the chips fall where they may. Yet Boring insists that scientists cling tenaciously to conceptual schemes even in the light of mounting evidence against them. He has coined the term "egoism" for this trait. He says that while the very life blood of scientific progress is change, scientists form an emotional attachment to the hypotheses and theories which they have come to accept. There is a pride of authorship, a fearsome loyalty, to the conceptual schemes which the individual espouses, The longevity of a pet theory is directly proportional, he says, to the hero status of its proponent: yet in the course of time, all conceptual schemes are doomed either to be modified or replaced completely,

Boring is not alone in his point of view, James B. Conant says, "The notion that a scientist is a cool, impartial, detached individual is, of course, absurd. The vehemence of conviction, the pride of authorship, burn as fiercely among scientists as among any creative writers," *(Modern Science and Modern Man,* page 67.)

Now I am not trying to deny that this happens to theologians: I am simply trying to point out that contrary to the popular image of the objective scientist, it happens also to scientists.

Emotionalism in Evolution

The theory of evolution is one in which there has been a great deal of emotion, and consequently it has been difficult to discuss the theory objectively. Charges and counter-charges flew in the late 19th century when Darwin presented his *Origin of Species.* Darwin, the mild-mannered man that he was, was deeply disturbed by the controversy that his theory raised. When the theory was discussed at the Oxford meeting of the British Association for the Advancement of Science in 1860, Darwin was not even present because he did not want to become embroiled in the controversy which he knew a discussion of his theory was bound to arouse. Unfortunately it was a British bishop who assumed the responsibility for attacking the theory, and what is even more unfortunate, he chose to attack personally Thomas Huxley, who in Darwin's absence found himself cast in the role of apologist for the theory. Instead of discussing the theory and the evidence for and against it, he chose to attack Huxley personally and to ridicule him.

Later the teaching of evolution was forbidden by law in some of the states of the United States. Most of these laws were passed at the insistence of churches and churchmen. When the Tennessee law which forbade the teaching of evolution in the public schools of the state came under attack and John Scopes was arrested for teaching evolution in the schools of Dayton, Tennessee, it was a Christian layman, William Jennings Bryan who assumed the responsibility of prosecuting Scopes.

Bryan was poorly prepared for the task: he had not tried a case for 25 years. Moreover, he was critically ill at the time and died five days after the conclusion of the trial. He assumed a very grave responsibility in agreeing to represent the Church, and did a poor job in the role which he accepted. Both these episodes reflected unfavorably on the Church. The Church was placed in the position of using personal attacks and the authority of the State to interfere with science and to hamper the search for scientific truth. Consequently any attack on evolution, even today, raises a red flag and resurrects the controversies of the past. It is very difficult to get an objective discussion of evolution: the subject continues to be an emotional one. Personally, I believe this has been one of the most unfortunate aspects of the whole creation-evolution controversy.

Lest anyone think that only the evolutionists have been the victims of emotionalism and personal attacks it is only necessary to consider what happened in the State of Washington about five years ago. Dr. John M. Howell, Supervisor of Curriculum Guides and Courses of Study for the State of Washington, was asked to express his opinion of evolution in a letter addressed to him by a freshman at the University of Puget Sound who was writing a theme on Darwinism. His answer in which he expressed doubts as to the correctness of the theory, and in which he states that acceptance of evolution implied a denial of the Bible, was published in the student newspaper. As a result Howell lost his job

and found himself shifted to another position in the state Department of Education.

It will not be possible for us to analyze in detail all of the so-called "evidences" for evolution. Suffice it to say there are many observed facts which can be interpreted as indicating relationship, but these same facts can also be interpreted as indicating a single general plan or pattern such as one would expect in a scheme in which life came into being in a wide variety of forms.

Similarity and Descent

The general argument employed is that similarity is evidence of descent from a common ancestor. This represents a slight modification of a common everyday observation, but a modification which is significant. It is readily observable that siblings tend to resemble one another in their external appearance, but it does not follow that individuals who resemble one another are closely related by descent. We all know instances of individuals who resemble one another to such a degree that they might well be taken for identical twins but whose common ancestor is either completely unknown or found only in the far distant past.

Moreover there is evidence which casts doubt on the assumption that similarity is the function of descent from a common ancestor. The phenemonon of parallel mutations is a well-known one. This is the occurrence by mutation of similar characteristics in different species. For instance, the fruit fly, *Drosophila melanogaster* and *Drosophila simulans,* two separate species, have both experienced mutations of eye color to prune, to ruby, and garnet; of body color to yellow; of bristle shape to forked and boxed; of wings to cross veinless, vesiculated, and rudimentary, It might be assumed by those who regard similarity as proof of descent from a common ancestor that two flies, both of which have ruby eyes, have inherited this trait from a common ruby-eyed ancestor, but this is not necessarily the case, The same type of mutation has occurred in both species, and the two ruby-eyed flies may not be related at all.

This phenomenon of parallel mutations is not confined to *Drosophila.* It is a wide-spread phenomenon and has been clearly established in a number of forms.

It is often argued that parallel mutations are indeed evidence of close relationship since the fact that they occur indicates similar genetic material which is capable of such parallel mutations. Thus it is argued that the phenomenon of parallel mutations instead of being a problem for evolution is actually an evidence for it. Dobzhansky cautions against such a line of argumentation, pointing out that similarities do not necessarily indicate similar genetic material. He says,

> But here is a caveat–phenotypically similar, or mimetic mutants are produced also at different, fully complementary and not even linked genes within a species. Among the classic mutants in *Drosophila melanogaster* there are several non-allelic but visibly similar changes of the eye color, the eye surface, the bristle shape, etc. A few of these mimetic genes may conceivably have arisen through the reduplication of the same ancestral genes. But for the majority such a supposition is quite gratuitous. Our powers of observation are, limited, and what to our eyes are phenotypically similar changes may actually be due to different genes. *(Cold Spring Harbor Symposia on Quantitative Biology,* Vol. 24, p. 22.)

Later Dobzhansky says, "The presence of homologous organs is, then, not necessarily evidence of persistence of identical, similar, or even homologous genes. The genetic system which brings about the development of an eye in a fish is probably quite different from that of an eye in a bird or in man."

He goes on to say: "What has been said above concerning organs applies as well to their chemical constituents and to enzymes. To an evolutionist the fact that certain "enzymes are widely distributed in most diverse organisms is very impressive. But to conclude that these chemical constituents are produced everywhere by the same genes is going far beyond what is justified by the evidence."

Actually the evolutionist selects his similarities. Those that fit his theory are presented as evidences for evolution, those similarities which do not fit with the theory of evolution are cited as examples of parallel evolution and convergence; that is, the development of similar traits by organisms who are not closely related. For instance, there are many resemblances between the duckbill, or platypus, an Australian monotreme, and the ordinary duck. If these were related by supposed evolutionary descent, I am sure that these resemblances would be regarded as due to descent from a common ancestor. But since they are not supposed to be closely related these evidences are completely ignored.

There are also many instances in which resemblances do not fit the supposed phylogenetic evidence. Sanger *et al* are quoted as saying that, on the basis of insulin composition, sperm whales are identical with pigs and are quite different from sei whales. *(Science* 146:1537)

In studying hemoglobin similarities, Buettner —Janusch and Hill, find some unusual similarities in hemoglobin. They find, for instance, that hemoglobin of the Ceboidea–the New World

monkeys-appear to resemble human hemoglobin rather closely. This, they say, is most interesting for the Ceboidea are not closely related to man. They appear, they say, as a completely distinct lineage in the Miocene deposits of South America. The authors believe that this similarity is due to convergence. *(Science* 147:841 ff.)

To cite just one more example, an extraordinarily powerful neurotoxin called Tarichatoxin, has recently been isolated in crystalline form from the eggs of various Western American newts as well as in newt eggs and embryos. It is very different chemically and pharmacologically from other known salamander toxins. This toxin, however, is identical to a toxin which occurs in the Japanese fugu or puffer fish. Thus this substance appears to occur in only one family of the amphibia and in one sub-order of the fishes. It is highly questionable whether this is evidence of a descent from a common ancestor. (Science 144:1100) Instances of this sort could be multiplied.

The Mechanism of Evolution

Let us turn now to a discussion of the mechanism for the changes which evolution requires. Darwin postulated a variation in living organisms on which natural selection worked, selecting the fit to survive and killing off those that were not fit. To this day, evolutionists have not developed what to my way of thinking is a satisfactory explanation for the mechanism whereby the variation postulated by Darwin could arise. Darwin himself did not deal with this problem: he apparently was unacquainted with Mendel's work or at least did not appreciate its importance and developed a rather bizarre and far-fetched theory for the origin of variation.

Today, two methods are suggested for these changes: (1) chromosomal changes or chromosomal aberrations and (2) gene changes or mutations. Chromosomal changes do not appear to be of too much importance in providing the variation required by progressive evolution. Chromosomal changes have only a very slight chance of survival because they upset a great deal the delicate balance of the gene complex. The most favorable type of chromosomal change so far as the possibility of survival is concerned, is probably polyploidy, but this is regarded as an evolutionary dead end. Cameron says that ultimately polyploids succumb because they cannot go back to the diploid condition, and their gradual change of genetic variation seems to be hampered by the high number of chromosomes. *(Evolution, Its Science and Doctrine,* page 121.)

Strict autopolyploids–polyploids derived from a single ancestor—are rare in nature. (Ehrlich and Helm, *The Process of Evolution,* page 190.) Polyploidy in general, according to Ehrlich and Helm is generally disadvantageous in the very long range view. They believe, however, that because they are extremely common in both plants and animals they must result in a selective advantage. (An example of a rather common type of circular reasoning.)

The other chromosomal changes are either so lethal that they can hardly be of any importance in progressive evolution or they actually decrease the genetic material. In aneuploidy, for instance, usually there is a decrease rather than an increase in chromosome number, which would hardly provide for the increase in genetic material that progressive evolution would presumably require.

Mutation as a Mechanism

So far as mutation is concerned, evolutionists will have to agree that there are many, many unsolved problems. One of the really critical problems is the fact that most mutations are either lethal, semi-lethal or subvital and in the ordinary course of events will be eliminated by the very natural selection which is postulated as the guiding factor of evolution. It is usually argued that natural selection works with those mutations which are favorable. While this is theoretically possible, it would certainly increase substantially the amount of time required for evolution. Some evolutionists feel that even the billions of years postulated by evolutionists are not enough for evolution if this is to be the guiding factor.

Even favorable mutations are likely to be eliminated. Fisher calculates that out of 10,000 mutations which have a one percent selective advantage, 9,803 will eventually be eliminated. This means that only 197 out of 10,000 favorable mutations can be expected to survive.

Generally, evolutionists have felt that most mutations important in evolution have had an even smaller advantage which would increase the probability of extinction. This poses a real dilemma. Large changes with large selection coefficients (which would provide for relatively rapid evolution) would probably upset the delicate balance of the gene complex and would be lethal for this reason. Consequently, evolutionists believe that small changes are the only possible mechanism, a point of view with which Ehrlich and Helm disagree. Small changes, however, are so time consuming that they are unlikely to provide the diversity needed by progressive evolution. This dilemma has still not been solved.

Another problem of evolution is the fact that the changes provided by mutation do not necessarily bring about sterility which is necessary presumably in the development of new species.

Nor do they provide the kind of changes that progressive evolution needs. Carson, in the *Cold Spring Harbor Symposia on Quantitative Biology,* Vol. 24. "One of the great dilemmas that modern evolutionary theory has had to face is the fact that most of the mutations found repeatedly for instance, within populations of different *Drosophila* species, do not constitute the kind of differences which distinguish species." (Page 95.) If this is the case they certainly do not provide the kind of change required by progressive evolution.

The Evolution of Man

Another problem area for the evolutionist is the evolution of man. There is a wide gap between man and the anthropoids in spite of the emphasis that is often placed on the similarities between man and the anthropoids, and progress in studying the evolution of man has been very slow. This is all the more remarkable in the light of the fact that there is considerable interest in man's evolution and consequently considerable incentive to study this area.

One of the problems has been the paucity of fossil material. While fossils in general are very common; and while we have a great many fossils of various organisms, the number of human and prehuman fossils is very limited. Evolutionists explain this on the basis of the fact that man is believed to have been a tropical organism who very early in his history practiced earth burial. Under these circumstances we are likely to have very few fossils. But the fact of the matter is that we do have some fossils from non-tropical areas which would indicate that man was found in these regions..

This paucity of fossils has resulted in a real problem. Dobzhansky says, "Investigators often submit to the temptation of speculating on the basis of scanty bone fragments (and it goes without saying, virtually all finds are fragmentary)," *(Mankind Evolving,* page 171.) Herberer in the *Cold Spring Harbor Symposia* says, "Despite all progress made by primate paleontology, especially since the end of World War II, documentation is still sparse and more material is greatly needed; that is any reconstruction must use the methods of comparative morphology and physiology." (Vol. 24 page 235 ff.)

As indicated above, most of the fossils are quite fragmentary. Often the entire find consists of a skullcap or a piece of lower jaw or even a few teeth. Much of the classification has been done on brain box size. At first glance this seems to be a very valid method of determining relative evolutionary development, but the fact of the matter is that it does not work out quite so easily. Bennett, Diamond, Krech, and Rosenweig say,

> In the 19th century the measurement of the size and weight of the brains of men were made in an effort to discover differences that might relate to the degree of intellectual attainment. The first results were encouraging, since men of distinction were usually found to have larger brains than those of inferior intellect. Gradually it was realized, however, that men of different stations in life often differed in health and nutrition as well as in intellect and that the former factors might affect brain weight. There were also striking exceptions to the general relation-idiots with larger brains and geniuses with smaller brains. The hypothesis of an intrinsic relation between brain size and cerebral exercise or ability was therefore generally abandoned. In its place there were suggestions of more subtle factors involving neural inter-connections, or chemical changes in the brain. The difficulty of working with such factors discouraged research, and the problem largely reverted to the speculative realm. *(Science,* 146:610).

Skerlj raises many of the same objections when he says, "Brain size does not seem to me a proper measure since we know in modern man the variability goes from 800 to 2000 cc. and covers all the range from Java to modern man. Furthermore why not mention the Neanderthalers who had on the average a somewhat larger brain size than modern man?" *(Cold Spring Harbor Symposia,* Vol. 24, page 215).

Actually the evidence for human evolution is not nearly as conclusive as one would be led to believe from the number of named forms. The fact of the matter is there are far more named forms than are justified. Dobzhansky says, "A minor but rather annoying difficulty for a biologist is the habit human paleontologists have of flattering their egos by naming each find a new species, if not a new genus. This causes not only a needless cluttering of the nomenclature but is seriously misleading because treating as a species what is *not* a species beclouds some important issues." *(Mankind Evolving,* page 171.)

Another writer says,

> High physical and dental variability in given species of man and apes has long been known, but it is clear that this has not been taken into account by the majority of past and recent describers of fossil Hominoids. Beginning with Mayr in 1950, taxonomists have drawn attention to the extreme over-splitting of the known varieties of Pleistocene Hominoids. Since the late 19th century this erroneous approach to

taxonomy has produced approximately 30 genera and almost countless species.

At the other extreme from this taxonomy prolixity, stand such workers as Mayr and Dobzhansky who, drawing on their knowledge of modern speciation, have adduced evidence for a single line of but a few species successive through time in this particular lineage. To alter their view it would only be necessary to demonstrate the occurrence of two distinguishable species of Hominids in a single zone of one site, but despite much discussion of possible contemporaneity, in my opinion such contemporaneity has not been satisfactorily established. There is fair morphological evidence that there were two species of *Australopithicus* but their synchronous existence has not been confirmed by finds at the same level in one site. (Simons, *Science* 141:880)

Concluding Remarks

In conclusion, it would seem to me that evolution is far from "proved." The scientific method is, itself, limited to approximations and reasonable certainty. In studying evolution we do not have the major tool of modern science, experimentation. We must recognize that scientists, too, are human, that they are emotional, and that they are conservative in the sense that they like to keep the theories they have come to accept. Evolution presents a great many problems.

True, there are many evidences and observations which seem to support the idea of evolution, but there are also many which do not fit with the general Darwinian scheme. Fair-minded evolutionists—and most evolutionists are fair-minded—have come to recognize this. Ehrlich and Helm ask,

> Is our current explanation of evolutionary processes without a flaw? Hardly; even the most sanguine evolutionist would admit there is much to learn. The fine theoretical structure of population genetics has not been thoroughly tested in natural populations–although the broad outlines of the spreading processes in evolution seem to be understood adequately, no general mathematical treatment has been possible, and many of the details are obscure. (Page 310.)

Mayr says,

> Yet in spite of all these advances numerous unsolved problems remain. Let me single out only four aspects of natural selection which raise doubt in my troubled mind. 1) The selection of genes vs. the selection of genotypes. Selection places a considerable strain upon populations. Too rapid a rate of simultaneous selection against too many genes might eliminate the entire population. 2) The measure of fitness. It is crucial to find an objective yardstick, 'Is it not a basic error of methodology to apply such a generalized technique as mathematics to a field of unique events such as organic evolution?' 3) The population as a unit of selection. 4) Reproduction success. Natural selection may be defenseless against certain genes." (page 5 ff.)

Mayr quotes Lerner as saying, "What we have learned so far about natural selection is obviously only the beginning. What remains to be learned is immeasurably more."

Ehrlich and Helm say,

> The most obvious aspect of evolutionary theory that may be at least partially explained as a reaction to the Bishop Wilberforce approach has been the development of a rather stringent orthodoxy. This orthodoxy is easily detected in the compulsion of biologists to affirm *belief* in evolution (rather than to accept it as a highly satisfactory theory) and to list *proofs* that evolution has occurred. It is, of course, a matter of debate as to where healthy conservatism leaves off and dogma begins. Suffice it to say that the discipline is at least close enough to the danger area to call for some critical reexamination of its basic tenets. (Page 309.)

Elsewhere Ehrlich and Helm say,

> The strong urge to believe in present evolutionary theory, which is so evident among workers in the field seems to stem partly from a very common human error, the idea that one of a number of current explanations *must* be correct. One usually finds the theory of evolution being contrasted with that of special creation, a one-sided contest to say the least. The demonstration that the idea of special creation is scientifically meaningless does not however 'prove' that the theory of evolution is correct. Current faith in the theory is reminiscent of many other ideas which at one time were thought to be self-evidently true and supported by all available data—the flat earth, the geocentric universe, the sum of the angles of a triangle equalling 180 degrees. It is conceivable, even likely, that what might facetiously be called a non-Euclidean theory of evolution will be developed. Perpetuation of today's theory as dogma will not encourage progress toward more satisfactory explanations of observed phenomena. (Page 310.)

Sylvio Fiala writes,

> With all due recognition to the greatness of Darwin's achievement, we cannot remain blind to the fact that not a single step in the evolu-

tionary mechanism has been clarified. Evolution means primarily an increase in the content of information in the case of DNA, but natural selection means only the elimination of error in information or mutation (in the most favorable case, only a modification of the information), not an increase in the quantity of information. Correcting a misspelled word or substituting one word for another is after all something quite different from writing down a sentence, an article, a whole book.

It would seem to me premature to reject the clear account of Genesis in favor of this theory. The evidence is not so overwhelming that reason insists on this approach.

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THE MYSTERY OF THE RED BEDS

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The extensive formations, canyons and erosion of the Colorado Plateau region are described and illustrated. Succession of these sedimentary rocks and their lithology is presented with notation of their great 200,000 square mile expanse. The relative lack of erosion at the various horizons in comparison with the amount that has occured on the PRESENT *surface of the plateau is used to argue for a relatively short period of time for their formation. A general lack of sources for these vast deposits of sandstone, shale and conglomerate is shown as being critical to a satisfactory explanation of them from the viewpoint of uniformitarianism. Conclusions are (1) sediments were brought in from great distances (2) great sweeps of water instead of local river or flood action were necessary to spread out these sediments over this vast area, and (3) the various formations were laid down one after the other in rapid succession.*

Probably nowhere else in America are to be found more interesting and puzzling displays of rocks than in the Colorado Plateau region, which covers more than 200,000 square miles in Utah and portions of surrounding states. For a number of years I have made observations here and there in the region, and have covered it quite thoroughly, I have also read widely in the literature dealing with the region, and this paper is the result of these travels and studies. The points presented will, I hope, be of value in interpretation of geology from the viewpoint of the Flood.

The accompanying figures, showing the relation of the strata over this region, have been prepared from various publications, from private

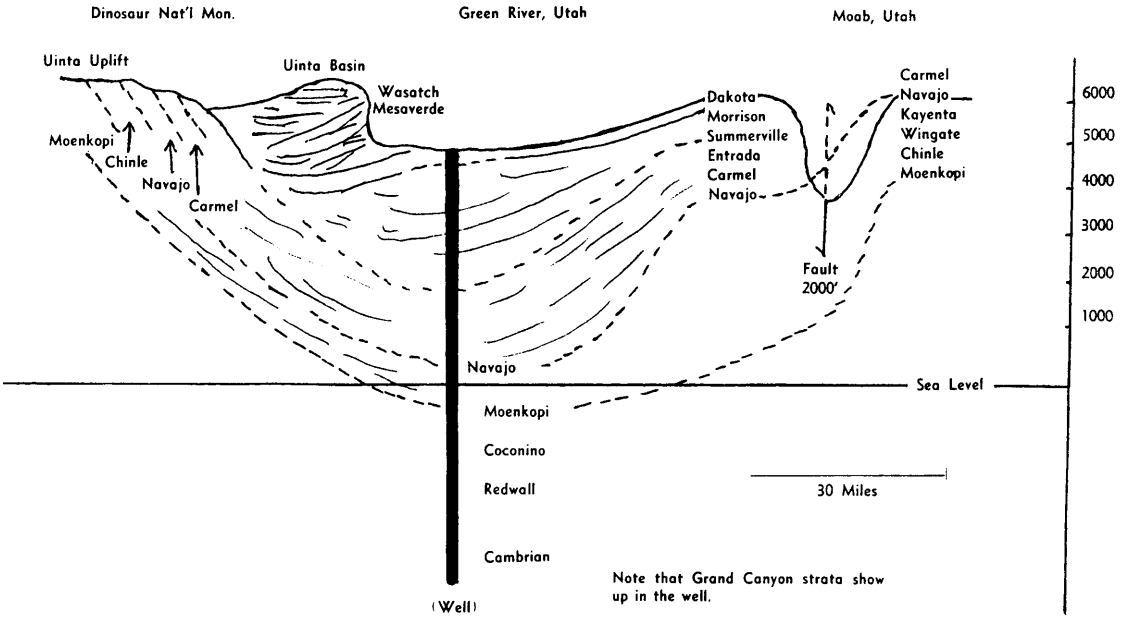

Fig. I Section from Moab, Utah, North to the Dinosaur National Monument, showing the dip into the Uinta Basin, and the uptilted strata on the southern flank of the Uinta Mountains.

correspondence, and from data obtained from the office of the Pure Oil Company at Moab, Utah. Reference to these should be made as the article is read, in order to follow the data to its logical conclusion.

A visitor to the Grand Canyon stands in awe as he gazes almost a mile straight down past layer after layer of rock that has been carved by the swift-running Colorado River. At the bottom the inner gorge cuts through over a thousand feet of crystalline rocks, These rocks are classified as pre-Cambrian, and are supposed by the geologists to represent the very earliest rocks of the earth, laid down, according to popular theory, before the fossiliferous rocks were deposited.

The most striking feature of the canyon is probably the massive cliffs that are formed by the erosion of the limestones and red sandstones. Then, near the top is the spectacular white Coconino sandstone, with the grayish Kaibab limestone capping the north rim, (The left-hand column of the chart gives the classification of these strata.) We must remember that while we may not agree with the geologists as to the "age" of these rocks, we must recognize that the rocks do occur in a certain sequence.

When we go northward from the Grand Canyon, either to the east or the north, we find more red beds spread out everywhere, with beautiful carved cliffs, monuments, and canyons. Wells in the Kanab Valley, about 75 miles north of the north rim, penetrate many of the same formations that are exposed on the walls of the canyon. It is important to note that the Moenkopi formation, which in these wells lies directly on top of the Kaibab, is exposed at some distance away, both to the east and the west. It forms the floors of the valleys just south of Zion National Park.

CHART OF PRINCIPAL FORMATIONS OF THE COLORADO PLATEAU

TERTIARY	WASATCH	
CRETACEUS	MESAVERDE	
	MANCOS	
	DAKOTA	
JURASSIC	MORRISON	
	SUMMERVILLE	
	ENTRADA	
	CARMEL	
TRIASSIC	NAVAJO	GLEN CANYON GROUP
	KAYENTA	GLEN CANYON GROUP
	WINGATE	GLEN CANYON GROUP
	CHINLE	
	SHINARUMP	
	MOENKOPI	
PERMIAN	KAIBAB	
	COCONINO	
	HERMIT	
	SUPAI	
MISSISSIPPIAN	REDWALL	
CAMBRIAN	MUAV	
	BRIGHT ANGEL	
	TAPEATS	
PRE-CAMBRIAN	GRAND CANYON SERIES	
	VISHNU	

(Note: Often boundary line between Triassic and Jurassic is indistinct locally.)

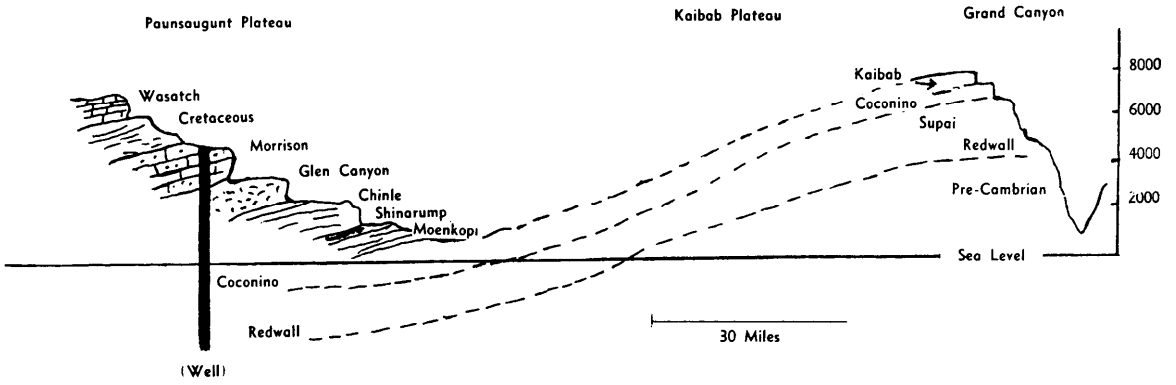

Fig. 2 Section north from the Grand Canyon, showing relation of Grand Canyon strata to formations of higher stratigraphic sequence.

Rising above the Moenkopi we find a succession of beautiful beds, which are prominently displayed over much of central Utah. Then, farther to the north and east, others appear above them, until we reach the highest members of the series in the Uinta Basin in northern Utah.

Several Questions Generated

Questions arise as we examine the lateral distribution of these beds. From northern Arizona to southern Wyoming, between 400 and 500 miles, and from eastern Nevada to central Colorado, 400 to 500 miles across, this great Colorado Plateau appears to be one of the greatest sedimentary basins in the world, Estimates of the amount of material deposited here before erosion washed any of it away, run as high as a million cubic miles, and in some cases, even more. What a movement of rock-forming sand must have

Where did it all come from? And by what means did it get there? These are simple questions, but the answers involve some of the most profound mysteries of the past. Let us examine these rocks somewhat in detail.

Perhaps the best location where we can begin our investigation is near the little city of Moab, in eastern Utah. Here, rising 2000 feet above the Colorado River, are the beautiful red and brown cliffs classified as Triassic and Jurassic. About 50 miles north of Moab the Cretaceus Book Cliffs arise, and we note that they lie on top of the rocks that are exposed around Moab.

If we go to the Colorado National Monument near Grand Junction, Colorado, we find the same red beds we see near Moab, and across the valley to the north the gray Cretaceus cliffs rise above the Jurassic. Farther north we can catch glimpses of the Tertiary rocks. There before our eyes are spread out between 4000 and 6000 feet of strata in regular succession.

Coming back to Moab, let us study the formations exposed on the cliffs. Their names are as follows:

- Triassic
  - Glen Canyon Group
    - Navajo
    - Kayenta
    - Wingate
  - Chinle
  - Shinarump
  - Moenkopi

The Kaibab and Coconino formations of the Grand Canyon rocks lie only a few hundred feet below these cliffs, but do not come to the surface.

The Moenkopi formation generally consists of up to 500 feet of red and brown mudstones, sandstones, or shales, and it weathers to form brilliant slopes. In some places it is much thicker. It contains very few fossils, but what are found lead to the conclusion that these beds were mostly of continental origin, not marine.

The Moenkopi underwent structural warping before the overlying sediments were laid down upon it. Yet no deep canyons appear anywhere. The next higher formation, the Shinarump, was dropped into shallow hollows of the Moenkopi. These hollows are generally not over 40 feet in depth, sometimes more, and in many places much less. We are puzzled as to how geologists can believe that millions of years could be involved in these processes without leaving deep canyons instead of shallow hollows.

The Shinarump is a very peculiar type of rock. It is a hard, resistant sandstone containing many small pebbles. This combination forms what we call a conglomerate. The pebbles are well rounded, showing that they have been washed for great distances. They are usually less than two inches in diameter, and are composed of quartzite, chalcedony, and flint, in various colors. Eighty per cent of those over one-fourth of an inch in diameter comes from rocks not represented in the plateau.

Questions About Origin of Rocks

Where did these pebbles come from? If they had been produced by normal processes, the underlying Moenkopi rocks should have formed the landscape from which streams would wash out material to form the Shinarump deposits. The fact that the Shinarump is spread out so widely and so thinly makes it practically impossible to explain it by any normal local actions. The situation would seem to demand rapidly moving water on a tremendous scale.

The Shinarump grades into the Chinle, so that the distinction between the two is hard to make. The Chinle consists of mudstones, shales, sandstones, and conglomerates. These various rocks intergrade. They show considerable irregularity in local bedding, as if strong streams and whirling waters had dumped their loads into shallow bodies of water. This "delta" bedding is also true of the Moenkopi. Fossil wood occurs in "log jams," which is another indication of flood-plain or delta conditions with rapidly running water.

The Glen Canyon group, lying above the Chinle, consists of rocks very similar to the ones just described. In some cases cuts of 15 to 20 feet have been made before the next layers were deposited, but beyond these slight irregularities no special signs of erosion can be seen. Wherever exposed, these rocks form cliffs from 700 to 1000 feet high.

On the east side of the highway, about five miles north of Moab, another group of rocks lie exposed in the Arches National Monument. These are classified as follows:

Jurassic { Morrison, Summerville, Entrada, Carmel

Due to a fault, the Carmel, which normally lies on top of the Navajo (the top layer on the west side of the valley) is brought down to the level of the valley; and so as we go eastward into the Monument, we can follow the Jurassic series upward to the Cretaceus.

The Carmel is from 125 to 150 feet thick, and consists of pink to red or brown sandstones and mudstones, irregularly bedded. On top of it lie 250 or more feet of Entrada, a massive reddish-brown sandstone. The Summerville is less than 50 feet thick, and varies in composition. In some areas it contains great masses of agatized or opalized material.

One of the most outstanding formations in the region is the Morrison, which crops out a few miles to the north and east. This has many variations,–sandstone, conglomerate, etc., similar to the Shinarump, also limestones of various colors, mudstones, and quartzite. (Note: A formation is not necessarily uniform in composition; its unitary structure is determined by its stratigraphical position and fossil content rather than by its lithographic composition.)

The Morrison has been traced for more than 100,000 square miles, and is nowhere more than 400 feet thick. It shows up as far east as Oklahoma and North Dakota. Geologists say it appears to have been laid clown by rivers sweeping over extensive flood plains.

Above the Morrison lies the Dakota, a Cretaceus formation similar to the Morrison in superficial structure, but made up largely of sandstones and clays.

The Tertiary formations of the Uinta Basin are interesting, but are outside the problems we are considering in this paper. Note, however, that the lower strata crop out from beneath them on the flanks of the Uinta Mountains uplift.

Evaluation of Data

Now what conclusions can we draw from these facts? Let us try to evaluate the data and see what generalizations are possible.

Of course the first idea to propose would be that the materials forming these beds had been washed down from nearby highlands and deposited in an ancient sea, But where were these highlands? Not the Rockies nor the Wasatch nor the Uintas nor the La Sals, for all these great mountain regions were pushed up after most of the sediments of the Colorado Plateau were laid down. They are uplifts and intrusives that have been forced up from deep down, and have warped and twisted and inclined the overlying sediments as they arose.

Only one local area seems to have contributed much of the rocks of the basin, and that is the Uncompaghre Plateau, a mass of granite rock lying in southwestern Colorado. But what it gave could have involved only the lowest of the beds, the gray marine rocks of the strata below the red sands. Later much of this overlying material was removed, but today remnants still remain on top of the granite in some places.

Geologists are able, by examining the thickness and texture of the rocks, to tell from what direction they have been derived. In the case of the Colorado Plateau, most of the sandstones are believed to have come from the west or southwest. In some areas the formations are much thicker on the west than on the east; they thin out to the eastward. Also, as we go eastward, the materials become finer and finer. These facts show clearly that the sediments came from the west.

Of course there are local variations. One of the most recent reports on the region describes supposed ancient "seas" into which sediments

were washed from the east. But this is not the general rule, although a certain amount of back and forth washing might be expected in any case, whether we interpret the situation in terms of "ages" or of Flood stages.

Studies of areas farther west fail to reveal the source of the sands. Central Nevada contains as much as 15,000 feet of the lower marine sediments, but there is nothing there that could have supplied the red sands. The conclusion seems almost inevitable that an ancient continental mass in the vicinity of California or the eastern Pacific must have been the source.

There is a possibility that some of the material may have come from the southwest, as some of the granites of Arizona contain particles of iron, which might furnish coloring material and sand. But this is only a speculation; we do not have enough information to make an effective point of it.

A striking fact that supports the conclusion that the sands came from a long distance away is the remarkable evenness of deposition, with very little erosion such as goes on today. How beds of sandstone, mudstone, and shale could have been exposed to the atmospheric elements for millions of years and yet show no canyons or deep gorges such as recent times have produced, is a mystery.

Geologists sometimes postulate millions of years of exposure to the elements until a peneplain (a perfectly smooth plain) is formed before another layer is deposited. This explanation cannot apply here, for, as we have pointed out, the formations very commonly blend one into the other, as if their deposition had been continuous.

Had the Shinarump and Chinle deposits, for example, been derived from a landscape of Moenkopi rocks, the latter would have had to be elevated so as to furnish materials to supply these beds. There is no sign that that has happened. Everywhere the Moenkopi underlies them. How could the Shinarump and Chinle have been derived from the Moenkopi? This general principle holds good for almost any two consecutive beds. None of the layers of sandstone below the Morrison limestone, for instance, could have furnished material to build up this great formation. The material had to come from a distance.

As one studies the cliffs, even though they expose a supposed 70,000,000 years of deposit, nowhere do they show land masses, mountain ranges, badlands, river-carved canyons, or beach lines such as might be expected in the normal course of events. Look at what has happened in this region today; even if we allow the time lapse accepted by popular geological theory, not over a million years would be involved. And yet in that time (if we allow it, for the sake of argument), tremendous cutting and washing has taken place, the like of which seems to be entirely lacking in the cliffs themselves.

Furthermore, even with the great amount of cutting that has recently taken place, nothing has occurred that would spread materials such as conglomerates over a hundred thousand square miles. The action that laid those cliffs down was of a nature completely different from what was going on when they were carved into their present contours.

One more peculiar fact should be noted. Several of these successive formations are very similar, in fact, so nearly identical in composition and appearance that it is difficult to identify them unless we can follow through their sequence. In one locality the great cliffs are made of Wingate, in another Navajo, in another Entrada. There is an alternation of massive sandstone repeatedly, as also of other materials. How this could have happened over 70,000,000 years of time is very hard to understand.

Conclusions

After all the evidence has been considered, several obvious conclusions seem to be justified: (1) that the sediments have been brought in from great distances, not from local sources, (2) that they were brought in by great sweeps of water, for no ordinary river could spread them out as they are, and (3) that they were laid down one after the other in rapid succession, with no long periods of erosion between. On what other basis can we reasonably explain the evenness of the contours between formations, the irregular bedding within them, and the alternate occurrence of the massive sandstones and conglomerates?

All in all, as we study this region and try to build a picture of how the deposits have been made, we are impressed that a new approach needs to be made to geological interpretation. The current theories were proposed a century and a half ago, when very little detailed observations had been made. On the basis of these meager observations great areas have been interpreted. But the present theories are definitely inadequate to explain what we find in this vast and colorful region.

On the other hand, the facts may be fitted effectively into the Deluge interpretation. The great universal Flood, with its world-wide sweep of waters rising higher and higher and engulfing the ancient world and spreading its rocky materials far and wide, is a far more satisfactory answer to geological problems that the theory of ages of slow, normal sedimentation.

How long will it be before serious scientific consideration is given to the Flood? It is high time that we give it a place in modern thought.

COSMOLOGICAL IMPLICATIONS OF EXTINCT RADIOACTIVITY FROM PLEOCHROIC HALOS

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Halos from various short lived polonium isotopes are found in Pre-Cambrian mica. Po-21O, 214, and 218 are involved. These place restrictions on the time period of formation of the basic crustal material of the earth. The short half-lived nuclides of either polonium, bismuth or lead were incorporated into halo nuclei at the time of mica crystallization and significantly existed WITHOUT *the parent nuclides of the uranium series. Thus for Po-218 ($T_{½}$ = 3 minutes) only a few minutes could elapse between its formation and subsequent crystallization of the mica. Otherwise Po-218 would have decayed and no rings would be visible. These halo types are widespread in the Pre-Cambrian granites from Canada, Sweden and Japan.*

Pleochroic halos, which are minute discolorations formed in such substances as biotite (mica) [1,2] and cordierite[3] by alpha particle emission from small radioactive inclusions in the host material, have in some cases been investigated with reference to the stability of the decay constant over geological time.[4]

It has been reported in this connection that autoradiographic studies on Pre-Cambrian mica show slightly radioactive inclusions for type D halos.[5] These D halos were previously thought to be due to Ra-226 ($T_{½}$ = 1620 years) by Henderson, and have heretofore been considered completely devoid of radioactivity.[6] In addition the D halos were previously described as possessing no ring structure.

However, in my own research a light outer ring surrounding the inner aureole has been observed in some very dense D halos[11] in the Ballyellen mica. Further research on D halos reflects alpha activity, possibly from U-236 or Np-237 with an admixture of U-238 and U-235, whereas the U-238 contribution seems to predominate in the later stages.

A largely overlooked aspect of pleochroic halo phenomena involves the restrictions which certain types of halos place on the time period of formation of the basic crustal material of the earth from raw matter, irrespective of the theory that is used to account for the primary existence of the matter. It is to be expected that nuclides with long half-lives, such as U-238 ($T_{½}$ = 4.5 X 10^9 years) and Th-232 ($T_{½}$ = 1.4 X 10^{10} years), would produce halos, and such is the case.[7]

It is not generally recognized that halos due to certain short half-life polonium isotopes (sometimes erroneously identified as "emanation halos"[8]) also exist in far greater abundance than uranium and thorium halos in some mica samples. All previous attempts to account for the existence of the polonium halos have been from the standpoint of a hydrothermal mode of formation.[6]

In the hydrothermal mode it is envisaged that radioactive solutions containing U-238 and daughter products flowed through a small conduit in the mica, thus causing coloration along the conduit and in some cases coloration about small inclusions due to preferential precipitation of certain elements. There is little question that some halos have formed by this process as in many instances uniform coloration may be observed surrounding minute veins in the mica. However, some halos appear to have developed around very small nuclei in the conduits with no trace of radioactive staining along the vein, thus implying that the radioactive nuclides responsible for halo formation were primary constituents of the nucleus.

Two Hypotheses Possible

More significantly, personal observations of a large number of halos indicate that in many cases the polonium, uranium, and thorium halos have formed around very small inclusions with no visible conduit or crack in the mica connecting the halo nuclei. In this case where halos have formed about point nuclei there are only two possibilities: either (1) the small radioactive inclusions crystallized first with the mica subsequently forming around them, or (2) the inclusions were introduced somehow after the mica was formed.

Although, the latter case has been considered a possibility,[2] there are serious questions about this hypothesis, especially for the polonium halos. Halo nuclei of 1-2 microns in radius are not uncommon for the polonium halos and it is difficult to conceive of a mechanism that would introduce inclusions of this size into large thick mica crystals without leaving a damage trail of some sort which would be optically visible. The relatively short half-life of the Po isotopes raises still another objection to this hypothesis by severely restricting the allowable time period for secondary deposition.

Furthermore, when cleaving the mica to obtain

surfaces on which the halo nuclei are exposed, the mica definitely shows evidence of having completely enclosed the inclusion, thus indicating that it had crystallized around the inclusion. It is also significant that polonium halos have been found in cordierite,[3] so that the secondary depositional mode is especially ruled out for this mineral.

Thus by process of elimination, the most clearly evident mode of halo formation for the polonium halos (which arise from point nuclei) is that halo nuclei contained either polonium isotopes or short half-life beta decaying isotopes of bismuth or lead at the time of mica crystallization. For example, since beta emitters do not produce coloration in mica, the formation of the disc-like Po-210 halo may have resulted from either Po-210 ($T_{½}$ = 138 days) directly, or from Bi-210 ($T_{½}$ = 5 days) or Pb--210 ($T_{½}$ = 22 years) by beta decay into Po-210.

The two-ring Po-214 halo could have formed directly from Po-214 ($T_{½}$ = 164 u sec.) or from the beta emitters Bi-214 ($T_{½}$ = 19.7 min.) or Pb-214 ($T_{½}$ = 26.8 min.). The three ring Po-218 halo differs from the above halos in that it was either formed directly from Po-218 ($T_{½}$ = 3 min.) or possibly from the nuclides Bi-218 or Pb-218 which beta decay into Po-218.

The significant point here is that, while the properties of Bi-218 and Pb-218 are as yet unknown,[10] they are probably beta emitters with half-lives much shorter than that of Po-218. (The same conclusions are obtained even if progenitors with atomic number less than 82 are considered as the initial parent nuclides of these halos, since they, too, would be short half-life beta emitters.)

Since Po-214 and Po-210 are alpha emitters which are successive decay products of Po-218, a three-ring halo, such as one shown in Figure 1 will result from the initial presence of about 10^9 atoms of either Po-218, or Bi-218 or Pb-218 in the

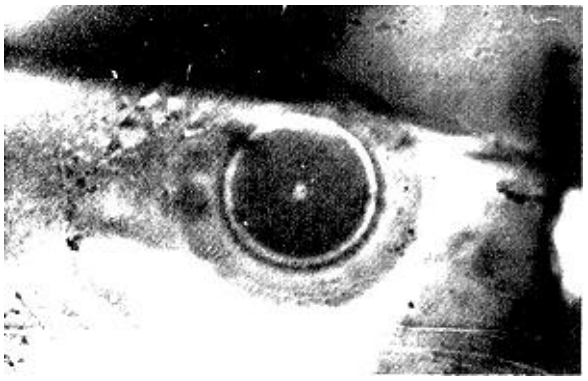
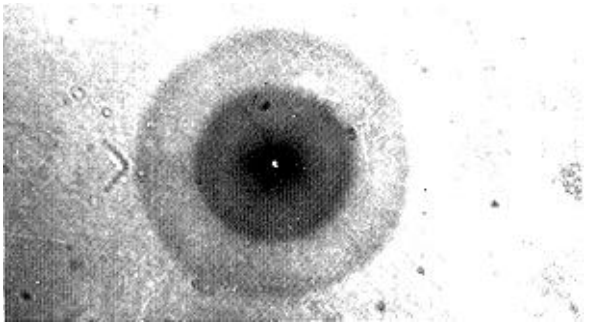


Fig. 1 Po-218 Halo (Enlarged 470X)

central inclusion. The inner ring in Figure 1 is due to alpha emission from Po-210 (radius= 18.8 microns); the second ring corresponds to Po-218 (radius = 22.5 microns); while the outer ring corresponds to Po-214 (radius = 34 microns).



Fig, 2 Po-214 Halo (Enlarged 540X)

The halo in Figure 2 shows an inner ring due to Po-210, an outer ring due to Po-214, and can be accounted for by the initial presence of either Po-214, Bi-214 or Pb-214 in the central inclusion.

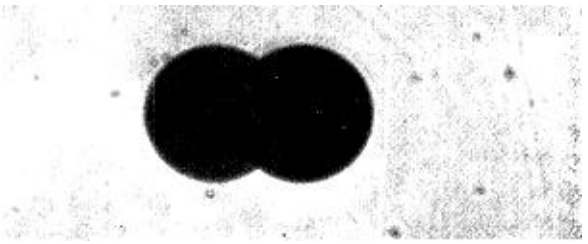


Fig. 3 Po-210 Halo (Enlarged 470X)

Figure 3 shows overlapping Po-210 halos due to the presence of either Po-210, Bi-210 or Pb-210 in the inclusions.

It can be demonstrated that the radon isotopes were not progenitors of these polonium halos since other rings would be visible due to alpha particle emission from these isotopes if this were the case. Using the fission track etching process,[9] numerous background fission tracks may be observed to emanate from the central inclusion of U-238 halos, while no background fission tracks have been observed to emanate from the central inclusion of the polonium halos.

In addition, several mica samples containing U-238 and polonium halos have been irradiated with a neutron flux of about $1O^{17}$ n cm^2. These irradiated U halos reveal a vastly increased number of induced fission tracks, while the irradiated polonium halos still exhibit a complete absence of tracks. These experimental results indicate the absence of U in polonium halos and contradict the hypothesis that the polonium isotopes in these halos were initially derived from uranium.

Autoradiographic experiments carried out over a period of several months sometimes reveal alpha particle tracks from the U and Th halos, but none have ever been observed from the polonium halos. It is also possible to rule out

preferential deposition of short-life nuclides due to laminar flow of radioactive solutions as a possible source of the radioactivity of these halo nuclei, since gross discoloration over wide areas is evident where laminar flow occurs.

New Halo Type

In addition, a new type of pleochroic halo (type Y) has been found in a Canadian mica. The Y halos bear no relation to the well known U-238 and Th-232 halos, since both the magnitude of the halo radii and the ring structure are anomalous, The Y halos have an outer radius of about 26 microns corresponding to an alpha particle energy of about 6.6 MeV.

Although it is not possible to unequivocally identify the isotope responsible for the Y halos, Bi-211 ($T_{½}$ = 2 m) has the correct decay energy and is tentatively identified as the parent nuclide. As was the case for the polonium halos, a fission track analysis revealed the absence of uranium in the central inclusion of this halo.

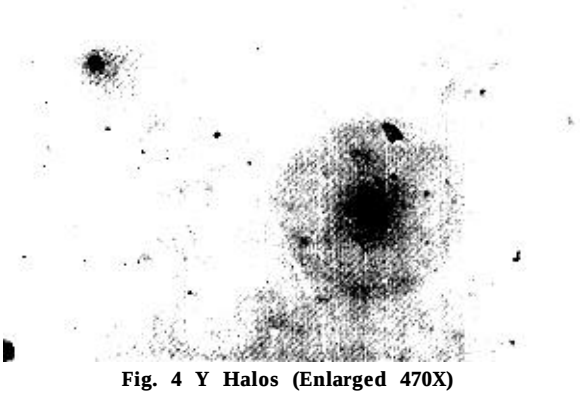


Fig. 4 Y Halos (Enlarged 470X)

Figure 4 is a micrograph of the two Y halos referred to above. The light inner ring in one of the halos corresponds closely to the size of the Po-210 halo, thus implying the central inclusion may have initially contained a combination of the alpha emitters Bi-211 and Po-210. An alternate explanation would be that the inclusion initially contained Pb-211 and Pb-210, which beta decay respectively into Bi-211 and Po-210.

Recent acquisition of Wiman's[12] remaining halo collection revealed the presence of a halo of about 55-60 micron radius as measured from the edge of a large inclusion, thus tending to establish the existence of halo radii far in excess of any expected from U or Th halos. It was pointed out previously that only fairly short half-life alpha emitters could be responsible for these giant halos.[13]

Conclusions

It thus appears that short half-life nuclides of either polonium, bismuth, or lead were incorporated into halo nuclei at the time of mica crystallization and significantly enough existed without the parent nuclides of the uranium series. For the Po-218 halo only a matter of minutes could elapse between the formation of the Po-218 and subsequent crystallization of the mica; otherwise the Po-218 would have decayed, and no ring would be visible. The occurrence of these halo types is quite widespread, one or more types having been personally observed in the micas from Canada (Pre-Cambrian), Sweden, and Japan.

The point in question, and one which has not been heretofore considered seriously, is whether any of these variant halos represent *prima facie* evidence of extinct natural radioactivity due to primordial short half-life alpha emitters. It is believed that the accumulated evidence from the polonium halos, the Y halos, and the giant halos provides an affirmative answer to this question.

It is difficult to reconcile these results with current cosmological theories which envision long time periods between nucleosynthesis and crustal formation. It is suggested that these halos are more nearly in accord with a cosmological model which would envision an instantaneous fiat creation of the earth. The words of scripture relative to this event are, "By the word of the Lord were the heavens made; and all the host of them by the breath of His mouth. For He spake, and it was *done;* He commanded, and it stood fast."

(Psalm 33:6, 9)

Acknowledgments

I wish to express my sincere appreciation to Drs. H. B. S. Cooke, C. G. I. Friedlaender, G. C. Milligan, and E. W. Guptill of the Geology and Physics Departments, Dalhousie University, Halifax, for the loan of Dr. Henderson's fine pleochroic halo collection. Dr. Joly's halo specimens, which were very kindly loaned to me by Dr. J. H. J. Poole of Trinity College, have been of exceptional value, and Dr. D. E. Kerr-Lawson, Swastika Labs, Swastika, Ontario, generously made a gift of his remaining halo specimens.

Valuable mica specimens were also received from Dr. J. A. Mandarino, Royal Ontario Museum, Dr. B. Loberg, Stockholm Univ., Dr. I. Hayase, Kyoto University, Dr. F. Mendes, Lisbon University, Dr. M. Matthias, University of Cape Town, and Dr. R. Gorbatschev, University of Uppsala. Certain facilities of the Oak Ridge National Laboratory were kindly made available through the courtesy of Dr. A. E. Cameron and Mr. Rodger Neidigh of ORNL.

Finally I wish to express my gratitude to Drs. C. L. Thrash, A. M. Thrash, L. B. Hewitt,

Charles Graves, and Mr. R. E. Crawford for support of this research through a grant from the Archaeological Research Foundation of New York City.

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STATEMENT OF RELATION BETWEEN THE CREATION RESEARCH SOCIETY AND THE BIBLE-SCIENCE ASSOCIATION, INC.

Pursuant to a motion by the board of directors of the Creation Research Society, Dr. W. E. Lammerts met with the officers of the Bible-Science Association at the home of Paul Hackstedde, president, on the evening of May 2, 1966. After consultation with Rev. Walter Lang, executive secretary of the Bible-Science Association, the following statement of clarification as to the origin and objectives of the two organizations was agreed upon, and it is hoped publication of this statement will clear up any confusion regarding purposes of each organization.

I.

Bible-Science Association

This originated in the efforts of the Rev. Walter Lang of Caldwell, Idaho to contact scientists and others regarding the soundness and the value of the creation approach to science and religion, It began in September, 1963, with a mimeographed exchange, and this soon became a multilithed Newsletter and then in the summer of 1964 it was printed and a society was organized.

When the society was organized, Paul Hackstedde of the Los Angeles area became president; Herman Voss of Caldwell, Idaho, became treasurer; and Ed Rochlitz of Caldwell, secretary. Directors were selected from Los Angeles; Denver, Colo. and from Michigan. In the Fall of 1965 a branch society was formed in the Los Angeles area with Mrs. Cal (Jean) Sumrall as the secretary. As of July, 1966, the Newsletter, is mailed to 13,000 addresses, all over the world.

This society is primarily a public relations society interested in calling attention of Christian groups and individuals to the books and writings of scientists and organizations that support the creation concept. It is interested in featuring those who oppose mega-evolution, who support a relatively young earth, a universal Flood of World-wide proportions.

The society publishes a monthly Newsletter; it distributes books written by experts in various fields of scientific disciplines, reprints their articles, distributes tape recordings of speeches given at various seminars, distributes slides and filmstrips, and distributes many tracts and booklets. It is also engaged in a radio ministry and offers a fifteen-minute, weekly radio program to radio stations over the country.

The society is supported by subscriptions, memberships, monthly contributions, and distribution of materials. The full-time executive secretary is the Rev. Walter Lang of Caldwell, Idaho.

II.

Creation Research Society

The Creation Research Society originated in 1962 as a team of ten scientists, who exchanged letters as to their views regarding evolution, catastrophism, and the validity of the various ways of presuming to date the age of the earth. It was formally organized in the Summer of 1963 and so far has published three Annuals (including the 1966 issue) and six quarterlies.

It is strictly a research society interested in publishing the technical results of its scientist members' library, laboratory, and field research. The costs of this publication are supported by the dues of active scientist and sustaining members. Also contributions are received from interested groups and individuals.

Since it is primarily a research and publication society, no national meetings are held and decisions are made by a board of directors elected by the active members for a term of three years. Regional meetings of the members of the Creation Research Society are encouraged for the presentation of papers, mutual help and encouragement, and presentation of programs to the general public.

III.

Areas of Cooperation

Much good can come of a program of cooperation between the Bible-Science Association and the Creation Research Society, since their beliefs are so similar. Thus the scientists in the various fields of scientific discipline related to evolution versus creationism, catastrophism versus uniformitarianism, and the study of the age of the earth might well act in a consulting capacity to the editing of the Bible-Science Newsletter, and do.

It has been agreed that all articles published in the Creation Research Society publications, though copyrighted, will be available for reprinting, for summary or for tracts through the Bible-Science Association and its Newsletter. Mutual financial arrangements are worked out.

The Bible-Science Association stands ready to help in the raising of funds for the new biology text the Creation Research Society is preparing under the direction of Dr. T. G. Barnes. This text is to counteract the Biological Science Curiculum Studies texts, prepared with the financial help of the Federal government, and which take mega-evolution as a way of life.

It is felt that continued cooperation of the two groups will bring about a greater research activity on the part of members of the Creation Research Society and a correspondingly greater interest and information and public understanding of the creation program through the Bible-Science Association.

MINUTES OF BOARD OF DIRECTORS MEETING, CREATION RESEARCH SOCIETY APRIL 17, 1966

Concordia Junior College, Ann Arbor, Michigan

(Present: Lammerts, Rusch, Moore, Marsh, Morris, Barnes, Linsenmann, Gish, Korthals, Zimmerman, Klotz.)

The meeting was convened at 9:10 a.m. by Chairman, Dr. Walter E. Lammerts. First order of business was the appointment of Dr. Karl W. Linsenmann as temporary Recording Secretary. A letter of regret was read stating that Dr. Tinkle was ill. Letters of regret were read from Mr. Burdick and Drs. Grebe and Davidheiser, that they were unable to attend.

Minutes of March 27, 1965, were read by Prof. Rusch. The revisions to the Constitution were adopted.

Membership fees remained the same–$5.00 U. S. A., $6.00 out of the U.S.A. Student fee, $3.00. It was again noted that this is a publication society, that members are not paid for work or expenses. For clarification it was entered into the minutes that the Editor is Dr. Lammerts, that Dr. Barnes is Chairman of the Textbook Committee. (A brief address was given by Dr. Zimmerman inviting the Board to Chapel, 11 a.m. service; this was accepted.)

Dr. Klotz reported on Public Relations, that the first of the series of thumbnail sketches of the men in C.R.S. appears in the *Lutheran Witness* of May, 1966. Subject, Dr. Lammerts. Other publicity media were discussed, other possibilities explored.

According to the Constitution, the Board of Directors appoints officers for the coming year. Unanimously elected were as follows:

President–Dr. Lammerts
Vice President–Dr. Marsh
Secretary–Dr. Tinkle
Treasurer–Prof. Rusch
Corresponding Secretary–Col. (Rt.) Korthals

Notation was made of mention of C.R.S. in *Chromosomes, Giant Molecules,* and *Evolution* by Bruce Wallace (Norton Publishers, 1966). It was felt that to facilitate the processing of inquiries all are to be forwarded to the Corresponding Secretary.

Appointments made by President Lammerts are as follows:

Dr. Moore–Managing Editor of the C.R.S. quarterly and annual. Dr. Moore added that he has been ably assisted by Dr. Howe and Dr. Whitcomb in proofreading.

Editorial Board–Dr. Morris, Dr. Klotz, Dr. Tinkle, Dr. Howe, Dr. Barnes, Dr. Whitcomb.

All present wished Dr. Tinkle God's blessing for a speedy recovery. Should Dr. Tinkle's illness necessitate, Dr. Howe will be requested to carry on Dr. Tinkle's work.

Dr. Barnes reported on the Textbook Committee. Sixteen people are working on the textbook, over one-half of the first manuscripts on the assigned topics is already received. The first complete rough draft should be ready this summer and will require much extra help. Much work is being done by Mrs. Rita Rose Ward, a teacher of biology in Austin high schools. It is hoped that this fall the book without illustrations is to be tested in one high school in Austin and one in Dallas, as a supplementary text. In its final form, it is to be a complete textbook. This final form target date is September of 1967. Already many inquiries are being received as to when the textbook will be available. It is planned

to distribute three hundred free copies in the fall of 1966, of the initial draft without the illustrations. The various sources of illustrations which are very expensive, was discussed, as well as the real need of a lot of very good illustrations in such textbooks.

The Treasurer's report was distributed, accepted as recorded by Prof. Rusch. Discussion followed regarding the high percentage of the lack of renewals and reasons therefore. It was felt that the very erudite articles are no doubt well over the head of the average reader. It was suggested by Dr. Linsenmann— (1) We consider short resumes of each article at the end of each article, coached in common parlance. (2) A question and answer page in each journal. (3) A section in each journal devoted to digest of pertinent articles involving the various facets of "The Myth of Evolution." It was also suggested by Dr. Linsenmann that the journals and annuals to be published as yearly volumes—: "The Proceedings of Creation Research Society''–in as much as individual magazine issues become easily lost, and also the volume could be sold to libraries or bought by members and given to libraries as reference material.

There was a general discussion of the problems of publishing any book and the cost involved. Various publishers and avenues and sources of financial backing will be explored.

A motion was made by Dr. Zimmerman and seconded by Col. Korthals, that "contributions be solicited for the Textbook Project Fund. The textbook committee will initiate and expedite such solicitations by sending out letters of intent, explanation, and appeal to go out under the name of Dr. Lammerts, President, such contributions being designated as the Textbook Fund." This was passed. A rather prolonged discussion followed regarding the Bible-Science Association request for (1) permission to print our articles. (2) willingness to pay royalties. It was decided that each article must be cleared with Dr. John Moore, prior to publication, with the details of royalties paid for such articles being arranged by Dr. Moore and Prof. Rusch (Treasurer). Dr. Moore is authorized to write to Secretary Lang of the Bible-Science Association to this affect.

It was moved that the Board of Directors give attention to soliciting larger funds from private individuals for research. A discussion of Burdick's research on spores, radiometric dating of carbon 14, and the question of validity of such findings, were only a few of the examples quoted where the need of money for adequate research is most urgent.

Moved by Dr. Lammerts, seconded by Dr. Klotz, passed unanimously, the meeting was adjourned at 4:15 p.m., April 17, 1966.

Respectfully submitted
Karl W. Linsenmann, M.D.
(Temporary Corresponding Secretary)

BOOK REVIEW

DONALD O. ACREY, B.Sc.
Amarillo, Texas

The Strange Story of the Quantum by Banesh Hoffmann, Dover Publications, Inc., New York, 1959, 277 pp. $1.45.

This book is an account of the growth of ideas underlying our present atomic knowledge. Conceived as a non-mathematical presentation for the layman, yet faithful to the whole concept of quantum mechanics, the author has presented the dramatic history of the most thoroughgoing revolution in physics since Newton.

When a German theoretical physicist, named Max Planck, presented the idea in 1901 that light was not absorbed smoothly, but rather in small bundles called "quanta," and when a Swiss patent clerk, named Albert Einstein, in 1906 proposed that radiation itself must exist as quanta, the new age of quantum physics was born which resulted in the destruction of some of the most basic assumptions of classical physics.

The new physics was founded in abstract and complex mathematics to the extent that those well trained in classical physics were unable to follow the intricate turns and twists of this new concept of the quantum. Banesh Hoffmann presents a marvelous summary of the historical events which unfolded during this theoretical revolution by using analogies and examples that the layman can well understand.

Among the momentous discoveries and theories revealed in the historical development of the quantum concept are Bohr's energy levels of the atoms, Pauli's exclusion principle, de Broglie's wave theory, Schroedinger's wave equation, Heisenberg's uncertainty principle, Dirac's fundamental laws of quantum mechanics, Sommerfeld's fine structure theory, Feynman's world lines, electron spin, invariance, the quantum number, and many other dynamic ideas.

One of the more important underlying features of this book is to show the ofttimes confusing and groping search for knowledge conducted by scientists from many lands in many fields of science in the never-ending quest for Truth. The search is brightened by flashes of insight, aided by accidents and guesses, and enlivened by coincidences that defy the imagination.

And the reader becomes aware that even this dominant concept in the field of physics—quantum mechanics–does not hold undisputed sway but must share dominion with the topic of relativity, that other rebel to classical physics. What appears to be a minor scratch on the surface of the mirror of these two concepts is in reality a widening crevass betraying the uncertainties of these two accepted ideas, and thus pointing to their demise or alteration after further research and study.

We think of space, time, matter, and radiation and wonder whence they came, and which framework of reference they fit. The story of the quantum is the story of the study of matter and radiation and the unexpected conclusions that resulted. But among this chaotic tale of trial and error, there is present the beautiful architecture of the intricate jigsaw puzzle the human mind has named the universe.

From the author's clear and chronological presentation of the dramatic events leading to the development of nuclear physics and related disciplines, the reader becomes aware of the complex universe about us. The picture is at times abodes from the storms of doubt and ignorance, for we perceive that these theories are but adventures of the human mind amidst an exploration of the wonderful works of God.

Through the minds of the Bohrs and the Einsteins we see the structural beauty, the cunning intricacy, and the awe-inspiring magnificence of God's universe with none of the pain and bestiality of man. And if we marvel at the precious gift of scientific insight during each generation of scientists, how much more shall we marvel at the wondrous powers of God?

If the minds of the Bohrs and the Einsteins astound us, how can we begin to appreciate the glory of God who created them? These are questions from the author of the book, a teacher of college mathematics and participant in the Institute for Advanced Study at Princeton, New Jersey.

At the same time, the author points out that fear and greed pervert the blessing of nuclear energy discoveries by changing the technological triumphs of the atomic age to the primitive barbarism of a struggle for survival. To quote Banesh Hoffmann:

> We, the People of Earth, must choose our future. It can be fine and loveable, gentle and dignified, and filled with wonder and thrilling discovery. Or it can be degraded and obscene, despairing and wretched beyond measure, with death and primitive misery stalking the land unchecked.

In a 1959 postscript to the 1947 edition, an updated discussion of the developments in nuclear studies is centered around the discoveries of the actions of protons, electrons, photons, the Lamb shift of second-quantization (particles not permanent but created and destroyed), virtual particles, and renormalization.

With the advent of the renormalization technique, the quantum theory of electrons, positrons, and photons was brought to so high a degree of perfection that no single phenomenon within its compass remained unaccounted for. But studies of the neutrino, anti-neutrons, mu-mesons, K particles, and other particles lead to the new Quantum Number concept which has been so aptly called the "Strangeness" factor.

Strangeness is as much poetry as physics: it is lumpy stuff; it is found in units of -2, -1, 0, 1, or 2 only; it is durable; it cannot be created or destroyed in strong interactions, although it can be demolished in weak interactions. All this leads to the relationship studies of **position** and **momentum, time** and **energy.**

New particles like the Theta Particle and the Tau Particle were found to be really K mesons. Then came the discovery of the non-conservation of parity in weak interactions and the resultant dominance of a thing called Handedness which denounces the idea of mirror image as unphysical.

Parity non-conservation threw physics into a turmoil which is still raging, and even new scientists of the stripe of Yukawa, Heisenberg, and Bohm work in new concepts such as existence and properties of the fundamental particles, causality in basic quantum mechanics, and isotopic spin.

The story of the quantum is not finished. Much of the awesome work of God is yet to be discovered.

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 $5.00 per year and may be sent to Wilbert H. Rusch, Sr., Treasurer, 2717 Cranbrook Road, Ann Arbor, Michigan, 48104. Active membership at present is limited to scientists having an M.S., Ph.D., D,Sc., Ed. D., or M.D. Degrees. Sustaining non-voting membership is open to those who subscribe to the above statement of belief at $5.00 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 $1.50 for each Quarterly and $3.50 for the Annual. The subscription price for all issues for one year is $8.00.

Annual $3.50, Quarterly $1.50

Subscription price $8.00