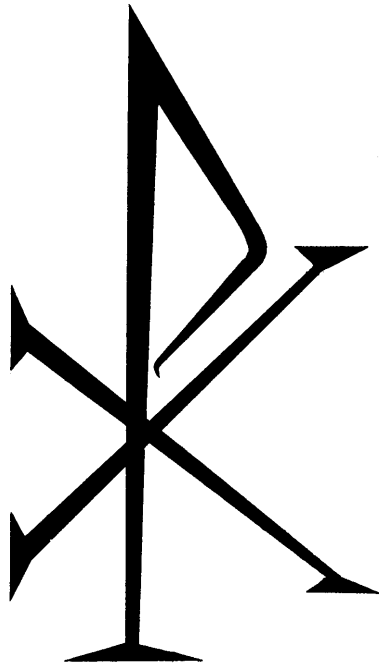


CREATION RESEARCH SOCIETY

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

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, 4090 Geddes Road, Ann Arbor, Michigan. Active membership at present is limited to scientists having an M.S. (or equivalent in experience), 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.

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TABLE OF CONTENTS

Page

The Plants Will Teach You ----- 3

Harold W. Clark

There Was Evening—And There Was Morning ----- 6

Richard G. Korthals

The Premises of Evolutionary Thought ----- 15

R. J. Rushdoony

Science vs. Scientism in Historical Geology ----- 19

Henry M. Morris

Book Reviews ----- 28

“THE PLANTS WILL TEACH YOU”

HAROLD W. CLARK

Professor Emeritus of Biology

Angwin, California*

In the deserts of the Southwest grows an interesting plant, the yucca, or Spanish bayonet. The name is derived from a dense rosette of long, daggerlike leaves that rise a foot or two above the ground. In the spring a flower stalk grows upward from the center of this rosette, reaching a height of from four to six feet. It is crowned at the upper foot or two with scores of cream-colored lily-like blossoms, each about two inches long and drooping from the end of a short branch.

The remarkable feature of these beautiful flowers is their manner of pollination. The stigma, that sensitive area on the end of the style, which must receive the pollen from the stamens in order to stimulate the growth of the seeds, is not like most stigmas. On the contrary, it is hollow, and the sensitive area is inside the hollow. Hanging down as it does, no pollen can drop into it. Ordinary methods of pollination are impossible. Neither wind nor passing insects are of any use in the pollination of the yucca.

Here is where the female pronuba moth enters the picture, just as if she had been given a special role to play in the economy of the desert. Entering a flower, she brings in her mouth a wad of pollen which she has gathered from other flowers. Having taken enough to suit her instincts, she now goes about her business. Searching about in the flower, she crawls upward until she comes to the bulbous ovary, the case in which the seeds will be developed. Here she deposits her eggs.

As soon as she has done this, she performs a most surprising act. Crawling back down the long, hanging style, she finds the tubular stigma at the lower end and proceeds to pack it full of pollen she has been carrying in her mouth. Her mission has now been accomplished. Provision has been made for her offspring and at the same time for the reproduction of the yucca.

The yucca ovary contains about 200 ovules, each of which, fertilized by the pollen packed into the stigma, is capable of developing into a seed. About twenty seeds are all that will be needed by the growing pronuba larvae, so an abundance of seeds will mature.

How, by any stretch of the imagination, can we account for this remarkable feat performed yearly

by thousands of pronuba moths? How did the process originate? In the first place, a yucca plant could not produce seed without the aid of the moth. But how does the moth know enough to pack the stigma full of pollen? Instinct you say? Yes, but instinct is merely an inherited action pattern. Before the pattern can be inherited, it must be formed. But how could yucca plants mature seeds while waiting for the moths to learn the process and set the pattern?

The whole procedure points so strongly to intelligent design that it is difficult to escape the conclusion that the hand of a wise and beneficent Creator has been involved.

But the yucca is not the only case where miraculous events occur in the plant world. In fact, the growth of every seed is a miracle.

In many flowers, such as the apple blossom, tiny nectar pits are placed at the base of the petals. The odor of the flowers, and probably the color also, attracts the honeybees. Seeking the nectar, from which they manufacture honey, the bees brush against the stamens and become covered with the sticky yellow pollen. Not only do they seek nectar, but they also deliberately gather pollen and pack it into pollen sacs provided on one pair of legs. In the course of gathering the pollen, they brush against the end of the style in the center of the flower. Some of the pollen is left sticking to the soft syrupy surface of the stigma. In this way the honeybees not only benefit from the nectar and pollen, but they return the favor by pollinating the flowers.

Again we may well ask how such an arrangement could have come about by accident, or how either the flowers or the bees could have survived alone. Intelligent design is again evident.

Sometimes it is better for a flower if it can receive pollen from another plant rather than to be pollinated by its own. Elaborate mechanisms ensure this cross-pollination. In some flowers the stigma and stamens mature at different times. This makes self-pollination impossible. Some flowers have two kinds of styles and stamens — long and short. A bee will enter a flower with a short style and long stamens, and will receive a pollen on the rear portion of its body. Then when it enters a flower with a long style, it will rub off some of the pollen on the stigma. At the same time it will obtain pollen on the front of its body from the short stamens, and this in turn will be rubbed off on the next short style the bee encounters. Remarkable, isn't it? A miracle? Surely no ordinary growth processes could account for such

*Reprinted by kind permission of Richard H. Utt of the Pacific Press Publishing Association, Mountain View, California, from "Wonders of Creation." The beautifully illustrated book has 13 other chapters all showing the wonderful design in nature. (See Review Section)

marvelous adaptive relationships. Such precise adaptations require something more than trial and error. They require intelligent planning.

You will notice that so far we have spoken only of sticky pollen. Some flowers have dry pollen that would not stick to the body of a bee, or even be held by the thick hairs that cover its body. These flowers put out no brilliantly colored flowers or sweet scents to attract the bees, but they have another way of carrying on their necessary functions.

Take the grasses, for instance. Their large stamens are dangled out on long filaments, which sway with every passing breeze and release their pollen to the wind. The pollen is so light and dry that it flies everywhere (ask any hay-fever victim), and the grasses are freely pollinated.

This kind of pollen distribution may be observed in many trees. In the dense pine forests, for instance, living conditions are not favorable for honeybees, and if the pine trees were to depend on them to carry pollen, the process would be poorly done. But the pines hang out thousands of tiny cone-like structures, each one with many pollen-bearing stamens. Every movement of the branches in the wind shakes loose a mass of minute powdery golden grains. I have seen a strong wind sweeping over a pine forest, picking up a cloud of yellow dust and sending it filtering through the trees. So dense was the cloud of pollen that it could be followed with the eye for miles. The wind-blown pollen is so abundant that it colors the surface of mountain lakes and collects in golden masses along the shores. Here is ample provision, and to spare, for the development of new pine seeds, and the bees are not needed.

After all, the process of pollination itself is a miracle. A tiny pollen grain lighting on the sticky

surface of the stigma begins to sprout, using the sugary secretion as food. The sprout becomes a tube, which burrows its way down through the tissues of the stigma and style until it reaches the ovary, or egg case. Here it does not wander about aimlessly, but leaves the walls of the ovary and enters the cavity inside. Here are located the ovules, each one destined to become a seed. Each is attached to the ovary wall by a short stalk, and at the base of the ovule, near to its attachment to the stalk, is a tiny opening, the micropyle. Into this micropyle the pollen tube enters. Once inside the ovule, it discharges its sperm cells, which immediately unite with egg cells to produce a new seed.

What causes the pollen tube to grow downward along the style? Some botanists suspect there is some kind of chemical attraction. But if this is true, how did it get that way to begin with? Even though we may find some cause for the directional growth, we are puzzled to know why it is that way. The whole process is so purposeful that it cannot be explained as mere coincidence.

These principles have been so well expressed by another that I would like to close this discussion with a short quotation:

“A mysterious life pervades all nature—a life that sustains the unnumbered worlds throughout immensity, that lives in the insect atom which floats in the summer breeze, that wings the flight of the swallow and feeds the young ravens which cry, that brings the bud to blossom and the flower to fruit.”
—Ellen G. White, *Education*, page 99.

In this age of scientific skepticism, we need to realize the hand of God in nature, and to recognize His power at work in all the things He has created.



POLLINATION OF YUCCA FLOWER BY
PRONUBA MOTH

- | | |
|--|---|
| <p>A. General view of Yucca in bloom</p> <p>B. Single flower. (Note stigma protruding on left side)</p> <p>C. Moth placing ball of pollen inside open end of stigma which is a hollow tube</p> | <p>D. Seed capsule showing opening where moth emerged</p> <p>E. The Pronuba Moth</p> <p>F. Longitudinal section of stigma showing hollow into which pollen must be placed</p> |
|--|---|

Drawings by H. W. Clark

THERE WAS EVENING — AND THERE WAS MORNING

By Richard G. Korthals

Lt. Colonel, U.S.A.F. Academy, Colorado

“In the beginning, God created the heavens and the earth. And the earth was without form and void and darkness was upon the face of the deep; and the Spirit of God moved upon the face of the waters, and God said, ‘Let there be light.’ And there was light, and God saw that the light was good, and God separated the light from the darkness. God called the light day, and the darkness He called Night. And there was evening and there was morning, one day.” (Genesis 1:1-5)

“Away out there alone, above,
Without a thing to make it of,
The world was made without a flaw,
Without a hammer or a saw.
Without a bit of wood or stone
Without a bit of flesh or bone,
Without a board or nail or screw,
Or anything to nail it to.
Without a foothold or a trace
Of anything at all but space.
The only thing the Lord could do
Was simply speak a word or two
And if the story told is true,
The world came boldly into view.”

And if the story told is true . . . Two centuries ago the mere hint that this story could possibly be false would have been sufficient to brand the speaker a heretic. Today the acceptance of this story of the creation as true can result in the word “fool” being attached to your name. Why has this almost violent change in attitude taken place — and who, if anybody, is correct?

The why can probably best be answered by quoting a recent Life Nature Library publication entitled “Evolution.” The following is written on page 10 concerning evolution: “Darwin did not invent the concept. But when he started his career, the doctrine of special creation could be doubted only by heretics. When he finished, the fact of evolution could be denied only by the abandonment of reason. He demolished the old theory with two books. One published in 1859, he titled ‘On the Origin of Species by Means of Natural Selection, or the Preservation of Favored Races in the Struggle for Life.’ The second, published in 1871, he called ‘The Descent of Man, and Selection in Relation to Sex.’

The books did not so much undermine the old, comfortable order of things as simply overwhelm it; nobody had ever bothered to try documenting the other side — instantaneous creation — with such a painstaking built structure of evidence. At two strokes Darwin gave modern science a rationale, a philosophy, an evolutionary, and thereby revolu-

tionary, way of thinking about the universe and everything in it, and incidentally established himself as the Newton of biology. But at the same time he dealt mankind’s preening self-esteem a body blow from which it may never recover, and for which Darwin may never be quite forgiven. For it is one thing for man to be told (and want to believe) that he was created in the literal image of God. It is quite another for him to be told (and have to accept) that he is, while unique, merely the culmination of a billion years of ever-evolving life, and that he must trace his godhood down a gnarled and twisted family tree through mammals and amphibians to the lowly fish and thence to some anonymous, if miraculous, Adam molecule.

Was Darwin right? Is the world, and its inhabitants, the result of a cosmic accident? Are we the descendants of some lower order of mammal, and as such then constantly evolving into a more perfect form of mankind? If we realize that Darwin was a scientist, committed to the method of science, *and if we accept this method*, then we must answer yes to the question regarding evolution. It is very evident in studying history that Darwin was a product of his time, a time when science came into its own. Had Darwin not developed the concept of evolution, then somebody else would have. Therefore, if I must think as a pure scientist, committed only to using the methods of science, then I must agree with him — I really have little choice.

Should our church then re-examine its position on creation? Are we justified in having people research Biblical documents line by line, word by word, letter by letter, looking for hidden and obscure meanings which would enable us to re-interpret the first Chapters of Genesis? Is a well known Bible Study course correct when it spends an entire lesson on the discussion of the various forms of Biblical writing, namely historical, poetical, personification, fable, allegory, imagery, and symbolism, a discussion which is carried out in order that this question can then be asked concerning Genesis 2 and 3: “What literary medium do we find here, historical event in poetic form, imagery/personification? Whatever our findings, barring a wooden literalism, our conclusions on the overarching message of this portion of scripture will be the same.”

Must we continue in our attempt to modify scriptural interpretation so as to bring about agreement with scientific theories, changing days to eons, miracles to modified natural events? Perhaps theologians — or you as Christian Day School teachers — may disagree, but my answer to all of these questions, my answer as a layman with a strong belief in

religion, is a resounding no. I feel a conservative position — a literal interpretation — on creation and miracles is as justified today as it was centuries ago. I can see no reason for a change.

I imagine that if I could examine each of your minds right now I would find this thought present: “Well — here is a real two-faced individual — a true middle-of-the-roader, fence-riding type. First he says it is, and then it ain’t — first that evolution is true, and then that the literal interpretation of Genesis is true. Come now, it must be one or the other.”

I agree with you, it must be one or the other. If you are puzzled, then it is because you missed the fact that I prefaced my statements of agreement with the method of analysis being used. In the one case it was scientific, in the other religious. This question of methodology, and the implications it carries is, in my estimation, the crux of the entire problem. To explain why, I would like to review something which you are already familiar with, but which is so important to our understanding that we should have a common ground from which to start. This is the definition of what many outstanding philosophers feel are the three main kinds, spheres, or domains of knowledge. These are philosophy, science, and religion. Let us begin by defining science, and describing its limitations.

If we were looking for one word which would best describe the methods of science it would be “investigate.” All sciences look into things and discover data which are not a part of the common experience of mankind. Now what do I mean by this “common experience of mankind”? By this I mean the experiences that you and I, our ancestors, our children — men of all times and ages have in common — experiences we have simply by being awake, not looking for anything, not observing any method. If I clap my hands, snap my fingers, drop a book, you know subconsciously what has happened, even if you didn’t witness the event. We have all seen and heard a storm, seen things grow and die, observed changes in nature, watched things move. These are simple experiences which everyone has had — they are the common experiences of mankind.

If you stay with the common experiences of mankind you will never develop sciences. Science deals with that which is on the periphery — outside the common experiences of mankind. It investigates using telescope, microscope, photographic emulsion, or nuclear reaction. A scientist forms a hypothetical theory as to why something happens, and then set out to prove it is correct by conducting experiments, using special equipment such as mentioned previously. The experiences which he has are generally limited to a small number of people, they are uncommon — or unique — experiences.

If we were then to define the tools, or the methods, of science, we would say they are observations which

affect the senses of the observer — senses such as sight, smell, touch, or hearing — causing sensations which he must then analyze and formulate using his power of reason. Because this is the method of science, then it is limited to describing — not *explaining why*, but *describing how*. Science by its method stays on the surface of reality, dealing with the apparent or phenomenal, and as a result there are a host of questions which it cannot answer.

Take a very simple question in which you may be interested as teachers, one concerning knowledge. What are the different kinds of knowledge — what does it mean to know? How do you know? What is knowing in itself? We could investigate from now till the end of time and not answer these questions. You can answer them by thinking, but not by looking.

Neither can science answer questions which require placing a value on something. It cannot tell you whether your occupation is good or bad, whether a society is exemplary or corrupt. And science will never develop to the extent where it can answer these questions. These are questions which are beyond the competence of scientific inquiry — the method used is inadequate, it is not appropriate.

This is not to say that science is bad, for this would be far from the truth. Science is extremely useful, but its utility lies in his ability to produce — the production of goods and services which contribute to the mastery of the physical world. Because of this ability science is powerful, but it is a tremendous power that by itself cannot and does not tell us where to go, or what to do.

Philosophy, on the other hand, produces nothing physical, and yet it also serves a high purpose — a good — in that it can answer many of the questions which science cannot touch. The philosopher makes use of the common experiences of mankind in attempting to describe the reason behind all events. Philosophy and philosophical inquiries are not investigative. The philosopher needs no data, no special instruments. He is an armchair thinker who can sit in a dark room and contemplate the common experiences of mankind. His question is not how things operate, but rather what they are — and why they are as we find them. At first it would appear that he has little value, since nothing physical comes out of this room — he doesn’t make anything. However, if we use this line of reasoning, then there are many things which have no value. As an example, consider a road map. It contains knowledge, yet it never makes anything. Yet that map can become our most precious possession when we are in strange territory — for it directs us where to go (if we can read it).

Science is concerned with phenomena — philosophy delves into the what, the why of things — the underlying existence. In science reason serves sense. In philosophy sense serves reason — the main work

is done by reason, not sense. Because of this the very questions science cannot answer, philosophy can. As an example, suppose you all ask yourselves this question: "What is the difference between science and philosophy?" You can agree with what I have said, or you can say that all this is wrong and instead give some other answer. But if you give any answer to that question at all, then you do it as a philosopher, not a scientist. There is no method whereby you can scientifically answer that question. Just pause and think for a moment. Could you possibly — by any means of investigation, experiment, or laboratory research — discover the difference between science and philosophy? Obviously not!

Philosophy can solve the questions which require the establishment of values. The philosopher can answer questions concerning human happiness, whether a form of government is good or bad — a war just or unjust — your job beneficial or harmful to mankind. He can demonstrate that democracy is, in terms of justice, the only perfectly just form of government. These are questions that are philosophical, but totally untouchable by the methods of science.

So much for science and philosophy, their methods and equipment, usefulness, and limitations. Now where does the third realm of knowledge — namely, religion — fit into this picture. What is its method — its usefulness? If there is religion, distinct as a body of knowledge, practically and speculatively, then what would it be like? There is no distinction possible between religion on one hand and science and philosophy on the other, unless that distinction is made in the separate realms of faith as opposed to reason. Allow me to explain to you what I mean. Over here, science and philosophy are both knowledge, obtainable by the exercise of man's faculties, his mind, his senses, and his reason. Whatever man obtains is gotten through his own efforts. He observes, analyzes, invents techniques, and performs experiments — acquiring knowledge through his own hard work — using his natural faculties.

If religion is nothing but some other form of inquiry using natural means, then it can be reduced to these two. For religion to be distinct it must consist of knowledge which man receives — but does not acquire by his own efforts — and is this not the definition of revelation? A true religion claims to say something which could not possibly be said if it had not been revealed by God. They do not claim to know it by investigation, historical analysis, or historical research. They claim to know it as a gift from God. The knowledge is literally handed to them.

Religion, having this revelation, this gift from God, is enabled through this means to answer questions which the scientist and philosopher cannot begin to solve. I could, as examples of these questions, take the Christian doctrines of the Trinity or

the Incarnation — but I don't want to. Instead I would like to take a doctrine which you may feel does not belong in this class, the doctrine of creation. Neither philosopher nor scientist can tell with the slightest degree of certainty whether or not the world had a beginning. As a Christian, however, you have an answer. You know the world began — it had a beginning — for God has chosen to reveal to you the answer. That answer is found in the first verse of the first chapter of Genesis: "In the beginning God created the heaven and the earth." It is an answer which is impossible to prove by reason or investigation. If you have an answer to that question, then you have it on the basis of your religion — and your religious faith.

This means that a body of knowledge can be properly classified as a religion only if this faith is present. If you do not admit to faith, then forget religion. Following Christ as a great moral leader and teacher, even imitating his exemplary character, is not religion. You might as well follow the moral teachings of Socrates, for all you have is a moral philosophy.

Three bodies of knowledge, each separate and distinct, each with a method, each with a purpose, each with limitations. On the basis of this common understanding let us now go back and re-examine the questions asked earlier — and the answers given.

What about the statement made to the effect that if we realize that Darwin was a scientist, and if we accept his method, then we must agree with him? Did we not just agree that only religion could answer questions concerning the beginning of the world? Yes, this is true, for Darwin was stepping out of his field of competence in attempting to answer this question — science was overstepping its boundaries. Then doesn't agreement with Darwin and those following him indirectly acknowledge acceptance of the unbiblical theory of evolution? Yes it does — if, and please notice this key phrase — *if we accept the application of his method to this question*. Let me explain why.

I would like to have your full cooperation during the next several minutes. This may prove extremely difficult — but please make the attempt — try to the greatest extent possible. Try to cleanse your mind of all previous ideas and concepts, and for a moment imagine that you are a pure scientist, committed to using only the methods of science. This will mean using only observable data — and your senses and reason to interpret it. You have never heard of the Bible — and even if you did, your method forbids the use of this knowledge. As you are sitting in your seat you let your thoughts stray, and you begin to think and wonder about the origin of the world and its inhabitants. You know you must depend upon data and reason, but this doesn't trouble you, for you are well trained, highly intelligent, and have a wealth of data at your disposal.

And so you start correlating facts — forming hypotheses — making assumptions. You look at the world's inhabitants around you, noting differences and similarities — seeing the effects of mutations, the results of hybrids. You see dairy cattle producing twice as much milk as their ancestors — blocky beef cattle as opposed to the rangy Texas Longhorn — all changes which have been brought about because of selective breeding. You see horses of sturdier stock, chickens which lay only large white eggs, children who are larger than their parents. Suddenly the thought comes to you that everything is improving, is evolving from some lower and less perfect form — suddenly you have the key, a hypothetical answer to the question of the origin of life. You see with clarity that everything seen on earth today has evolved from some lower form of life. But where do you start? You, as a scientist, can only use the laws of nature present around you, and using these you extrapolate back through time to the only place where you can stop — a single cell — formed by pure chance. You — restricted to using only the methods of science — have no choice.

You have formed your hypothesis — your theory or idea — now you must substantiate it. First, you realize that the process you are visualizing and proposing is extremely slow, therefore the world must be billions of years old. How can you show this? Well, if you say that the earth was formed as a smooth, homogeneous ball, then you can look at the Grand Canyon, and calculate the millions of years it took the Colorado River to carve this chasm from the smooth surface. Your estimate is made using the present measurable erosion rates as your yardstick.

You also realize that you must show that a common tie exists between various forms of animal life. You notice that there is a similarity between some bone structures — for instance the two bones present in the forearms of many animals. Backbones are similar, as are the fetal forms in some instances. You propose that this is evidence demonstrating that the animals — including man — must have a common ancestor. Ancient fossil remains are found in rocks. In some cases you use the rocks to establish the age of fossil remains — in other cases, where there is an apparent discontinuity in the rock structure, the fossil establishes the age of the rocks. You use these fossils as evidence that at one time this was the only form of life which existed — and therefore everything must have evolved from it.

So you — in your own mind — using only your reason to evaluate data — gradually develop your theory. True, there are many gaps in your observations, ideas which you cannot substantiate with actual evidence — but as you go along you make what you feel are reasonable assumptions — and complete the picture using to a certain extent your imagination. With the pattern developing, you de-

cide to consolidate your thoughts by putting them in writing. Then, at your friend's persuasion, you write a book — which is eagerly read by all who have been looking for a solution for this particularly difficult problem dealing with origins. Soon other books are written — some by pseudo scientists who popularize your complex theory in a paperback version — and who in the process somehow have forgotten to put in the "ifs" which you so carefully included. So suddenly the assumptions you made — the guesses and the musings, the dreams and the imaginations suddenly become fact, and anyone who doesn't believe them is either obstinate or biased. You find yourself a celebrity, acclaimed by all for having found the answer to the mystery surrounding the question of man's origin.

"But," you say, "I don't want to go back that far. I will base part of my theory on Biblical knowledge, and will assume that at least man was created." How can you — for remember our initial agreement? You are a pure scientist, utilizing only the methods which that body of knowledge can use. Therefore you cannot stop at that point in time — you have no justification for such an assumption — no valid reason. You must go back to a single cell, because your reason tells you—after evaluating available evidence—that man could not instantaneously be created out of nothing. There are no scientific data to substantiate this — nor is there an experiment which you can perform which will duplicate it. It is against every law of nature in existence today — and these laws are the tools of your trade, immutable laws which you use to project present day findings into the past. The very idea is unreasonable and incomprehensible.

This is true not only with respect to the question of the origin of life; you must also assume that the earth started out as a homogeneous sphere, smooth and untarnished, with all elements in their most basic form. You really have no choice, for where else can you start? Could you say that the Grand Canyon was 1000 feet deep when the world was formed — or 1627 feet deep — or that it had a depth of 2369 feet? You must start somewhere — and that somewhere must be a smooth surface if you are to substantiate your arguments.

So now do you see why the methods of science dictate an evolutionary theory? Reason, senses, and observable data all tell us there can be no other way. If you were all scientists I would stop right here, for though you may have different ideas concerning the details, yet the basic concept is one you would accept and uphold.

But you are not scientists, you are people with religious beliefs — people who not only use reason, but also have faith in God's revelation to us. As such you are told in the revealed Word that the earth was created by God — and that He created us in His image — breathed into our nostrils the breath of

life. As a result of this knowledge a struggle exists in your mind, a mental conflict which says you should accept one or the other idea, but not both. Which will it be?

Much hinges on the validity of scientific claims — the amount of truth which can be attached to the theories presently being advanced. Let me state now that the theory of evolution will never — in my estimation—be completely disproved. In fact, “evolution” or variation does take place—we can see it in nature around us. God did not necessarily create all the varieties of dogs, cats, and even humans which are present in the world today. Most of these “evolved.” But I firmly believe that He did create the various kinds—biologically speaking. The theory that things evolved from a single source, and that the rattlesnake, butterfly, eagle, whale, and man all have the same common ancestor is far from proved. This is evidenced by the fact that scientists themselves have trouble finding a theory which is agreeable to all.

I have neither the time today — nor the ability to present all the arguments against single source evolution. I am neither a biologist, a geologist, or a paleontologist. If you want specific facts, then I would like to refer you to two excellent books on this subject. One is entitled “Darwin, Evolution, and Creation,” edited by Dr. Paul A. Zimmerman and published by Concordia Publishing House, St. Louis, Mo. The other is “The Genesis Flood” by Henry Morris and John Whitcomb, and published by Presbyterian and Reformed Publishing House. However, as an engineer familiar with scientific methods, I would like to explain to you several general weaknesses.

First let us examine the question of assumptions. How can these lead us astray? Let me give you a very simple example. Suppose we are going down an interstate highway in the middle of the desert, miles from nowhere, at 11 o'clock in the morning, and come upon a car which has just run out of gas and is standing deserted. The question arises as to how many hours the man had been driving since his last gas stop, since it is considered a violation to impede traffic. You are a scientist, so you look at the gas tank and determine it has a 20 gallon capacity. The car is exactly like yours, and you know you have been getting 15 miles per gallon. The speed limit is 60 miles per hour, and almost everyone drives at this rate, so your car has been consuming 4 gallons per hour. Using this data you estimate then that he must have driven 5 hours since his last stop.

You get into your car, and pretty soon encounter the driver trudging down the road. Anxious to demonstrate to your partner the validity of your assumptions and the wisdom of your scientific analysis, you stop, roll down your window, and ask the disgruntled and footsore hiker how long he had been driving before running out of gas. “Thirty minutes,”

he angrily shouts back. “Next time I’m going to fill up the gas tank when I stop, and not only put in 3 gallons — and I will check the gas lines for leaks.” You turn your embarrassed countenance toward your partner who is chuckling over your error — and admit you made a mistake — not in calculations — but in assumptions. Yes, your assumptions which seemed so valid and factual when you made them, were wrong.

The theory of evolution is based upon many assumptions. The first and foremost is that there was no special creation. It is also based in part upon the assumption of uniformitarianism, unchanging rates. But allow me to make another assumption — the assumption that God created the world and all its inhabitants in 6 days. And now let us imagine that Adam was a scientist interested in determining the age of the earth. He starts his research on the 8th day after creation, in and around the garden of Eden. He looks at himself and Eve, and realizing that they are both mature individuals, states that they and the earth are at least 20 years old. He cuts down a tree in order to build a fire, and counts the growth rings. According to this, the earth is at least 139 years old. He and Eve stroll down to the river banks, where he notices the deep channel cut by the stream. By carefully measuring the erosion rate, he estimates and concludes that 5,000 years have gone by since the stream started as a tiny trickle. They pause and marvel at the magnificent mountains in the distance, watching the sun as it slowly sinks beneath the peaks. He knows that internal pressures within the earth are slowly pushing these mountains higher — and using the present established rate, he calculates that the mountain range is at least 1.5 billion years old. The next day they explore a canyon started 750,000 years ago by a river, and marvel at the layers of rock, some formed almost 3 billion years in the past, according to his geological time scale which is based upon rock formation phenomena. He sees fossils imbedded in some of the rock — and wonders what conditions on this earth were like 1 billion years ago when this was the only form of life which was present. They stumble upon a cove, and find bones which a carbon check shows are 10,000 years old. He taps a rock with his hammer until it breaks, and finds therein a mixture of uranium and lead. A quick radiological test and he knows that at least 1 billion years have elapsed since this rock was formed . . . And so Adam, the scientist, determines the age of the world upon which he is living — a world which according to his reasoning, observations, calculations, and assumptions, is at least 3 billion years old — yet it is a world which was created just 8 days earlier.

“Absurd,” you say, “you are prejudiced and biased. Why should God create a world in that condition?” Is it? Not everything I said may be true, and much of it such as the fossils in the rocks, and

bones in the cave, we have reason to believe were deposited during the cataclysm known as Noah's Flood and later on in major upheavals of nature. Indeed many of the layers of stratified or sedimentary rock were deposited during this period, thus giving the appearance of great age. But the idea is the same and God indeed might have created a world exactly as it looks now with every appearance of great age. Only by His revelation do we know that many of the earth's features are not part of his original creation. This assumption of a built in apparent age may not be reasonable according to our senses — but it certainly can be true. It is just as valid to make this assumption as it is to assume that the earth was formed in a "big bang" and that all life evolved from a chance encounter between the right atoms.

The only way that this assumption can be disproved is for science to prove their theory without a shadow of a doubt, and this will never be done. It would take an eye witness account to prove that the creation theory is wrong — and yet strange as it may seem all written history indicates otherwise. The material evidence which we do have to work with can be shaped and interpreted to prove almost any theory you would care to advance. This fact is quite evident when we see the number of theories which do exist.

As an example, consider current theories concerning the origin of the universe. One group vigorously upholds Lemaitre's Big Bang idea, while the other group vehemently claims this is wrong, and adheres to the Steady State Universe of Hoyle and his colleagues. Allan Broms, a scientist, in his book "Our Emerging Universe," comments on the latter and says: "He does not tell us how new matter comes into being, but asks us (at least for the time being) to bake its continuous creation on faith (scientific faith, that is), which of course means that we will take it all back the instant any positive fact gives us the slightest excuse. Furthermore, he does not explain why this accumulation of new matter should push the older matter more and more apart to give us the expanding Universe, but again asks for another bit of scientific faith, subject to the same proviso. And when we look dubious over taking so much on faith, he properly reminds us that we ourselves have no way of explaining how matter otherwise came to be (even originally, suddenly, and in a lump), and that we are taking the Big Bang itself very nearly on faith." . . . And we say it takes too much faith to accept Genesis One literally?

The same can be said about the origin of life. Here you must accept the philosophy of uniformitarianism. Physical processes both on earth and in the earth are thought to be subject to unchanging natural laws, and therefore more or less continuous and uniform over the past — hence the word "uniformitarianism." Once the assumption is accepted,

one can study actual processes and extrapolate these into the geological past to interpret our factual findings, forming them into a genetical, historical picture. The implications of uniformitarianism in the search for the origin of life on earth are clear. You look for natural causes of the same character as are in operation at the present time. You do not — and cannot — envision some sudden event which caused life to appear all at once as a full fledged phenomenon in every corner of the earth. Rather, the origin of life will have covered an enormous time span if measured against human standards. During this period development will have been slow, almost beyond imagination.

How firm is this theory — this assumption? Allow me to quote from a book written by M. G. Rutten, a professor of Geology, entitled "The Geological Aspects of the Origin of Life on Earth," a book published in 1962. He writes: "So on the one hand we geologists have the possibility of studying the evolution of life on earth, of paleontological research, with a wealth of factual data. Although the gaps in the paleontological records are so large that anyone with a bias can still make a case against natural evolution, the development of paleontological research clearly points towards its general acceptance. Many gaps in the records have been lately filled by lucky finds, and we feel sure what this research is leading up to.

"On the other hand, there is the problem of the origin of life on earth. Here the data are extremely poor. The time elapsed is so enormous that it is difficult to prove anything at all, because the records are not only incomplete in the extreme, but also often changed beyond recognition by younger events. Moreover, such research implies a doubt toward popular views on creation and thereby provokes criticism on immaterial grounds from the side of church people: criticism which cannot be effectively answered owing to lack of data." . . . And we are at times ashamed and apologetic of our faith in Genesis One?

Neither are historical dates firmly established. C. W. Ceram, in his book "Gods, Graves, and Scholars," writes this: "How far the scholars of the West have departed from Manetho's chronology is shown by the following array of dates assigned, through the years, by different authorities to the unification of Egypt by King Menes, an event that marked the real beginning of Egyptian history and may be taken as the earliest happenings of dynastic significance: Champollion, 5867 B.C.; Lesueur, 5770; Bokh, 5702; Unger, 5613; Mariette, 5004; Brugsch, 4455; Lauth, 4157; Chabas, 4000; Lepsius, 3892; Bunsen, 3623; Eduard Meyer, 3180; Wilkinson, 2320; Palmer, 2224. Recently the date has been pushed back again, Breasted dates Menes at 3400, George Steindorff at 3200, and the newest research at 2900. It is significant that all dates become more difficult to determine the farther back

one goes into history.” . . . And we struggle to find a means whereby we can logically change the meaning of the word “day” in Genesis One?

I could go on for hours citing similar examples — how Hooton in his book “Up From the Ape” devotes an entire section to explaining the tremendous significance of the Piltdown Man — a fossil we now know to have been a fraud — how White in “The Warfare of Science with Religion” flagrantly misinterprets the significance of the Chaldean cuneiform, using them to prove the Bible is a myth, when actually they substantiate the Bible. But I feel I have shown you enough to make you realize that the scientific theory of the origin of the universe and the life it holds has not been proven — and furthermore will never be proven on this earth. It is a theory which must be accepted on faith — faith in science and its method.

But why, do you ask, is this theory so readily accepted, while religious faith is scoffed at? The answer lies in the dominant role played by science in our lives today, and in the philosophy which is accepted and adhered to by most people. The philosophy is that originated by David Hume, and is called positivism. This doctrine claims that the only knowledge that has any accessible validity is the knowledge obtained by the positive — or empirical and experiential — sciences. It asserts that science gives us this positive knowledge — and denies that we can have any other knowledge but this. Reason, not faith, is the key word. Therefore religious beliefs are automatically false, since we cannot conduct a controlled experiment to prove them. To many — science is the only knowledge — serving in addition as a philosophy and religion. It can provide the answer to the common question of our times — namely “Show me.”

So today to question science is almost tantamount to being labeled a heretic. Question their theories — and your beliefs are ridiculed — your faith in other forms of knowledge made to appear groundless and foolish. In some circles to be unscientific is to be automatically wrong. The Church, subjected to an almost overwhelming intellectual pressure, starts to look for methods of obtaining relief. The first avenue explored is that of modifying doctrine and interpretation to make it more reasonable — to appeal to reason — to agree with science and its theories. You, as teachers, are subjected to this temptation probably more than anyone else — since you, of necessity, teach both religion and science.

Where do we start to modify? At what appears to be our most vulnerable point, of course, the doctrine of creation. After all, what difference does it make if I believe the earth is 4 billion years old? Isn't evolution also a form of creation, evidence of the power and wisdom of Almighty God? Since evolved man is constantly improving, he could never have been perfect and sinless, therefore Genesis 3

becomes a poetical way of explaining why things aren't perfect today . . . The flood? Well, you know how events magnify when told and retold. After all, Moses had to rely on stories handed down from generation to generation. In the process a small local inundation becomes a world-wide flood. Reason tells us there just isn't enough water to cover the entire earth . . . God leading the children of Israel in a pillar of cloud and fire? What reasonable explanation can be found for this? Well, the Israelites, in their fear, wanted to believe God was near, so they imagined this, and the writings of Moses reflect the people's imagination and impression. Actually, the smoke and fire came from a distant volcano — they just thought it was leading them, and God was using a natural phenomenon to help them . . . The waters of the River Jordan parted? Now this could have happened if, for instance, a large rock slide upstream had temporarily held back the waters. True, God caused the avalanche, but Joshua got carried away in his description. He omitted the real facts.

And so we make the Bible reasonable — changing our interpretation to what we feel is acceptable to the public — using as our excuse the fact that none of these changes are affecting beliefs necessary to salvation. We never give to God the almighty power so rightly His — the power to act in ways different from His usual ones, that is, miraculously — because we feel our people will never accept this. *But where do we stop?* Are the doctrines of the Trinity — the Immaculate Conception — the Virgin Birth — the dual nature of Christ — the Resurrection — the Ascension — salvation by grace through faith — are these doctrines reasonable? How do you tell someone to have faith in these doctrines, when you have trained him to use his reason throughout the rest of the Bible? How do you explain to him that in one case we accept the literal translation, and in the next we modify? Would it not appear to the outsider that the church is itself unsure of what to believe?

The argument is often advanced that we must “stay with the times” — we must revise our teachings if we are to appeal to the modern man. There is a tendency to react to this philosophy in a manner symptomatic of our times, we try to make it easy for a potential member to join — or our members to believe — asking little of them by way of mental effort. We try to make everything reasonable — instead of appealing to their faith — instead of taking the time and effort to go through a logical explanation. We are afraid we might turn *away* a prospect by unreasonable demands — so every effort is made to make the instructions “easy to swallow.”

In the process we try to bring God down to man, rather than taking man up to God — we try to give him a God whose action and power can be understood. We feel we are helping — and yet are we not actually depriving? For I want a God whose wisdom, power, attributes, and might are so great that

my frail human mind cannot begin to understand Him. I want a God who fills me with such wonder and awe that I feel compelled to fall on my face and worship Him. I want a God so all-knowing and powerful that He can reverse the forces of nature, if necessary, to protect me. I want a God so loving that He will forgive me again — and again — and again.

To have this kind of God I must have faith — a faith which He gives me — using as His instruments the pastors, teachers, and members of His Church. Are we doing all we can to aid in instilling this faith in our people today? Faith, not works — was the battlecry of the reformation. Faith, not reason — should be the watchword of tomorrow. Thank God our church has adhered to a sound, fundamental, and conservative doctrine in the past, a doctrine based on faith. Pray God that she may continue to do so in the future.

A question you may rightly ask concerns how this applies to you. Does this all mean that you should ignore reason in your instructions? Should we, for instance, forbid the teaching of the evolution theory in our parochial school system? No — for reason is the tool of science and philosophy, one they will certainly be called upon to use as they continue their education. Evolution, for instance, should not only be mentioned, it should be taught as a required subject, in my way of thinking. Unless we do this, the student will feel we are trying to suppress the truth, and will be all the more prone to accept the theory for fact in advanced education courses. But when it is taught include all the “ifs” and the “buts” — and the “whys” and “therefores.” If the textbook you use makes theory sound like fact — and almost all elementary texts will — then supplement your reading with others more truthful. In fact, I think there is a crying need today for a small handbook which briefly explains the weaknesses in the evolutionary theory in layman’s language — and I hope that the Creation Research Society, in which I proudly claim membership, will soon publish one.

Reason or Faith — which will you emphasize when you return to your school? Reason — which tells us that there must be a Supreme Being who established the order in nature, who wound the clock which runs the universe, and who now sits back and watches it run without interference — or faith, which tells us we have an all powerful God who not only created the world and its inhabitants, but who still today guides, controls and directs it . . . Reason, which tells us that man evolved from lower mammals, and is better in all respects today than he ever was in the past — or faith, which tells us that man was created by God in His image, righteous, in perfect communion with God. Man, who chose to sin, and who today pays the penalty. Man, who from the moment of conception is in need of a Savior . . .

Reason, which gives to God a human form, and which then tells us that He could not possibly be at all places in the same instant — or faith, which tells us that He is Omnipresent, always close to us, always guarding, guiding, and protecting . . . Reason, which tells us that God sits back and watches the world, indifferent to our individual problems — or faith, which tells us our God is omniscient, He knows our thoughts, our troubles, our joys, He stands by ever to help us, no matter how deserted we may feel . . . Reason, which tells us that God must be a stern judge constantly condemning us for breaking impossible laws — or faith, which leads us to know God as a kind and loving Father, who cherishes us as His children, who sacrificed His Son that we might live, who forgives us when we sin, who loves us with a love incomprehensible to human understanding.

What will be the predominant theme in your classroom in days to come — faith in man’s ability, in his reason — or faith in the almighty power of a God who has revealed Himself to us. Choose reason if you want to take the easy — the popular route. Choose reason if you want to be in tune with the times, if you want to impress the scientific community, if you want to have popular appeal. But choose faith if you are concerned about the eternal welfare of the children in your charge. Choose faith if you want to give them that peace which we cannot understand. Choose faith if you want them someday to say: “I shall be forever grateful to that parochial school teacher I once had.”

I have, during the past hour, attempted to show you that science depends on reason, religion on faith — that science is forced, by its method, to adopt a theory such as evolution, and that this theory has many serious weaknesses. My examples of these have been few — I ask you to accept my word that there are others. I would like to share with you, however, my beliefs after a lengthy study of scientific and religious books. I believe that God created this world and its inhabitants in a period of six days. I believe that God created man in His image, and that my desire to sin is a result of the fall of one man, a man named Adam. I believe that the miracles of the Bible occurred as described, that God used His power to suspend the forces of nature which He once set into being, I believe that I am a child of God — not because of my works, but because Christ has atoned for my sins — an atonement which the Holy Spirit has led me to accept. I believe that I can go through life confident in the knowledge that God is in control, allowing only those things to happen which will ultimately be for my good. I believe that this faith will be challenged severely in the years to come, years in which science and reason will become more prominent, years in which apparent proofs will arise to support existing theories. But I believe that God will keep that faith

ever present in me — and that someday that faith will be justified — the day when the cloudy lid shall be removed from my eyes and I shall know all things — the day when I stand before my Father, my God, my King, in heaven.

Prejudiced? Perhaps. Biased? Yes, I guess I am. A fool? If this means believing that very apparent physical evidence can be misinterpreted, then the accusation may be just. You, too, may be the recipient of such titles. If such should happen, and if as a result you feel insecure, then why not turn to St. Paul's first letter to the Corinthians, in the first chapter, where his inspired words tell us: "For the word of the cross is folly to those who are perishing, but to us who are being saved it is the power of God. For it is written, 'I will destroy the wisdom of the wise, and the cleverness of the clever I will thwart.'

Where is the wise man? Where is the scribe? Has not God made foolish the wisdom of the world? . . . For the foolishness of God is wiser than men, and the weakness of God is stronger than men."

There was evening, and there was morning . . . And if the story told is true, the world came boldly into view . . . Faith — or reason? Which will it be? As you go to your respective congregations I would like to have you take seven words with you — words I have repeated so often in the past — words which I hope you will learn to use in the future. The words, in the form of a prayer, are these — *Lord, I believe, help thou my unbelief.*

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THE PREMISES OF EVOLUTIONARY THOUGHT

R. J. RUSHDOONY

Sigmund Freud, as an evolutionary scientist, has been a source of embarrassment to his many dedicated followers at one critical point: Freud grounded his evolutionary thinking firmly on the theories of Lamarck. The inheritance of acquired characteristics is basic to Freud's anthropology, biology, and psychology. In the face of extensive criticism, Freud "adhered throughout his life" to "the Lamarckian belief."¹ At this point, even his devoted disciple and biographer, Dr. Ernest Jones, criticized Freud as "What one must call an obstinate adherent of this discredited Lamarckism."² Freud, however, was resolute. Because of his hostility to religion, the doctrine of evolution was intensely important to Freud, and evolutionary theory provided for no effective mechanism for evolution apart from Lamarck. To deny Lamarck and the inheritance of acquired characteristics was to posit a god-like power somewhere in or behind evolution and to introduce illegitimately an element resembling the supernatural. It pointed to an intelchey of being, a potentiality or power far exceeding the original elements of the universe. If *nothing is acquired*, then *everything is involved*, and what has evolved was originally involved in the original spark of energy or matter out of which all the universe has developed. Such an assumption would be ridiculous; it would place in that original atom powers commensurate with God. Freud saw only one consistent theory on which to ground his evolutionary faith: Lamarck's concept of acquired characteristics. Freud stated his thesis succinctly: "If nothing is acquired nothing can be inherited."³ All of Freud's psychology rests on this concept of acquired characteristics. It is not our purpose here to analyze the implications of this position for Freud's psychoanalytic theory; this has been done in another context.⁴ What does concern us is Freud's thesis: "If nothing is acquired nothing can be inherited." To introduce any other mechanism is to introduce the miraculous in disguise.

Freud's shrewd observation deserves renewed attention. The miraculous is indeed commonplace in evolutionary theory, although in disguised manner. An important aspect of the standard evolutionary geological time tables is the urgent necessity for countless millions of years to dilute the miracle of evolution and make them "natural." It is assumed that changes which are impossible or else miraculous when pinpointed in time can be rendered possible and natural when blanketed with millions of years. Given the millions of years, spontaneous generation is also "naturalized" as well as other necessary steps in the evolution of species. *Philosophically*, the basic assumption of these positions is the inherent power of all being; the entire spectrum of

nature has within itself a *being in process* of almost unlimited potentialities. This being in process has manifested already a measure of potentiality in the universe we know; there is no reason to suppose that its potentiality is exhausted or that somewhere continuous creation is not in process. This being, which is the whole of the natural world, possesses, therefore, whether consciously or not, probably unconsciously, all the vast reservoir of power which orthodox Christianity has associated with God. In a sense, of course, the greater faith rests with the evolutionist in assuming that the order, structure, and design of creation is the product of a blind and unconscious potentiality rather than the totally self-conscious and ontological Trinity.

The implications of this position are especially of interest when we analyze the philosophical position of those who hold to creative evolution or progressive creationism. This compromising position represents an attempt by neo-evangelical Christians to retain the respectability of science and of Christianity as well. Basic to their position is the denial of the *creative act* in favor of a *creative process*. The six days of creation give way to the geological time table, a substitute god of like creative power. But the moment creativity is transferred or to any degree ascribed to the process of being, to the inner powers of nature, to that extent sovereignty and power are transferred from God to nature. Nature having developed as a result of its creative process has within itself inherently the laws of its being. God is an outsider to Nature, able to give inspiration to men within Nature but unable to govern them because He is not their Creator and hence not their source of law. Of course, the creative evolutionist denies that he is surrendering God; he is trying to retain all the values of two systems of thought. But, in attempting to serve two masters, he is clearly being disloyal to one, since both have mutually exclusive claims. Where does creativity rest, within God or within Nature? If it rests in God, then the universe is, as Genesis 1 declares it to be, the result of a series of creative acts without process in the short span of six days, and all perfect and good. If creativity rests in Nature, then the universe is the result of a creative process, and the laws of its being and of its creatures are to be derived, not from an alien God who is an outsider, but from Nature itself. The creative evolutionist attempts to hold to either an outright dualism, and, in every dualism one god becomes the evil god, or he attempts to maintain the two in dialectical tension. It is not without significance that virtually all progressive creationists, while professing degrees of criticism of dialectical theology, do nevertheless maintain a relatively apprecia-

tive and even friendly attitude towards this radical departure from orthodox Christianity. Indeed, progressive creationism or creative evolution must be described as at least incipient dialectical theology.

This was clearly apparent in the American Scientific Affiliation symposium, edited by Russell L. Mixer, *Evolution and Christian Thought Today* (1959). The Thomistic (or dialectic) nature of this symposium was cited by this writer in a review article.⁵ Such progressive creationist writers hold commonly to a double-revelation theory, a revelation of spiritual truths through the Bible by God, and the revelation of God in nature. It is held that these two truths cannot be in contradiction.⁶ Basic to this double-revelation theory is the Thomistic and Greek concept that the reason of autonomous man is capable of impartially and objectively investigating the truths of creation and of establishing them into a valid revelation of nature. The source of "revelation," then, concerning the universe is man's reason and science. The source of revelation concerning God and the supernatural is the Bible. Reason and science can establish firmly truth in their realm, the knowable, whereas the province of the Bible lies beyond the natural world. To use the Bible as a source-book for facts concerning nature and history is thus regarded as illegitimate. Jan Lever has gone so far as to say "that we may not consider the language of the Bible as scientifically conceptual language; hence, we may never demand from Scripture exact physical, astronomical, biological and thus also not exact historical knowledge."⁷ This position rules out of history not only the prosaic account of Genesis 1, but also the accounts of the resurrection and the poetical narratives of the virgin birth. Such a view of the Bible is not Christian: it is dialectical, and the difference between these scholars and Karl Barth is only one of degree, not of kind.

Moreover, this dialectical position, by holding to two realms of truth, gives us two sets of infallible truth which cannot be attacked. Since the Bible is limited to revealing only spiritual truths, most of it is open, of course, to attack because it is within the domain of science and history. What about evolution? Wherein lies its immunity? James O. Buswell III has given clear expression to this area of infallible truth:

One of the chief drawbacks to the anti-evolutionists, from Darwin's early critics to the present day (familiar as some of their leaders are with the data), is that their activities and literature have been almost completely wrapped up in arguments over petty fragments of the record, assuming that to attack evolution as a total philosophy one must show the data upon which the assumptions are based to be untrue.⁸

This is an amazing statement. The data and facts of evolution can be untrue, but "the total philosophy" of evolution cannot be disproved, and it is wrong to

assume that "to attack evolution as a total philosophy one must show the data upon which the assumptions are based to be untrue." What other recourse does a scientist have? If fallacious and "untrue" data as the foundation of a theory fail to disprove that hypothesis, what can be done? Buswell does not give an answer, but it is apparent that the double-revelation theory is implicit in this perspective. We have an area of immunity from disproof because it is an area of revelation.

The appearance of Darwin's thesis was the appearance of an alternative revelation to the Bible. According to George Bernard Shaw, "If you can realize how insufferably the world was oppressed by the notion that everything that happened was an arbitrary personal act of an arbitrary personal God of dangerous, jealous and cruel personal character, you will understand how the world jumped at Darwin."⁹ Although Shaw's conception of God is a gross caricature, his basic analysis is correct. On the one hand, man faced an account of origins as the creative act of the ontological trinity, a totally self-conscious Person, omnipotent, omniscient and sovereign, and to whom man is totally responsible. On the other hand, Darwinism offered an account of origins which performed also all the miracles of creation and yet was totally impersonal, materialistic, and held no man to account. An unregenerate world jumped to it as "liberation." It provided, to cite the title of a modern book, a "god without thunder." In this evolutionary perspective, potentiality resides *within* the universe, not beyond it in God. This position is an article of faith. A prominent philosopher, in discussing the question of origins, stated candidly that the philosophically astute naturalist will refuse to ask the question of origins: just as the Christian will take God and the Bible as his "given," so the pragmatic naturalist should insist on taking the world as it exists today and the concept of evolution as his "given," his basic assumption about reality.

The creative evolutionist holds therefore a position which lacks the philosophical consistency of either the naturalist or the orthodox Christian: he attempts to operate in terms of two "givens" and to maintain them in dialectical tension. But every dialectical position, because it is an attempt to maintain and reconcile two mutually exclusive concepts or "givens," is doomed ultimately to resolve the tension in favor of one. A dialectical position is precisely the insistence on maintaining this hold on two warring concepts, and, while it is doomed to collapse, it finds nothing more difficult to accept than this inevitable collapse.

We have thus two rival faiths, each with its belief in miracles, one by God, the other by the potentiality inherent in the universe. We have a third position, the attempt to unite these two. But Freud's resort to Lamarck had as its motive the resolution to avoid

this dilemma of rival miracles. *Granted* the validity of acquiring characteristics, then evolution is a thoroughly natural and explicable phenomena. But here Freud introduced as much faith as he had rejected: the faith in acquired characteristics is a faith, and an amazing one. Systematically, according to this theory, from the beginning of time, important new characteristics have been acquired by various forms of being and have then been transmitted to successive forms of matter and then of life. These modifications are "induced by the action of environment."¹⁰ Lamarckism is environmentalism, and while Lamarck is disowned, environmentalism is basic to many areas of study other than Freudian psychology, and the implicit Lamarckism in much evolutionary thinking is considerable. The point which concerns us is the inescapable miracles built into this position as into every form of evolutionary thought.

God, clearly, is an inescapable premise of human thought. Man either faces a world of total chance and brute factuality, a world in which no fact has meaning and no fact has any relationship to any other fact, or else he accepts the world of God's creation and sovereign law. But men often refuse this choice. They deny the world of brute factuality, but they also deny God openly while trying to re-introduce all the attributes of God's creative power in naturalized form. They cannot escape God as a premise of their thinking, but they refuse to accept Him as God. Their science operates on borrowed premises, and their hypothesis conceals a hidden and utterly irrational miraculous power. If evolutionary scientists eliminated this faith and confined themselves to the facts, they would have no knowledge at all, only a vast ocean of meaningless and unrelated facts which could not be related to one another except by positing a world of meaning whose hidden premise is God. With Cornelius Van Til, we must assert that, where it is consistently and rigorously applied, "science is absolutely impossible on the non-Christian principle."¹¹

"An illustration may indicate more clearly what is meant. Suppose we think of a man made of water in an infinitely extended and bottomless ocean of water. Desiring to get out of water, he makes a ladder of water. He sets this ladder upon the water and against the water and then attempts to climb out of the water. So hopeless and senseless a picture must be drawn of the natural man's methodology based as it is upon the assumption that time or chance is ultimate. On his assumption his own rationality is a product of chance. On his assumption even the laws of logic which he employs are products of chance. The rationality and purpose that he may be searching for are still bound to be products of chance . . .

"It will then appear that Christian theism, which was first rejected because of its supposed authori-

tarian character, is the only position which gives human reason a field for successful operation and a method of true progress in knowledge."¹²

Only on the presupposition of Christian theism is a valid science possible. The orthodox Christian holds that God as Creator has created both the facts and the laws of physical existence, so that the facts exist in the context of law. God stands behind all creation as Creator and sustainer. He has, Van Til points out, adapted "the laws of our minds" to the "laws of the facts," so that "the knowledge that we have of the simplest objects of the physical universe is still based upon the revelational activity of God." Science is possible because the biblical revelation is true.

"Thus the truth of Christianity appears to be the immediately indispensable presupposition of the fruitful study of nature. In the first place without it the physical scientist could have no assurance that his hypothesis would have any relevance to any of the facts in his field of study. For then Chance would be supreme. There would be no facts distinguishable from other facts. Unless the plan and therewith the interpretation or thought of God be back of all facts in their relations to all other facts, no idea, no hypothesis that the human mind could make with respect to them, would have any application to them.

"Secondly, except for the truth of Christianity it would be impossible to *exclude* one hypothesis rather than another. It would be impossible to exclude such ideas as would enter "into the minds of the insane." This second point is involved in the first.

"In the third place, without the truth of Christianity there would be no possibility of the testing of one hypothesis as over against another. The idea of testing hypotheses by means of "brute facts" . . . is meaningless. Brute facts, i.e., facts not created and controlled by God, are mute facts. They have no discernible character. They cannot, together, operate in regularity, thus forming a uniformity of nature. Thus they cannot constitute the reality which Christians and non-Christians know in common in order by it to test the "hypotheses" of the existence or the non-existence of God. It is the truth of Christianity alone that permits us to attach any significance to the idea of testing of an hypothesis."¹³

The non-Christian scientist therefore is able to formulate and discover only because he operates on secretly Christian premises while denying that faith. "The natural man has valid knowledge only as a thief possesses goods."¹⁴ Factuality apart from God is totally meaningless factuality. "No fact, then, is truly known unless its createdness in the biblical sense is owned by the scientist,"¹⁵ although this acceptance is generally an unacknowledged one.

But God remains as the inescapable premise of

human thought. Because God is the Creator, every aspect of the universe and of man is structured by God's creative act and eternal decree, and therefore reflects His law and order. Men cannot escape Him nor can they shut Him out. If they attempt to think without Him as their premise, they simply re-introduce His attributes in the form of miraculous potentialities and processes which reduce science to irrationalism and self-contradiction.

¹Ernest Jones, M. D.: *The Life and Work of Sigmund Freud*, vol. I, p. 347. New York: Basic Books, 1953, 1961.

²Jones, II, p. 311 ; 1957, 1960.

³Jones, II, p. 222, 1955, 1962.

⁴See R. J. Rushdoony: *Freud*. Nutley, N. J.: Presbyterian and Reformed Publishing Company, 1965.

⁵*Westminster Theological Journal*, pp. 59-68, November, 1960, vol. XXIII, no. 1.

⁶See John C. Whitcomb, Jr. *The Origin Of the Solar System: Biblical Inerrancy and the Double-Revelation Theory*, Philadelphia: Presbyterian and Reformed Publishing Company, 1964. Adherents of the double-revelation theory

are cited on p. 31 f.

⁷Jan Lever: *Creation and Evolution*, p. 171. Translated by Peter G. Berkhout, M. D., Grand Rapids: International Publications, 1958.

⁸James O. Buswell III in Russel L. Mixter, editor: *Evolution and Christian Thought Today*, p. 169. Grand Rapids: Eerdmans, 1959.

⁹Cited by Arnold Lunn, in Introduction to *Is Evolution Proved?*, A Debate Between Douglas Dewar and H. S. Shelton, p. 4. London: Hollis and Carter, 1947.

¹⁰Sir William Cecil Dampier: *A History of Science and Its Relations With Philosophy and Religion*, p. 294. Cambridge: University Press, 1944. Third edition.

¹¹Cornelius Van Til: *The Defense of the Faith*, p. 285. Philadelphia: The Presbyterian and Reformed Publishing Company, 1955.

¹²*Ibid.*, p. 119.

¹³*Ibid.*, p. 283 f.

¹⁴R. J. Rushdoony: *By What Standard?*, p. 24. Philadelphia: Presbyterian and Reformed Publishing Company, 1959.

¹⁵Robert L. Reymond: *A Christian View of Modern Science*, p. 10, Philadelphia: Presbyterian and Reformed Publishing Company, 1964.

SCIENCE VERSUS SCIENTISM IN HISTORICAL GEOLOGY

HENRY M. MORRIS

The study of historical geology holds great fascination for many people who are neither historians nor geologists. This discipline occupies a uniquely interesting and important position in human thought. Among the humanities, the study of history surely is of singular significance and, among the sciences, geology, dealing as it does with the very earth itself, is similarly of unique interest. When the two are combined in historical geology, which professes to be able to decipher the mystery of the origin and history of the earth and its processes, the resulting panorama is of marvelous interest and significance. Such a picture, in fact, is of far more than historical and geological pertinence. Anything which elucidates origins is necessarily of philosophical and theological interest, with strong implications regarding meanings and purposes and destinies as well.

It is little wonder, then, that historical geology has attracted the intense interest and concern of a great variety of people. As a matter of fact, the basic structure of modern historical geology was worked out over a hundred years ago by such men as James Hutton (an agriculturalist with medical training), John Playfair (a mathematician), William Smith (a surveyor), Charles Lyell (a lawyer), Georges Cuvier (a comparative anatomist), Charles Darwin (an apostate divinity student and naturalist), Robert Chambers (a journalist), William Buckland (a theologian), Roderick Murchison (a soldier and gentleman of leisure), Adam Sedgwick (who, when seeking election to the chair of geology at Cambridge, boasted that he knew nothing of geology), Hugh Miller (a stonemason), John Fleming (a zoologist), and others of like assortment.

Although the basic framework of historical geology, as worked out by these men, has not changed to the present day, there has arisen a group of specialists in historical geology who have come to regard this field as their own particular field of science, and who now regard with some disdain any who venture to write or speak in this field without giving full allegiance to the accepted system. By its very nature, however, historical geology is not, and can never be, a genuine *science*, and therefore the dogmatic insistence that one follow the interpretations of its founders and present-day leaders, with all the implications of origins and meanings that are involved, is nothing less than *scientism*.

This is in no way meant to be a reflection upon the science of geology, which is a true science in every sense of the word, and which has made a tremendous contribution to our understanding and application of the laws of nature. When, however, a geologist (or lawyer or surveyor or naturalist or

anything else) seeks to become a *historical* geologist, he must leave the realm of science and enter that of philosophy or religion. The presently accepted system of historical geology is basically nothing else than a philosophy or a religion of evolutionary uniformitarianism. If this fact were only recognized and acknowledged by its adherents, no one would be greatly disturbed but, when this system is widely promulgated and insisted upon in the name of *science*, it has degenerated into mere scientism instead. This will become more evident as we consider the true meaning of science and the true nature of those physical processes studied by science.

What Is Science?

The word "science" itself of course is derived from the Latin *scientia* ("knowledge"), and this is essentially what it means. A more formal definition, as given in the Oxford dictionary, is as follows: "A branch of study which is concerned either with a connected body of demonstrated truths or with observed facts systematically classified and more or less colligated by being brought under general laws, and which includes trustworthy methods for the discovery of new truth within its own domain."

Science thus involves facts which are observed and laws which have been demonstrated. The scientific method involves experimental reproducibility, with like causes producing like effects. It is *knowledge*, not inference or speculation or extrapolation.

True science thus is necessarily limited to the measurement and study of *present* phenomena and processes. Data which have been actually observed in the present, or which have been recorded by human observers in the historic past, are properly called scientific data. Laws which have been deduced from these data, which satisfactorily correlate the pertinent data and which have predictive value for the correlation of similar data obtained from like experiments in the future, are properly regarded as scientific laws.

But there is obviously no way of knowing that these processes and the laws which describe them have always been the same in the past or that they will always be the same in the future. It is possible to make an assumption of this kind, of course, and this is the well-known principle of *uniformitarianism*. The assumption is reasonable, in the light of our experience with present processes, and it is no doubt safe to extrapolate on this basis for a certain time into the future and back into the past. But to insist that uniformitarianism is the only scientific approach to the understanding of *all* past and future time is clearly nothing but a dogmatic tenet of a particular form of religion.

That uniformitarianism has been the foundational

and guiding principle of historical geology is widely recognized. A standard textbook on the subject says, for example:

“The uprooting of such fantastic beliefs (that is, those of the catastrophists — author) began with the Scottish geologist, James Hutton, whose *Theory of the Earth*, published in 1785, maintained that the *present is the key to the past* and that, given sufficient time, processes now at work could account for all the geologic features of the globe. This philosophy, which came to be known as the *doctrine of uniformitarianism* demands an immensity of time; it has now gained universal acceptance among intelligent and informed people.”

Thus, science deals with the data and processes of the present, which can be experimentally measured and observationally verified. The principle of uniformity is a philosophy, or faith, by which it is hoped that these processes of the present can be extrapolated into the distant past and the distant future to explain all that has ever happened and to predict all that will ever happen.

But, when viewed in these terms, it is obvious that uniformity is not proved, and therefore is not properly included in the definition of science. There may be any number of other assumptions which might serve as the basis of such extrapolation, and all would similarly be mere acts of faith.

It is perfectly possible and reasonable, as we shall see, to assume that the processes studied by science were themselves created at some time in the past and will be terminated at some time in the future. The processes themselves then could tell us nothing about their creation or termination — this would be outside the domain of scientific investigation. Such information could come, if at all, only by revelation from their Creator.

As a matter of fact, a full and complete understanding of any process, even in its present character, could in that case be obtained only in the context and framework of the fact of its prior creation. This is because *meaning* is inextricably inter-related with *origin* and *destiny*.

Apart from this stricture, however, it is possible and proper to study science, in the sense of present processes, without reference to the past or future. Thus, the science of physics deals with the present processes of the physical world; the science of chemistry deals with the present chemical properties and behavior of matters; the science of geology deals with present geological processes and earth features; the science of biology deals with the processes of life in plants, animals and man. So long as the question of *origins* or *ends* is not considered, there will be no conflict between the Bible and science. The Bible has numerous references to present phenomena of science, and all will be found

in strict accord with the actual observed data. It is only when questions of origins or destinies (or fundamental meanings) are considered that conflicts appear.

To a considerable degree, therefore, a *Christian* study of physics or chemistry or other science can proceed along the same lines as a treatment by non-Christians. The same textbooks can be used, the same experimental apparatus, the same methods, provided only that the study is limited to an elucidation of the actual present properties and processes of the data of that science. But as soon as intrinsic meanings or origins or destinies are brought into the treatment, there will inevitably be conflict between the uniformitarian and Christian world-views.

The Processes of Science

Assuming that our study of science will be, as is proper, limited to the study of present processes, we soon encounter a most remarkable and significant fact. Regardless of the particular discipline of science we study — physics, chemistry, biology, geology, etc. — these processes all are built upon two basic concepts and follow two basic laws. The two basic concepts are *energy* and *entropy*, and the two laws are the *first and second laws of thermodynamics*.

Since the implications of these laws are highly important to the Christian cosmology, it will be well to allow a non-theist, thoroughly evolutionary and uniformitarian in his philosophy, to define them. Dr. Harold F. Blum, the Princeton biologist, states them as follows:

“Energy appears in various forms: heat, light, kinetic energy, mechanical work, chemical energy, and so forth. Energy can change its form but not its quantity — this is a statement of the *first law of thermodynamics*, which until quite recently could be accepted without qualification. We know, now, that matter is another form of energy, but that does not alter this fundamental principle which is also called the law of conservation of energy.”²

Energy is the concept which measures the capacity of doing work. Thus, everything in the physical universe, including matter and all the phenomena associated with matter, is essentially one or another form of energy. This first law of thermodynamics, which was proved empirically about a century ago, is really the most basic of all scientific laws. It has been verified in countless thousands of experiments, ranging from those on the scale of the sub-nuclear particles to measurements of the stars and galaxies, and there is no known exception. Thus, according to this most basic and best-proved of all scientific laws, there is *nothing which is now being created or destroyed*. Present processes, with which alone true science is able to deal, are *not* processes of creation.

With respect to the second law, Blum continues: "The *second law of thermodynamics* cannot be put in such concise form as the first; it is stated in numerous ways, according to the kind of problem under study. . . . It is one of this law's consequences that all real processes go irreversibly. Let us consider a universe in which the total amount of energy remains, supposedly, constant. Any given process in this universe is accompanied by a change in magnitude of a quantity called the *entropy*. . . . All real processes go with an increase of entropy. The entropy also measures the randomness or lack of orderliness of the system, the greater the randomness the greater the entropy"

Thus, the second law of thermodynamics states that there is a universal tendency toward disorder and decay. In any finite open system, of course, there may be temporarily and locally an increase of order, due to the influx of ordering energy from outside the system, but the tendency is always ultimately downward toward disintegration and death. This law also is proved beyond question, with no known exceptions. As Blum says, in the preface to the third edition of his book:

"Wishful thinking to the contrary, the second law of thermodynamics remains with us; . . . no wise scientist will, I think, deny its existence or import."⁴

Since we are here specially concerned with geological processes, the testimony of a prominent geologist will also be cited. Dr. Brian Mason, who is Curator of Physical Geology and Mineralogy at the American Museum of Natural History, says:

"In redistribution and recombination of the chemical elements in minerals and rocks the atoms or ions lose part of their energy and yield more stable systems. Every rock exemplifies the laws conditioning the stability of crystal lattices, laws which follow the general principles of the structure of matter and of thermodynamics . . . the study of equilibria in laboratory experiments and by thermodynamic methods has thrown a flood of light on geochemical reactions, such as the origin of rocks and minerals, the processes of weathering and decomposition, and other kinds of transformations going on within the earth The major value of thermodynamics in geochemistry is that it provides a general approach to problems of stability, equilibrium, and chemical change."⁵

Thus, the two laws of thermodynamics are not simply laws of physics and engineering, as they are too often considered to be, but are universal laws governing the behaviour of all matter and processes on the earth, including those of biology, as Blum has shown, and of geology, as Mason has shown. The first law teaches that energy (which includes everything in the physical universe) is quantita-

tively constant. The second law teaches that energy is qualitatively deteriorating. Thus *the present processes of nature are not processes of creation and integration, but rather of conservation and disintegration.*

All real processes in the universe of course therefore involve change, which means essentially exchanges of energy, or transformations of energy from one kind into another. But these changes are basically processes of decay. Locally and temporarily there may be processes which seem to be processes of growth and integration (such as the growth of a child or the growth of a crystal or the manufacture of an automobile). But these are due to a temporary excess influx of ordering energy into the system. Eventually, though, the child will grow old and die, the crystal will disintegrate, and the automobile will end up in the auto graveyard. Most processes fail even to exhibit this tentative growth character. In geology, for example, typical processes are erosion, heat flow, and radioactive decay. In fact, it is such processes as these whose measured rates have served as the basis for geochronological calculations. But here a very important caution is in order. Although the second law of thermodynamics indicates that any system must decay, it says nothing about the rate of decay. As Mason says:

"It is important to realize, however, that thermodynamics cannot predict the *rate* at which a reaction will proceed and does not tell us anything of the mechanism of the reaction."⁶

And, similarly, Blum says:

"The second law of thermodynamics points the direction of events in time, but does not tell when or how fast they will go."⁷

These rates of decay will depend upon many variables, and in nearly all cases must be determined empirically, by actual measurements. There is never any assurance that the decay rates will be constant, as they may well change if the factors which influence them change. All geochronometers are suspect from this cause alone.

The True Uniformitarianism

We can now see that the concept of uniformitarianism, while perfectly valid and proper in its legitimate framework, has been applied quite illegitimately in historical geology. True uniformity has to do with the inviolability of natural law (e.g., the laws of thermodynamics), and not with the uniformity of process *rates*. The laws of thermodynamics indicate what the character of all natural processes must be, but they do not indicate how fast or how slow such processes will proceed. And there is certainly never any assurance that the rate of any given process will always be constant.

But it is this assumed uniformity of process rates which is at the very hub of the principle of uniformity as it has been applied in historical geology.

This is evident from the following rather typical description of the principle:

"Opposed to this line of thinking was Sir Charles Lyell (1797-1875), a contemporary of Cuvier, who held that earth changes were gradual, taking place at the same uniform slowness that they are today. Lyell is thus credited with the propagation of the premise that more or less has guided geological thought ever since, namely, that *the present is the key to the past*. In essence, Lyell's *doctrine of uniformitarianism* stated that past geological processes operated in the same manner and at the same rate they do today."⁸

Now it is quite obvious that if geological processes have always been going on at the same slow rates they exhibit today, the earth must be immensely old. Age calculations by certain of these processes — such as radioactive decay, continental erosion, canyon-cutting, deltaic deposition, oceanic sodium increments, etc. — when based on present rates, are of course bound to give extremely high values, far greater than can possibly be accommodated within the framework of Biblical chronology.

But there is clearly no scientific basis for assuming such uniformity of process rates. It is quite valid to assume that running water will erode soil and rock, that radioactive minerals will decay, and that all other such processes will proceed irreversibly, in accord with the second law of thermodynamics, but neither this nor any other scientific law provides any guarantee that such rates will always be slow and uniform. In fact, it is certain that all such real decay processes are so intricately complex and are affected by such a great number of factors (a change in any one of which may drastically affect the process rate) that it will forever be quite impossible to say exactly what the rate will be except under very precisely known and experimentally confirmed conditions.

It is encouraging that many geologists in recent years are beginning to recognize and acknowledge this distinction. For example, Zumberge, in a widely used introductory text, after defining uniformitarianism as above, cautions:

"From a purely scientific point of view, it is unwise to accept uniformitarianism as unalterable dogma. As pointed out in chapter one, man's experience with geological processes is restricted to only a minute fraction of the total span of earth history. He should never close his mind to the possibility that conditions in past geological time were different than today, and that the doctrine of uniformitarianism may not apply in every case where the reconstruction of some segment of earth history is involved."⁹

A very strong statement of the pitfalls of uniformitarianism in attempting to explain the sedimentary rocks is given by a member of the geology faculty at Pennsylvania State University:

"Conventional uniformitarianism, or 'gradualism, i.e., the doctrine of unchanging change, is verily contradicted by all post-Cambrian sedimentary data and the geotectonic histories of which these sediments are the record. Thus, quantitative interpretations of the Ordovician from the Recent are meaningless."¹⁰

More recently, a Columbia University geologist has clearly tried to distinguish between the true and the fallacious uniformitarianism (calling them methodological and substantive uniformitarianism, respectively) :

"Uniformitarianism is a dual concept. Substantive uniformitarianism (a testable theory of geologic change postulating uniformity of rates or material conditions) is false and stifling to hypothesis formation. Methodological uniformitarianism (a procedural principle asserting spatial and temporal invariance of natural laws) belongs to the definition of science and is not unique to geology."¹¹

With this we would heartily agree. Uniformity of natural laws is basic in science, and is quite in accord with scripture (always allowing, of course, for the possible miraculous interruption of those laws by the Creator when He so wills). But the type of geological uniformitarianism which has held sway for a hundred years, and which has indeed served as the very foundation of the theory of evolution, is not only contrary to the Biblical record, but is completely inadequate to explain the actual data of geology.

"Substantive uniformitarianism as a descriptive theory has not withstood the test of new data and can no longer be maintained in any strict manner."¹²

Since geological uniformitarianism in the traditional sense can no longer be maintained, and since uniformitarianism in the true sense is in no way a peculiar possession of the science of geology, it is thus completely wrong to refer to uniformitarianism as being in some way particularly the possession of geological theory. An illuminating admission giving the reason why this identification continues to be made is revealed in the following:

"As a special term, methodological uniformitarianism was useful only when science was debating the status of the supernatural in its realm for if God intervenes, then laws are not invariant and induction becomes invalid . . . The term today is an anachronism for we need no longer take special pains to affirm the scientific nature of our discipline."¹³

If one looks beneath the surface of these reasonings, he begins to see that the real problem is not one of science at all, but of scientism! That is, historical geologists have attempted to defend substantive uniformitarianism (i.e., uniformity of process rates) by citing the undisputed evidence of methodological!

uniformitarianism (i.e., uniformity of natural law) . Whether this fallacy in reasoning has been conscious or sub-conscious is really immaterial; the basic reason for it in either case, has been the innate desire to relegate the position of the Creator and His possible intervention in history as far back in time as possible, and perhaps even to eliminate Him altogether. A full-orbed philosophy — nay, a religion — of origins and development has thus been erected upon a fallacious uniformitarianism. And this is scientism, not science.

The Evolutionary Framework

The vast ages of earth history which supposedly are implied by the principle of uniformity have been subdivided into a more or less standard series of geological eras and periods, each with a generally accepted name and approximate duration. The whole sequence is known as the Geological Column, and the corresponding chronology is known as the Geological Time Scale. This of course is the very backbone of the so-called historical geology. Any given rock formation must occupy a certain position in the Column, and presumably it can be dated as to time of formation in terms of the Time Scale.

A highly pertinent question needs asking at this point. On what basis are the various rock types and formations identified and classified? How is one system assigned to, say, the Devonian Period and another to the Ordovician? How do we know which is older and which is younger? How are the divisions between successive periods recognized ?

As a matter of fact, this problem of stratigraphic classification is involved in no little uncertainty and controversy at the present time, even though the Geologic Time Scale has been generally accepted in its present form for about a hundred years.

The layman is inclined to assume that the principle of superposition is the main factor in determining relative age, and that equivalent strata in different areas can be recognized by their chemical or physical composition. However, this is not so. The factor which is by all odds the most important in assigning an age to a given stratum is its biological content — that is, the *fossils* it contains.

“That it appears that the only presently available rational geochronological indices are biostratigraphically based — i.e., *biochronologic*.”¹⁴ This means plainly that *only* the fossils can be relied upon as a criterion for determining the time in earth history when a particular formation was deposited. Other data — vertical position, physico-chemical characteristics, and other factors — are essentially insignificant.

“Physico-geometrical data (apart from radiometric) can do no more than provide a crude local relative chronology or circumstantial evidence in support of a biochronologic framework.”¹⁵

Now the only way in which the fossil contents of a rock could possibly indicate how old the rock

might be is if the animals found as fossils were living only at that specific time in earth history. This means that there have been different kinds of life at different periods in history, and that therefore the living forms provide an unambiguous index to the chronology.

But how do we know which forms were living when? There must be some systematic way of viewing and classifying the changes of life forms with the passage of geologic time. The key, of course, is evolution! If we are to explain everything in terms of uniform laws and uniform processes, this must include the development of the biological world as well as the physical world. All kinds of animals must therefore have gradually developed from earlier and simpler forms. There must have been a slow increase of organization and complexity of living forms during geologic history. And this is the clue we need! Simple fossils mean a formation is ancient; complex fossils are recent.

The fossil record thus is of absolutely paramount importance in geologic dating. The fossil forms are classified according to the underlying evolutionary assumptions, and then they in turn become “index fossils” for future dating purposes.

“In each sedimentary stratum certain fossils seem to be characteristically abundant: these fossils are known as *index fossils*. If in a strange formation an index fossil is found, it is easy to date that particular layer of rock and to correlate it with other exposures in distant regions containing the same species.”¹⁶

The evolutionary significance of this methodology is clearly indicated by the following:

“Once it was understood that each fossil represents a biologic entity, instead of a special divinely created life form, it became quite obvious that the plants and animals of each stratigraphic division had simply evolved from those of the preceding epoch through gradual adaptation. They were, in turn, ancestral to those that followed.”¹⁷

This technique might have merit if it were actually known, from historical records or from divine revelation or from some other source, that in fact all living forms had actually evolved from prior forms. But the actual evidence for evolution on such a scale as this is, as implied by the above quotation, limited to the fossil record itself. In a presidential address before the Geological Society of America, Dr. Hollis Hedberg also stressed the evolutionary significance of the fossil record, as follows:

“That our present-day knowledge of the sequence of strata in the earth’s crust is in major part due to the evidence supplied by fossils is a truism. Merely in their role as distinctive rock constituents, fossils have furnished one of the best and most widely used means of tracing beds and correlating them. However, going far beyond this fossils have furnished, through their record of

the evolution of life on this planet, an amazingly effective key to the relative positioning of strata in widely separated regions and from continent to continent."¹⁸

Thus, the primary means of dating rock formations relative to each other, in the Geologic Column, is the evolutionary sequence of life on the earth through geologic time, and the preservation of distinctive life forms as fossils deposited in the rocks laid down during each successive period. But, then, in turn, the history of evolution on the earth has been built up on the basis of the record revealed in the rocks representing the successive geologic ages. In fact, the only genuine historical evidence for the truth of evolution is found in this fossil record. As Dunbar says:

"Although the comparative study of living plants and animals may give very convincing circumstantial evidence, fossils provide the only historical, documentary evidence that life has evolved from simpler to more and more complex forms."¹⁹

The evidence for evolution afforded by living plants and animals is, indeed, hardly convincing at all. The almost universally accepted biologic mechanism for producing evolutionary change is supposed to be genetic mutation (a sudden, random change in the biochemical structure of the germ cell) preserved, if favorable, by natural selection.

This is confirmed by the very prominent Edinburgh geneticist, C. H. Waddington:

"It remains true to say that we know of no way other than random mutation by which new hereditary variation comes into being, nor any process other than natural selection by which the hereditary constitution of a population changes from one generation to the next."²⁰

Since our focus of attention in this paper is geology, we do not wish to digress into a discussion of genetic theory at this point, except to call attention to the fact that *present* processes of biologic change are associated almost exclusively with mutations, as far as permanent, hereditary, truly novel changes are concerned. Presumably if evolution is actually a fact of nature, it is to be explained in terms of mutation and natural selection. This, in fact, is undoubtedly the consensus of the thinking of most leading evolutionists today, not only those working in the field of genetics, but also those in the field of paleontology.

Furthermore, it is admitted by all geneticists that the great majority — in fact, almost all — mutations are basically harmful. This is only to be expected, since they represent random changes in very highly-ordered systems:

"Mutations occur at random, not because it would be convenient to have one. Any chance alteration in the composition and properties of a highly complex operating system is not likely to improve its manner of operation and most mutations are

disadvantageous for this reason. There is a delicate balance between an organism and its environment which a mutation can easily upset. One could as well expect that altering the position of the foot brake or the gas pedal at random would improve the operation of an automobile."²¹

As a matter of fact, mutations provide a very fine illustration of the second law of thermodynamics — the universal tendency toward disorder and decay. In any case, truly beneficial mutations are obviously such very rare events, if they occur at all, that it is quite impossible to see real evolution occurring among present plants and animals. There is, of course, a great deal of variation, within basic kinds of creatures — in fact, no two individuals are exactly alike — but there are also quite clear-cut gaps between such basic kinds of creatures.

Since evolution cannot be demonstrated as occurring in the present, and since, indeed, such evidence as does exist of biologic change in the present seems to be evidence of decay and death, rather than growth and increasing organization, it is obvious that, in the last analysis, the only real evidence for evolution in the broad sense is that contained in the fossil record.

But the fossil record is based on the geologic ages, and the geologic ages have been built up as an interpretive framework for earth history on the very basis of the assumption of evolution! This is obviously circular reasoning, but that in itself does not condemn it since, in the final analysis, all philosophies are based on circular reasoning. One always brings certain innate presuppositions with him when he tries to Philosophize on origins and meanings, and these necessarily determine his conclusions. It is only when such circular reasoning is called science that it really becomes scientism. As a religious faith, it may be a live option, but not as science!

Basic Inconsistencies in Evolutionary Uniformitarianism

The fallacious application of uniformitarian reasoning to geological process rates thus has led to the system of the evolutionary geologic ages. This in turn forms the evidential basis of the theory of evolution, which presumably accounts for the origin and development of all things, including life and including man. All of this, as we have just seen, involves a powerful system of circular reasoning, somewhat disguised but nonetheless real.

But there is another, perhaps even more significant, fallacy in this system, which will now be discussed. True uniformitarianism involves the constancy and reliability of natural laws. These laws are formulated to describe the processes of nature, and by their very nature, as concepts developed by scientific measurements and methods, these processes are known only in their *present* form. As noted earlier, these laws deal basically with the concepts

of energy and entropy, and are ultimately structured around the two laws of thermodynamics.

The most basic and universal of all scientific laws is that of conservation. There are, of course, a number of different conservation laws (energy, mass, momentum, electric charge, etc.) but the most important is that of energy (including mass, as a form of energy).

“The physicist’s confidence in the conservation principles rests on long and thoroughgoing experience. The conservation of energy, of momentum and of electric charge have been found to hold, within the limits of accuracy of measurement, in every case that has been studied. An elaborate structure of physical theory has been built on these fundamental concepts, and its predictions have been confirmed without fail.”²²

Thus, the basic structure of the universe, in so far as *science* knows it, is conservative. That is, nothing is now being created or destroyed. The present processes of nature, including all *geologic processes* and all *biologic processes*, are not creative in nature.

Consequently, it is fundamentally impossible for science to learn anything about origins. Science deals with present processes, and present processes are conservative, not creative. Thus, historical geology, professing to discover the history of the origin and evolution of the earth and its inhabitants through a scientific study and extrapolation of present processes, is a self-contradiction.

And the situation becomes even more contradictory when the second law of thermodynamics is considered. Not only is the universe basically conservative in quantity, but it is also basically degradational in quality.

“Man has long been aware that his world has a tendency to fall apart. Tools wear out, fishing nets need repair, roofs leak, iron rusts, wood decays, loved ones sicken and die, relatives quarrel, and nations make war . . . We instinctively resent the decay of orderly systems such as the living organism and work to restore such systems to their former or even higher level of organization.”²³

Thus, all systems, no matter how large or how small, living or non-living, tend to become disordered and disorganized, to decay and die. Application of an excess of ordering energy from outside the system is continually needed to offset this decadent tendency, and even more is needed if, for a while, the system is to manifest a period of growth and integration.

There could hardly be imagined a philosophy more in fundamental contradiction with this actual and unquestioned law of nature than the philosophy of evolution. According to evolution, there is an innate principle of development and progress in the universe, leading always to higher and higher levels of complexity and integration.

“Most enlightened persons now accept as a fact that everything in the cosmos — from heavenly bodies to human beings — has developed and continues to develop through evolutionary processes. The great religions of the West have come to accept a historical view of creation. Evolutionary concepts are applied also to social institutions and to the arts. Indeed, most political parties, as well as schools of theology, sociology, history, or arts, teach these concepts and make them the basis of their doctrines. Thus, theoretical biology now pervades all of Western culture indirectly through the concept of progressive historical change.”²⁴

We would agree completely that modern science reveals a concept of universal change — but this change is one of decay and dissipation. The supposed universal process of evolution, on the other hand, postulates a universal law of progress and increased organization. Thus, the theory of evolution and the second law of thermodynamics squarely confront and contradict each other. Each is precisely the converse of the other. One is a universal law of change upward, the other a universal law of change downward! It should be plain and obvious that only one of these principles can possibly be valid.

Herein is another, and climactic, contradiction in evolutionary historical geology. Historical geology purports to tell us of the evolutionary development of life on the earth, and to do so in terms of *present* processes. But present processes are processes of decay, and therefore contradict the very concept of evolution.

If historical geology would be truly scientific, as it claims to be, then it must recognize that it must be organized within the framework of *true* uniformitarianism, which is uniformity of natural law. It must realize that the story of earth history which it seeks to decipher has been one enacted within the framework of laws of conservation and decay, not of creation and development.

Therefore, to assume that the origin and history of the earth can be interpreted within the framework of an assumed uniformity of process rates and an assumed innate principle of evolutionary development is to reject the very basic laws of science which it professes to follow. But this would still be a permissible point of view to take, since not even uniformity of natural law can be *proved* in the prehistoric period. It is legitimate to assume, if one wishes to do so, that the two laws of thermodynamics were not in operation during the geological ages, and therefore that evolution and progress were possible on a worldwide scale. The paleontologic data can then be interpreted to fit into that framework if one wishes so to do. All the contradiction and anomalies which abound in such a system can all be explained away by piling hypothesis upon

hypothesis (e.g., explaining great areas where “young” fossils are buried beneath “old” fossils by means of the theory of the overthrust fault). Since all of this can never be subjected to laboratory verification, and is thus out of reach of the “scientific method,” this framework of evolutionary uniformitarianism cannot be disproved scientifically.

But to say that a system erected upon such assumptions, which contradict the basic laws of science, is itself “scientific” is entirely unwarranted. And when the theory of evolution, based as it is upon this system, and the paleontologic data interpreted in accordance with it, is then made the foundation for all modern studies in theology, sociology, history, politics, and the arts — indeed into an all-embracing evolutionary world-view — and when all of this monstrous system is taught and indoctrinated as *scientific fact* almost everywhere, as it is today — the charge of *scientism* is a gross understatement of the true situation!

Implications of Evolution

The system of evolutionary uniformitarianism is, therefore, not a science but a system. It is a form of religion, a faith in innate progress, in materialistic development, in pantheistic humanism. It is the essence of modern man-centered culture. The evolutionary philosophy, as noted by Rene Dubos,²⁵ has profoundly affected every field of human thought and activity. Man has been led to see himself as organically linked to all other forms of life:

“Comparative biology has revealed, furthermore, that man is linked to all living organisms through a common line of descent, and shares with them many characteristics of physiochemical constitution and of biological organization; the philosophical concept of the ‘great chain of being’ can thus be restated now in the form of a scientific generalization.”²⁶

Not only so, but since all things can be explained in terms of this supposed universal process of evolution, effectuated by the cybernetic processes of mutation and natural selection, there is no need any longer to postulate a divine Creator originating or guiding the development of the universe. God becomes an unnecessary hypothesis. Man, as the highest stage of the evolutionary process, now having come to understand and even to guide it, is himself the creator.

“What is almost certain, however, is that the various components of human culture are now required not only for the survival of man, but also for his existential realization. Man created himself even as he created his culture and thereby he became dependent upon it.”²⁷

In the last analysis, then, evolution is a religion that permits man to divest himself of concern for or responsibility to a divine Creator. It is not a science in any proper sense of the word at all. And the same must therefore be true for the system of evolutionary geology which both supports it and is supported by it.

We hasten to say again that this is no criticism of the sciences of geology or biology, or of the scientists who practice them. The genuine sciences of geology and biology, dealing as they do with the *present* processes of the earth and of life are of highest merit and importance. It is believed that the great majority of geologists and biologists, who may nominally subscribe to the concept of evolution and the geological ages, have never fully considered its implications and that many of them would refute it if they did, professionally costly though such a stand might become.

It is not surprising, in view of the foregoing, that the system of evolution has been appropriated as the pseudo-scientific basis of every political or philosophical system of the past hundred years which has been opposed to Christianity, or even to theism in general. In particular has this been true of the various forms of modern “liberalism,” including socialism, fascism and communism.

The influence of Darwinism upon Marxism has been especially significant:

“Orthodox Marxian socialists in the early years of the twentieth century felt quite at home in Darwinian surroundings. Karl Marx himself, with his belief in universal ‘dialectical’ principles, had been as much a monist as Comte or Spencer. Reading *The Origin of Species* in 1860, he reported to Friedrich Engels, and later declared to Ferdinand LaSalle, that ‘Darwin’s book is very important, and served me as a basis in natural science for the class struggle in history.’ On the shelves of the socialist bookstores in Germany the works of Darwin and Marx stood side by side.”²⁸

The views of a prominent contemporary historian, Dean of the Graduate Faculties at Columbia University, are significant:

“It is a commonplace fact that Marx felt his own work to be the exact parallel of Darwin’s. He even wished to dedicate a portion of *Das Kapital* to the author of *The Origin of Species*.”²⁹

Some of the reasons for this feeling of debt on the part of Marx are discussed as follows:

“It is that, like Darwin, Marx thought he had discovered the law of development. He saw history in stages, as the Darwinists saw geological strata and successive forms of life . . . But there are even finer points of comparison. In keeping with the feelings of the age, both Marx and Darwin made struggle the means of development. Again, the measure of value in Darwin is survival with reproduction — an absolute fact occurring in time and which wholly disregards the moral or esthetic quality of the product. In Marx the measure of value is expended labor — an absolute fact occurring in time, which also disregards the utility of the product.”³⁰

To similar effect is the definitive historical evaluation by Dr. Gertrude Himmelfarb:

“There was truth in Engels’ eulogy on Marx: ‘Just as Darwin discovered the law of evolution

in organic nature, so Marx discovered the law of evolution in human history.' What they both celebrated was the internal rhythm and course of life, the one the life of nature, the other of society, that proceeded by fixed laws, undistracted by the will of God or men. There were no catastrophes in history as there were none in nature. There were no inexplicable acts, no violations of the natural order. God was as powerless as individual men to interfere with the internal, self-adjusting dialectic of change and development."³¹

It is possible to trace similar direct connections between evolutionism and fascism, as well as other philosophical and political symptoms of the basic antipathy to God which seems to afflict a substantial segment of mankind. Perhaps of more immediate concern is the fact that evolutionism is of predominant influence in the system of John Dewey, the chief architect of modern education theory in this country.

But that is another story, and would carry us too far afield from the context of this study. Our point is simply that the presently accepted system of evolutionary uniformitarianism in the so-called historical geology has projected its influence deeply into almost every sphere of human thought and that, in general, this influence has been highly inimical to the cause of Biblical Christianity. It is thus of immense concern to people in every walk of life and cannot be left simply to the self-assumed authority of those who claim jurisdiction over this field.

The Biblical Framework

The study of origins, destinies and meanings is thus properly to be considered as outside the domain of science. Science deals with present processes, and present processes are conservative and degradational, not creative and organizational. Understanding of the creation and organization of the universe into its present form is therefore to be obtained from other sources than science. Religion necessarily enters the picture.

As noted, evolution is one such possible religious explanation for the universe. But as such, it explicitly contradicts what we know about the present world, which operates in accordance with the first and second laws of thermodynamics.

It is far more reasonable to recognize that neither the data nor the processes nor the methods of modern science can lead to an understanding of origins. And certainly, then, the unaided speculations of human reasonings cannot do it. Therefore, divine revelation is required if we are ever really to know anything about the Creation — its date, its duration, its methods, its order, or anything else about it.

It is eminently reasonable, therefore, to reorganize the data which we have obtained in our studies of the universe and its inhabitants in terms of the Biblical framework given us by divine revelation. The Biblical framework does give a perfectly satisfying system for harmonizing all the data of biology, geology, and paleontology, as well as other sciences.

The Bible record describes a special Creation of all things, fully functioning from the very beginning, complete and finished by creative and formative processes no longer in operation, now being sustained by God in accordance with the conservation principle enunciated in the first law of thermodynamics. It also describes a Fall of man, and God's Curse pronounced on the earth, introducing a universal law of decay and disorder, in accordance with the second law of thermodynamics, which for the first time brought disharmony and death into the world. It then describes a great world-destroying Flood in the days of Noah, which completely changed the first cosmos and its structure and processes. It indicates, then, that since the Flood there has been an essential uniformity of both laws and processes, which can thus now be studied and elucidated by the scientific method.

It will be found, if enough study is devoted to it, that all the real data of the fossil record, of biological mechanisms, of geologic processes, and of all natural phenomena, can be oriented and understood within this framework. Such a system will be fully consistent with both the basic laws of science and history and the data of divine revelation.

¹Carl O. Dunbar: *Historical Geology* (2nd Ed., John Wiley and Sons, New York, 1960), p. 18. Emphasis is his.

²Harold F. Blum: *Time's Arrow and Evolution* (Torchbook Edition, New York, Harper and Brothers, 1962), p. 14.

³*Ibid*, pp. 14, 15.

⁴*Ibid*, p. v.

⁵Brian Mason: *Principles of Geochemistry* (2nd Ed., New York, John Wiley & Sons, Inc. 1960), pp. 64, 68.

⁶*Ibid*, p. 68.

⁷Blum, *op cit.*, p. 16.

⁸James H. Zumberge: *Elements of Geology* (2nd Ed., New York, John Wiley and Sons, Inc., 1963), p. 200. Emphasis is his.

⁹*Ibid*, p. 201.

¹⁰P. D. Krynine: "Uniformitarianism Is a Dangerous Doctrine," *Journal of Paleontology*, Volume 30, 1956, p. 1004.

¹¹Stephen Jay Gould: "Is Uniformitarianism Necessary?" *American Journal of Science*, Volume 263, March 1965, p. 223.

¹²*Ibid*, p. 226.

¹³*Ibid*, p. 227.

¹⁴T. G. Miller: "Time in Stratigraphy," *Paleontology*, Volume 8, February 1965, p. 119. Emphasis his. Miller is at Keele University in Staffordshire.

¹⁵*Ibid*, p. 128.

¹⁶J. E. Ransom: *Fossils in America* (New York, Harper & Row, 1964), p. 43.

¹⁷*Ibid*.

¹⁸H. D. Hedberg: "The Stratigraphic Panorama," *Geological Society of America Bulletin*, Volume 72, April 1961, pp. 499-518.

¹⁹C. O. Dunbar, *op cit.*, p. 47.

²⁰C. H. Waddington: *The Nature of Life* (New York, Atheneum, 1961), p. 98.

²¹Frederick S. Hulse: *The Human Species* (New York, Random House, 1963), p. 53.

²²Gerald Feinberg and Maurice Goldhaber: "The Conservation Laws of Physics," *Scientific American*, Volume 209, October 1963, p. 36.

²³Van Rensselaer Potter: "Society and Science," *Science*, Volume 146, November 20, 1964, p. 1018.

²⁴Rene Dubos: "Humanistic Biology," *American Scientist*, Volume 53, March 1965, p. 6.

²⁵Rene Dubos, *supra*.

²⁶*Ibid*, p. x.

²⁷*Ibid*, p. 8.

²⁸Richard Hofstadter: *Social Darwinism in American Thought* (New York, George Braziller, Inc., 1959), p. 115.

²⁹Jacques Barzun: *Darwin, Marx, Wagner* (2nd Ed., New York, Doubleday, 1958), p. 8.

³⁰*Zbid*, p. 170.

³¹G. Himmelfarb: *Darwin and the Darwinian Revolution* (London, Chatto & Windus, 1959), p. 348.

BOOK REVIEWS

By SAMUEL WOLFE

THEOLOGY — By Timothy Dwight. Review of Timothy Dwight by C. E. Cunningham. McMillan Co. 1942 (a biography).

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When he entered Yale University in 1795, there were hardly any Christians there. After he had been President a short time there were hardly any infidels.

After his death in 1817 it was said that none since Washington was more universally lamented. In 1965, who, even among Christians, has even heard of Timothy Dwight?

Almost single-handedly he reversed the trend from skepticism to evangelism. It was one of the great feats of our history. But since then the growth of pseudo-liberalism he combatted has all but obliterated his memory. Surely those professional

people today who believe in the Genesis account should be challenged to wipe the dust from this honored tomb.

Though he was pre-eminent as a preacher, Dwight's reputation was gained chiefly for his defense of the faith. In his day the contributions of Lyell and Darwin were still future. But he well discerned the approaching storm. Dwight's "Theology" is still obtainable in many libraries, and his keen pithy utterances on these matters are still pertinent. His well-reasoned contentions for the Genesis account of the Creation and the Flood are inspiring for the Creationist today.

¹Theology; explained and defended, in a series of sermons, by Timothy Dwight. 5 volumes. Printed by Clark and Lyman for Timothy Dwight. New Haven, Connecticut, 1818-19.

By WALTER E. LAMMERTS

Freedom, California

Wonders of Creation. Harold W. Clark, Pacific Press Publishing Association, Mountain View, Calif. 1964. 129 pages. Nine colored illustrations and 65 black and white.

Professor Emeritus Clark has done a superb job in writing and the Pacific Press Publishing Association in publishing this beautifully illustrated book. In his introduction he very aptly quoted from Remans 1:19-21: "For what can be known about God is plain to them, because God has shown it to them. Ever since the creation of the world His invisible nature, namely, His eternal power and deity, has been clearly perceived in the things that have been made." Clark goes on to say that as he has studied nature for many years, he has been looking for these proofs. The facts he gives and beautifully illustrates constitute clear proofs, not only that God exists, but that He is continually at work "upholding all things by the Word of His power." Hebrews 1:3.

Aside from the chapter "The plants will teach you," which we have reprinted with both his and the publisher's kind permission, all the other chapters are equally interesting and challenging to anyone who is fair minded and wishing to see evidence for the glory of God's creative genius. In this mechanistic age we are in danger of being completely out of touch with the nature that God created. Even our school laboratories are being taken over by materialists who would vainly try and reduce everything in nature to mathematical equations expressing impersonal physico-chemical laws. It is refresh-

ing then to turn to this book and see nature in larger perspective and have one's attention again called to the many clear evidences not only of design but beautiful design.

Some of the intriguing chapter headings are "Who made birds fly?" "the fish declare," "Treasures of the sea," "the desert shall bloom," and "fearfully and wonderfully made." The picture of the peacock alone is worth the price of the book! The chapter on "Divine geometry" is one that has personally intrigued me for a long time. It is interesting that the mathematical concepts man arrives at without relation to a study of nature are the very same ones we see displayed in nature! Surely interesting evidence that though we are finite, our thinking or conceptual ability insofar as it may be expressed conforms to that which God displays in nature: that is we think in the same image as He does, even though finite and therefore incapable of ever fully understanding what we see.

I particularly like Professor Clark's discussion of the origin of desert plants. So many people think cactus originated in the desert in response to desert conditions. The sight of the immense barrel shaped cactus growing among the pine trees which one sees on the way to Acapulco, Mexico, should quickly remove this illusion. As Clark says, as desert conditions developed, many plants died out and only those having genetic variability potential *already existing* were able to survive.

This marvelously illustrated book is a must for every teacher of boys and girls of high school age.