THE PENTECOST

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Cover photo: Tree Blossoms *Above photo: Minter Gardens in Chilliwack, B.C*

This September issue of *The Pentecost* is a little different from what we have done in past issues but our topic is important to theologians and scientists alike. The age of the earth may be younger than you think. Why is this important? Join with us as we explore *dating methods* and the *geologic time scale*.

Also, we are excited to announce the launching of our second magazine, "The Megaphone". If you receive the Pentecost magazine by mail, we will start sending you the Megaphone as well.

God bless you.

Shawn Stevens

There is much debate on the age of the earth. We hope that this issue will shine some light on the answer to that question for you.

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Creation, Evolution and the Age Of The Earth

How old is the Earth? This question is important to evolutionists and creationists alike and perhaps it is of interest to you. Most evolutionary geologists claim that the Earth is 4.6 billion years old. Most creationists claim that the Earth is less than 10,000 years old. How are these dates arrived at and can either of them be supported strongly? In the following pages we will examine these questions.

Let's begin our examination by considering the evolutionary view, which is that the Earth is 4.6 billion years old. How do evolutionary geologists go about dating rocks and fossils? Their dates are based upon what they call *relative time* and *absolute time*. Relative time relates to a widely accepted time table known as the *geologic time scale*. This time scale organizes the layers of the earth's rock into time periods with dates for each layer. For example, if a Brontosaurus bone is found in the earth a paleontologist will look at the geologic time scale and will read that dinosaurs lived in the Jurassic Period, 144-208 million years ago. He will accept this time period as a relative date for the Brontosaurus bone. It has already been decided that this era (Jurassic) was between 144-208 million years ago, and thus the fossil is relatively dated.

This Jurassic fossil now has a date. This theory and method is explained by Nancy E. Spaulding and Samuel Namowitz; “The geologic timetable … is a summary of the major events of Earth's history preserved in the rock record. Fossils are an important part of that history. In fact, many of the rock layers have been identified and matched based on the fossils in them.” [1] Our question becomes: Isn't relative time dating based upon circular logic? With this method, rocks are dated based on the accepted age of the fossils they contain and fossils are dated according to the accepted date of the rocks that they are in. [3] With relative time, this circle of fossils and rocks goes round and round, each dating the other. Because of this circular logic, I do not trust this method of identifying dates.

While relative time involves circularity, it is not the only method of dating rocks and fossils. It is, however, the most widely used form of dating. Our second method, absolute time, employs the use of *radiometric dating*. Radioactive elements in rocks decay over time. Radiometric dating attempts to measure this decay. There is more than one type of radiometric dating. For example, uranium-lead dating measures the decay of uranium into lead. It is estimated that it takes 4.5 billion years for a rock to have half of its uranium decay. It is estimated that it takes 14.1 billion years for half of a rock's thorium to decay into lead. It is estimated that it takes 1.3 billion years for half of a rock's potassium to decay into argon. [4] The decay of samarium (supposed half-life of 106 billion years) into neodymium and the decay of rubidium

(supposed half-life of 49 billion years) into strontium is also measured and the results used in dating methods.

Radiometric methods of dating rocks and fossils do, however, have certain problems. Let's consider some of them. For one, no one knows how much radioactive material a rock had at its time of formation (unless the rock has freshly solidified from its molten state). This is crucial information in determining how much radioactive material has decayed. Imagine, for example, that you were making the claim that a thief reached into your pocket and stole three quarters. Then, we ask you, “How many quarters did you have to begin with?” If you did not know, it becomes hard to maintain that you have lost three quarters. You would be estimating how many quarters you had to begin with. Likewise, radiometric dating begins with estimations.

As well as not knowing how much radioactive material a rock once had, we do not know how much radioactive material has entered a rock over the years. Rocks are a part of an *open system*, that is, they have elements passing in and out of them. Studies have been done that show that argon, from the mantle of the earth, is reintroduced into rocks. [5] The problem is that we don't know how much argon that is in a rock has entered in this way.

As well as not knowing how much radioactive material has been introduced into a rock, we do not know how much of a rock's elements have been lost through processes other than gradual decomposition. Heat plays a factor in the composition of rocks. For example, studies done by Dalrymple and Moore on Kilauea submarine basalt (in Hawaii) showed that the surface layer had forty times more excess argon than the basalt rock just ten centimetres below it. [6] What accounts for this dramatic difference in argon levels? The surface basalt, having contact with the ocean above it, cooled rapidly from its molten state, retaining most of its argon. The deeper basalt rock cooled more gradually and much of the argon was burned off. Dalrymple and Moore also discovered that basalt argon levels became higher the deeper the water level.[7] So, we learn that argon levels in rocks are affected by both temperature and water pressure.

These argon levels are not only affected by temperature at the time of a rocks first cooling, but also during *metamorphism*, the chemical or physical alteration of rock through pressure and temperature. So, again, we see that heat affects the argon levels, potentially resetting the radiologic clock. [8, 9]

Argon levels are not only affected by heat. They are also affected by chemical weathering, mechanical weathering, radiation damage, shock waves and solutions.[10] Therefore, radiologic dating depends on rocks being in an environment where they neither gain nor lose radioactive material in these ways. According to E. M. Durrance, “Geological materials and

environments do not often meet this requirement." [11] Geologist A. P. Dickins says that potassium-argon dates "are notoriously susceptible to argon loss …"[12] Because of fluctuations in the argon content of rock, potassium-argon dating sometimes produces dates that conflict even with evolutionary dates for the age of the Earth. [13]

Argon is not the only element that is affected by external influences. Studies on uranium in rock have shown that uranium levels vary in relation to the presence of ground water, the volume of circulating water and the chemistry of ground water around the rock. As well, uranium levels in rock are dramatically affected by the rock's exposure to the surface environment. Granite from the Lankin Dome of the Granite Mountains batholith (in Wyoming) was found to have lost up to 90% of its uranium as a result of contact with near-surface environment.[14] Again, consider how much a 90% loss in uranium levels would affect uranium-potassium dating methods on a rock.

As well as not knowing how much radioactive elements have been lost from a rock due to external influences, we also don't know how much of a rock's apparent *daughter element* existed in the rock at the time of its formation. A *parent element* is the original radioactive element (such as carbon-14, potassium, uranium, etc.) that exists, or existed, within a rock from the time of its formation.[15] When a radioactive element fully decays, it becomes a new element and is called a daughter element (such as nitrogen, argon, lead, etc.). For example, a geologist may find both potassium and argon in a rock. Argon is a product of potassium. How does he know that some argon was not already present in the rock at the time of its formation? The element polonium-218 is considered to be a daughter element of uranium. Research from Dr. Robert Gentry, formerly from Oakridge National Laboratory, United States Dept. Of Energy, Atomic Energy Commission, has shown polonium radiohaloes in mica and fluorite that have no evidence of parent elements. In this case, the polonium is *primordial*, present in the original rock from the beginning. [16] If primordial elements are not excluded from geologists' calculations, the ages that they arrive at will be erroneous.

As well as not knowing whether an element existed in a rock at the time of its formation, not requiring decomposition from a parent, we do not know for sure the rate of radioactive decay. Many scientists believe that radioactive elements decay at certain fixed rates. For example, Robert W. Christopherson, in his book, "Geosystems," states; "Radioactivity provides the steady time clock needed to measure the age of ancient rocks. It works because the decay rates for different isotopes have been determined precisely, and they do not vary."[17] He admits that the validity of radioactive dating is dependent upon non-variance in radioactive decay rates, and asserts that these decay rates do

not vary. However, this viewpoint is challenged by other data. Other scientists disagree that the decay rates don't change. One scientific study, done in 1976, conducted by Hahn, Born and Kim, documents over two dozen experiments in which nuclear decay rates were changed by the chemical or physical environments of the decaying nuclei.[18] More recently, in 1999, Huh and Kerr conducted a similar study with similar results.[19] Studies done by O. Reifenschweiler, in 1994, showed as much as a forty-percent change in the nuclear decay rate of tritium.[20] Dr. Gentry, mentioned above, has conducted extensive research on radioactive decay and has shown from his research that radioactive decay rates have changed in the past. Crystallized minerals leave minute concentric rings of discoloration called radiohaloes. Dr. Gentry observed variations in the measurement of ring diameters, revealing that decay rates have changed in the past.[21] These scientists, and others, report the results of their research indicating changes in radioactive decay rates.

If decay rates have changed in the past, and if we don't know how much radioactive material we began with, and if we don't know how much radioactive material has been gained or lost through external influences, we would expect to find inaccuracies in dating rocks. Such inaccuracies have been found by dating rock that has freshly cooled from lava flows. Many studies have been done, assigning ancient ages to lava rock. For example, rock from a lava flow at Kilauea, Hawaii, yielded a potassium-argon date of 22 million years. We know that the eruption of this volcano was only 200 years ago. A volcanic eruption at Hual Al AJ, Hawaii, in 1800-1801, produced rock that yielded a potassium-argon date of 160 million to 3.3 billion years old.[22] Great inaccuracies, such as these, should cause us to question the validity of radiometric dating.

Many geologists admit that radiometric dating does not always yield accurate results. Geologists also admit that these methods produce a variation of dates. Many respond, however, that this variation is not significant. If a rock is said to be 10 million years old, then it is considered acceptable, by many, to be a million years off in their calculations. Similarly, if a rock is believed to be 2 billion years old, it is acceptable, to many, to be 10 million years off. However, what shall we conclude if the variations in dates are in some cases dramatically greater than this? Dr. William D. Stansfield, professor from California Polytechnic State University, states:

> *It is obvious that radiometric techniques may not be the absolute dating methods that they are claimed to be. Age estimates on a given geological stratum by different radiometric methods are often quite different (sometimes by hundreds of millions of years). There is no absolutely reliable long-term radiological 'clock.'*[23]

So, we see from his comment that radiometric dating methods can produce a variety of dates. Cardenas basalt from the Grand Canyon was tested by several methods. Samarium-neodymium dating produced a date of 1.7 billion years old. Rubidium-strontium dating produced a date of 1.1 billion years old. Potassium-argon dating produced a date of 0.7 billion years old. In this case, samarium-neodymium and the potassium-argon methods produced dates one billion years apart.[24] Robert E. Lee, in the *Anthropological Journal of Canada*, says:

> *No matter how "useful" it is, though, the radiocarbon method is still not capable of yielding accurate and reliable results. There are gross discrepancies, the chronology is uneven and relative, and the accepted dates are actually selected dates.* [25]

So, we see that to obtain these ancient dates, evolutionists rely on relative time and absolute time. A rock is said to be a million years old because it has been decided that the fossils within it are a million years old. The fossils within a rock are said to be a million years old because it has been decided that the rock in which they find themselves in is a million years old. Scientists who don't wish to rely on relative dating employ radiometric dating. Scientists do not know how much radioactive material was present in a rock to begin with, nor do they know how much radioactive material has been reintroduced into that same rock. Neither do they know how much radioactive material has been lost as a result of heat, water pressure, chemical weathering, mechanical weathering, radiation damage, shock waves or solutions. Nor do they know how much of a supposed daughter element may have existed in a rock at the time of its formation. Lastly, they do not know for certain how radioactive decay rates may have changed in the rock they are testing. Yet, they make calculations and call these "absolute dates." These absolute dates can vary hundreds of millions of years, or even one billion years, depending on the dating method used.

Shawn Stevens

ENDNOTES :

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3 R. H. *Rastall, Encyclopedia Britannica Vol. 10* (1956), 168.

4 R. W. Christopherson, *Geosystems* (Upper Saddle River: Prentice-Hall Inc., 2000), 309.

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7 Ibid., 131.

8 Ibid., 144.

9 A similar study was done on metamorphic rock from the Front Range of Colorado. Rock that had undergone very minor mineralogical contact metamorphic effects experienced great alterations in their radiometric dates. Ibid., 154.

10 Ibid., 155.

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12 A. P. Dickin, "The North Atlantic Tertiary Province" (p. 111-149) in *Continental Flood Basalts* (The Netherlands: Kluwer Academic Publishers, 1988), 341.

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25 Robert E. Lee, "Radiocarbon; ages in error" *Anthropological Journal Of Canada Vol. 19* (3), 1981, 9-29.

THE GEOLOGIC TIME SCALE

We said earlier that geologists have a timetable that proposes to lay out geologic history. This timetable is called a *geologic time scale* or *column*. This time scale, however, exists only in the minds of evolutionists and in our textbooks. What I mean by this statement is that there is no paleontological site anywhere on Earth where one can observe this complete time scale. Geologists often find gaps in the rock layers. We would expect that the Grand Canyon would be the best place to observe the geologic time column. However, the Grand Canyon is the best place to observe gaps in this record. For example, the rim of the Grand Canyon consists of Permian strata. The top five periods of the geologic time scale encompassing the entire Cenozoic and Mesozoic eras are missing from the Grand Canyon. This, supposedly, represents over 200 million years from which no sedimentary deposits can be seen. As we go deeper into the canyon, an observer will find that the Silurian and the Ordovician eras are also missing. [1] This, supposedly, represents almost 100 million years when no soil deposits can be observed. These missing layers are significant gaps in this record.

As geologists dig into the earth, not only do they find significant gaps, they also find rock strata in the wrong order. As they dig below surface rock, eventually they come to a crystalline type of rock which they call basement complex. This is believed to be older than the sedimentary rock above it. Instead of finding the complete, unbroken geological column, a geologist may find any rock system in the entire geologic column immediately on top of the basement complex. Above these layers, the higher layers may also be out of textbook order. Most geologists believe that this wrong order is a result of rock layers overthrusting each other. Whenever rock layers are out of order, or contain gaps in the geologic column, geologists call this *unconformity*. [2]

One well-known example of unconformity is a geologic site known as the *Great Unconformity,* found in the Grand Canyon. Two large rock layers rest upon each other, allegedly being a half a billion years apart. The Dox formation (the bottom layer) is said to be over 1 billion years old. The Tapeats sandstone above it is said to be half a billion years old.

The Great Unconformity is not the only unconformity studied by geologists. As they study the Earth, they find tremendous unconformity on a massive scale. For example, in Wyoming, near Yellowstone National Park, there is an area of Paleozoic stratum that is 30 miles wide and 60 miles long. It is resting on Eocene beds from the Tertiary period. This huge expanse of the top layer is said to be a quarter of a billion years older than the rock on which it sits. Even a greater unconformity is in a region of pre-Cambrian stratum of the Lewis Mountain Range (Montana). This section of stratum is 350

miles wide and is sitting on top of a Cretaceous stratum. In this case, the top stratum is supposedly 400 million years older than the stratum on which it rests. These examples are significant cases of unconformity. [3]

Evolutionists believe that examples of unconformity like these, and others, are the result of rocks shifting positions. In some cases, this explanation is held in spite of missing evidence that would indicate the breaking and shifting of rock. Consider the following quote from a Canadian Government report on an area of Alberta near Banff:

> *East of the main divide the lower Carboniferous is overlaid in places by beds of lower Cretaceous age, and here again, although the two formations differ so widely in respect to age, one overlies the other without any perceptible break, and the separation of the one from the other is rendered more difficult by the fact that the upper beds of the Carboniferous are lithologically almost precisely like those of the Cretaceous (above them). Were it not for the fossil evidence, one would naturally suppose that a single formation was being dealt with.*[4]

So, we see from this example of unconformity that there is no perceptible break between these two strata of rock. If one were to interpret this rock formation without a preconceived geologic time scale division in mind, he would come to the conclusion that this is a single rock formation.

As well, fossils within the Earth's rock layer also raise many questions. For example, we would expect to find within the fossil record a gradual progression of species beginning with simple organisms evolving their way up the geologic time column into complex organisms. However, what do we find? In pre-Cambrian rock we find almost entirely single-celled organisms. This time period is believed to represent over 4 billion years. Then we find an explosion of life in the remaining 570 million years of the Cambrian period. If both the geological time scale and the theory of evolution are accurate, then why did it take so long for life to evolve beyond single-celled organisms? These significant time discrepancies are hard to reconcile.

Such time discrepancies beckon us to reconsider both the geologic time scale and evolution in general. Remember, when we dig into the earth, we do not find an unbroken text-book picture of the geologic time scale. Instead, we find gaps and unconformity on a massive scale.

Evolutionist Richard Fortey admits:

> *As Darwin was well aware, the rocks seem to betray many gaps and holes in the record. Somehow the ancestor hardly ever seems to be sitting there, where it should, in the rocks immediately below*

> *the descendant species. Sometimes a species which looks in most of its features as if it should be ancestral to a whole group of animals turns up in surprisingly young strata*. [5]

The geologic time scale can only, really, be found in the minds of evolutionists and in our textbooks. It is, in the words of Professor A. E. J. Engel of the California Institute of Technology, "imaginative manipulation":

> *No more than one percent or so of the history of the earth is decipherable. But that one percent is dispersed through a series of events or episodes, extending back through geologic time. By imaginative manipulation of the evolving data we can reconstruct a magnificent and awesome history of the earth and its life…*[6]

Shawn Stevens

ENDNOTES :

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5 R. Fortey, *Fossils, The Key To The Past* (New York: Van Nostrand Reinhold Co., 1982), 124. First published by The British Museum (Natural History).

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