



## Carbon Dating

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*[note: This appears to be a reprint of a much older Journal article. While still a very good article, it mentions the possibility of a vapor canopy, which most creationists abandoned years ago. The arguments of this paper still apply, except crediting a vapor canopy is no longer argued by most creationists. There still may have been much less atmospheric C-14 before and immediately after the flood. See several other LSI essays and articles, including the May 2003 LSI Journal article, "The Vapor Canopy Theory - Is It in Trouble?" As always, science changes, but God's revealed truth in Scripture never changes.*

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Certain scientists believe there are independent means to show that the earth and its fossil layers are extremely old. Young people will have dealt with this in their school courses recently and parents, having discussions with their young people, will have puzzled about this question of the age of the earth. Scientists propose they have independent methods to assert that the earth is from three to five billion years of age, and that some fossil bones are in the neighborhood of 50,000 years of age. They claim that certain radioactive chemicals such as Carbon-14 (C-14) and Uranium-235 (U-238) provide a usable clock that yields an accurate time estimate. They also maintain that U-238 proves the earth to be from three to five billion years in age. They feel C-14 shows that the fossils of animals and plants date back scores of thousands of years. Therefore, I think the subject of radioactive dating is worthy of our study.



### C-14 DATES ONCE LIVING MATERIAL

C-14 deals with bones or artifacts. Since they came from a living source, things like the scrolls of Isaiah can be dated by C-14. The C-14 method will apply only to things that were once living and hence the C-14 method cannot be used to date the earth itself or the rocks. On the other hand, the U-238 method can be applied only to volcanic rocks and not to previously living materials. These distinctions must always be kept in mind.

Even with some possible gaps in genealogies, the Bible seems to indicate a comparatively young earth while C-14 is proposed to date bones back some 40,000 to 60,000 years. There is an apparent conflict between the Bible and C-14 dating. Is the C-14 method an exact clock that can be read easily with no problems?

### HOW THE C-14 CLOCK WORKS

To understand how the C-14 clock works and what processes are involved, let us consider an egg-timer.

Perhaps people do not bother with sand-timers anymore, yet they may have one around.

By tipping the glass when the egg starts cooking, one learns when the three minutes are up and can stop the boiling. One can time the egg this way if in the first place he knows the rate at which sand moves through the glass. Secondly, an egg can be timed this way if one starts the timer at the instant the egg hits the water. If one thinks of starting the timer two minutes after the egg is submerged, the timing is obviously no good. Thirdly, one has to know how much sand is in the glass at the beginning. All three factors must be known for the timing to be accurate.

How does a scientist date a rock or bone? He must look for something in the bone which disappears, as the sand which goes through the egg-timer. This disappearance must be at a known and measurable rate. If the scientist can first find out how much of this material was in the bone when the animal died, and if in the second place he knows the rate at which this substance disappears, and thirdly if he knows the amount still present, then he has something like a natural hour-glass with which he can estimate the time since the bone died. Some scientists believe this can all be done quite accurately with C-14.

There is much carbon in our bodies since carbon is one of the most important atoms in the living system. Carbon is present in proteins, fats, and carbohydrates — the three basic foods. There is also carbon in DNA, the code molecule of the life cell. There is carbon even in such firm organs as bones.

## TWO KINDS OF CARBON

Carbon atoms such as we have in the living body are of two kinds. Most of the carbon atoms are of the C-12 type. C-12 does not disappear since it is stable. It is not a radioactive type of chemical that decays but it keeps its identity down through time. A very small part of the carbon in our body is radioactive C-14 which does change. A C-14 atom will change to a nitrogen atom. C-14 thus disappears, like sand running through the hourglass, because C-14 changes into nitrogen by giving off an atomic ray which is called a beta ray. In the process C-14 is converted into nitrogen. Man has learned that one atom can change into another this way. The alchemist dreamed of such changes hoping that he might convert the baser metals into gold. That time has come and one of the changes known to occur spontaneously is the conversion of C-14 to nitrogen.



## BETA RAYS

The beta rays given off when C-14 changes to nitrogen can be counted with a counting machine such as the Geiger-Mueller counter. A uranium prospecting device is a Geiger counter. On a needle it shows the number of "counts per minute" which means the average number of rays that are shooting out from a sample in a one-minute interval.

If a scientist records many counts per minute (beta rays), it indicates high radioactivity and it means that much C-14 is present. If he discovers fewer counts per minute, there is not much C-14 in the bone. The amount of beta radiation coming off (measured by the Geiger counter) will be directly proportional to the amount of C-14 in the bone. So the amount of C-14 present can be measured with a Geiger-Mueller counter. If all bones have about the same amount of C-14 when they are alive and at the moment of their death, then the scientist can use the C-14 test as something like an hourglass.

## COUNTING PROCEDURE

The scientist would say that the C-14 would be the substance in the bone which he can count. As nitrogen forms, it is no longer counted and the bone or other fossil will either give a high count or a low count on the Geiger-Mueller tube. If he knows how much C-14 the fossil started with, and if he knows how long it takes for a given amount of C-14 to change, then he can give a time estimate as with an egg-timer.

## HOW FOSSILS GET THEIR CARBON

To understand this procedure we must ask how the fossil gets its carbon. We want to find out whether or not all bones start with the same amount of C-14. Carbon gets to the bone through the food. Animals and men are “eaters” from the viewpoint of the biologist. Humans consume animal or plant flesh such as corn on the cob or steak, and this supplies our food. Carbon is then directly related to the food supply which ultimately comes from plants.

The plant gets its food in a different manner, It is not an “eater” in the biological sense. It starts with a few materials that by themselves would never do as “food” for us. Salts of phosphorus, magnesium, and a few other atoms are all that a plant requires by way of materials from the soil. A plant does not feed on the soil but secures only its mineral and water supply through the roots. The plant literally builds its own food in that it makes sugar from carbon-dioxide gas of the air and water which comes from the soil. Sugar is made not only by the sugar beet and the sugar cane, but most plants produce it as a primary by-product of their photosynthesis.

Plants can take that sugar and rework it, making proteins and other foods. The animal, in turn, eats the plant to get its carbon. The human eats either animal or plant food stuff. This amounts to a carbon cycle. The carbon atom is first in the air. It enters the plant through photosynthesis to become part of a sugar molecule. The animal or human being then gets the carbon atom by eating the plant.



## IS THE CARBON-14 CONCENTRATION CONSTANT?

Since carbon comes from the air, we ask whether or not the amount of carbon-14 in the air remains constant. Much of the carbon in the air is C-12 but a small amount of it is C-14. The plant, animal, and human will each have about the same ratio of C-14 to C-12 as does the air. The next question is where did the air get its C-14? The scientist today usually assumes that the C-14 in the air has always been present in the same amount. If this were true, any bone that died at any time would have had the same amount of C-14 at its death as a bone that dies today. But this constancy of C-14 in fresh bones depends on how it gets into the air.

## HOW C-14 ENTERS THE AIR

C-14 enters the air by the action of cosmic radiation. The cosmic rays impinge upon our earth's atmosphere from outer space. They can go through our bodies and incidentally, they can cause mutation. Some believe that cosmic radiation plays a part in the aging of cells. When cosmic rays enter the atmosphere they cause “scatter radiation” which consists of little particles called neutrons. A moving neutron is a high-energy particle which performs an interesting task. A nitrogen atom hit by one of those neutrons changes into a C-14 atom and ejects one proton. If a moving neutron enters a nitrogen nucleus a proton comes flying out, and the nitrogen atom is changed to an atom of C-14. It is like shooting a marble into a cluster of marbles and one comes moving out on the other side. This changes the complex of marbles that was present. Thus C-14 forms from nitrogen in our atmosphere.

The constancy of C-14 in our atmosphere depends on the cosmic rays coming into the atmosphere at the same rate. But the cosmic ray bombardment fluctuates moment by moment, day by day and week by week. Solar activity will effect the amount of cosmic radiation as will any changes in the earth's magnetic field or the Van Allen Belts. So we know that cosmic rays will fluctuate.



Some of the scientists who date by C-14 claim these are only small fluctuations and would have no overall effect. It would be like driving from Lucerne to San Francisco and weaving somewhat back and forth on the highway. One would still get to San Francisco and the weaving would not have an appreciable effect on the destination.

### **C-14 AND THE CANOPY THEORY**

But if there can be small fluctuations in the amount of C-14 produced in the atmosphere day by day, then there could have been greater fluctuations in earth's history. Let's take a look at the early earth. What might such changes in the atmosphere mean for the dating studies? Let's consider the Flood and use what is called the "canopy theory." There is some evidence for a canopy surrounding the earth in Genesis 1:7. "Waters above the firmament" in this passage may have reference to waters in or above our atmosphere. If such a canopy were present in the early earth, what bearing would it have on C-14, neutrons, and the entire dating question? The canopy would probably not stop all the cosmic rays themselves, but a good deal of the scatter radiation would be reduced. It would act as a shield. Thus there would be fewer neutrons and fewer C-14 atoms formed. Most of the carbon before the Flood would then be in C-12 form which never changes and does not give off radioactive rays.



### **WRONG AGE**

Suppose there were an animal which had died during the Flood and that a man from the radiation laboratories had been transplanted in time. While walking after the Flood he discovers a bone that he wants to test by C-14 methods. He runs it through a C-14 test and discovers to his amazement that it has very little C-14 present because it lived and died under a vapor canopy that he has never studied. Suppose the scientist doing the dating did not know about the Flood. He would give this bone a "date" of 15,000 to 30,000 years before this time because of the very low C-14. He would do so because he believed all bones contained the present amount of C-14 when they died. He would give this bone a false date because of a false assumption. If the ratio of C-14 to C-12 was much less in past time for any reason, then false dates would be given to such fossils now. Suppose a friend shows you a sand-glass with one-half-inch sand in the top. He asks you how long the sand-glass has been running. You would have to make assumptions to answer. Perhaps you would assume that the glass had started with three inches of sand in the top, especially if you couldn't see the bottom part. Nearly all sand-glasses hold three inches of sand when they start, you assume. Then you would continue to reason that the glass has been in its present position for about two and one-half minutes because only one-half inch of the original three inches remains. But you would be wrong. Your friend tells you that in this case he had a special kind of sand-glass, one which starts with only one-half-inch of sand! The problem here too is one of false assumptions.

If a scientist is working with some fossil that did not start with the present amount of C-14, he would be in the same predicament as you were with the sand-glass. He would assume a great age (30,000 to 40,000 years) because he would believe that the bone started with the present amount of C-14 in it, when it actually started with much less. He is unaware of his false assumptions and has made no effort to correct them. Thus all ancient dates established by the C-14 method are in serious question because ancient bones could have had a different amount of C-14 at death than bones now have. It isn't that God has tricked us but that there was once a different atmospheric economy that we cannot understand without the Bible.

## DIFFICULTIES IN MEASURING

Lets imagine that we visit a laboratory like the Geochron Laboratory which is equipped to count the rays quite accurately. Imagine that we have found a human fossil bone on a field trip and we want to know its C-14 content. For a fee the Laboratory will perform an analysis. Its scientists would suggest an age based on the amount of C-14 left in the bone per unit of total carbon. If the bone were found to have a date much older than 3,000 years by this method, the scientists would politely tell us that it is older than 3,000 years and they would send us a record of the counts registered on their machines, but they would not date it for us! Because of technical difficulties involved, they would say that it has a date before 3,000 years, but they would date no further. This is an amazing admission on the part of work-a-day engineers who deal with this on a commercial basis. Historical geologists, of course, will use this method and accept dates back to 50,000 years or more. But the men who know the limits of the method, the men who run the tests would report that they cannot date with accuracy beyond 3,000 years.

Suppose you went to a butcher shop and asked for a pound of steak. The butcher could sell you that readily. If you had less money and wanted only one-half pound, the scale would still weigh accurately. Even if you had only a penny and wanted that amount of steak, the butcher could possibly do it, but might grumble. If for some reason you asked for one-ten-thousandth of an ounce of steak, the butcher would object, knowing that this goes beyond the limits of accuracy for his scale. The mechanism is simply not that sensitive. Thus, when one goes back beyond 3,000 years, all sorts of questions enter into the method such as problems in counting and gross problems in assumptions. So Geachron does not apply absolute dates to ancient objects.

## MORE CARBON IN THE ATMOSPHERE

There are other factors which may have produced a different ratio of C-14 to C-12 in the atmosphere before the Flood. Perhaps there was more C-12 in the air before the Flood than there is now. A friend of mine found that if he put ten times the usual amount of carbon dioxide in the air, tomatoes would grow and produce much better than in normal air



Perhaps there was more C-12 in the air before the Flood. The effect can be seen by considering mixtures or ratios. Suppose we take a 50-pound pile of table sugar and blend with it one pound of salt. Take a scoop of material from this pile and give it to a scientist to find the ratio of salt to sugar. It will, of course, be one to 50. Then suppose we took one pound of salt and blended it with only five pounds of sugar. An analyst would say this mixture had a ratio of one to five or a much greater ratio of salt to sugar.

Now, let's suppose there was the same absolute amount of C-14 in the air before the Flood as now. But if there were a much greater amount of C-12 before the Flood, the ratio of C-14 to C-12 would be smaller. After the Flood there would be a higher ratio of C-14 because possibly more of the C-12 was removed from the earth's

cycle in forming vast coal deposits and fossil beds. Thus the Flood might have changed the carbon economy and the ratios considerably. This would also mean that there would be a much higher ratio of C-14 to C-12 after the Flood. Thus, a bone formed before the Flood would possibly have less C-14 per gram of C-12 than one formed after the Flood because of the greater amount of C-12 in the atmosphere before the Flood.

## **CONCLUSION.**

There are three possible sources of error in the C-14 dates: (1) A vapor canopy might have reduced the amount of radiation reaching the atmosphere, thereby reducing the amount of C-14 before the Flood; (2) There might have been much more C-12 in the atmosphere before the Flood, grossly changing the C-14 to C-12 ratio; (3) Geochron Laboratories admits that the method of counting C-14 becomes inaccurate before 3,000 years ago.

We may conclude that there are no accurate methods of dating ancient remains by C-14. The fossils may actually be quite young and there is no need to challenge the Biblical young-earth view on the basis of C-14 studies. *LSI*