**Carbon-14 in Fossil Carbon—an update.**

**Or,**

**The Missing Presentation**

¶¶ In 2012, there was a joint meeting of the American Geophysical Union and the Asia Oceania Geosciences Society. ¶ This was held on 11-15 August in Singapore. This is convenient for the Asia Oceania Geosciences Society as they didn't have to travel very far. It was also convenient for the American Geophysical Union because they got to go to Singapore on the geology department's dime. ¶ There is a website. ¶ If you go to their website, ¶find Wednesday, and ¶ scroll down, you'll find under ¶ BG02 a ¶ list of presentations for Wednesday the 13th afternoon. As we peruse the list we see presentation ¶ 1, ¶ 2, ¶ 3, ¶ 4, ¶ 6, ¶ 7, and ¶ 8. Wait a minute. ¶ What happened to number 5? ¶ 4 is "Tracing Soil Organic Carbon ..." by Jung-Hyun Kim et al., and ¶ 6 is "Carbon Isotopic and Organic Biomarker Evidence ..." by Prof. Selvaraj Kandasamy et al.

¶ Well, perhaps another site will help us. This one advertises itself as ¶ "All Abstracts of Session  BG02.  As we ¶ look down this list, we again find ¶ 4 next to ¶ 6. This seems a little odd.  Surely they can count!  Numbers 4 and 6 are, ¶ "Tracing Soil Organic Carbon ..."  by Jung-Hyun Kim et al., and ¶ "Carbon Isotopic and Organic Biomarker Evidence ..." by Selvaraj Kandasamy et al., the ¶ same two presentations.

Let's try another tack. Let's go to a website that records what was scheduled before the meeting.  Now we ¶ have presentation 5, between ¶ presentation 4 and ¶ presentation 6.  Presentation 4 and 6 are the same as before, but ¶ presentation 5 is  “A Comparison of 13 and pMC values for 10 Cretaceous-Jurassic dinosaur bones from Texas to Alaska, China and Europe.  ¶ The presentation appears to have been given a 15 minute slot.  ¶ The authors include Hugh Miller, Hugh Owen, Robert Bennett, Jean de Pontcharra, Maciej Giertych, Joe Taylor, Marie Claire Van Oosterwych, Otis Kline, Doug Wilder, and Beatrice Dunkel, all of which apparently are from something called the Paleo Group.  ¶ Maciej Giertych has the same name as a Polish geneticist who appeared in the movie Expelled, stating that Poland had much more academic freedom than the United States . Hmmm.

Well perhaps they just didn't send in an abstract. ¶ No, we found an abstract with the same title ¶ by the same group. ¶ They call themselves the Paleo Group, and they are from the ¶ US, ¶ France, and ¶ Poland. ¶ The abstract talked about the results of studies comparing 13 carbon and percent modern carbon, or PMC, for various bone fractions from ¶ 8 dinosaurs from Texas to Alaska and one from China. ¶ An accelerator mass spectrometer was used for most of the samples, which were ¶ treated in the usual fashion, ¶ with a couple of samples tested on the old conventional decay counting equipment.  ¶¶ The pMC ranged from 0.76 to 6.45, corresponding to an ¶ age of 39,230 ± 140 to 22,020 ± 50 radiocarbon years.  Dinosaurs 65+ million years old apparently are dating to less than 40,000 years by radiocarbon! Whoa!

¶ Several different kinds of dinosaurs were dated. ¶¶ The abstract notes a ¶ similar published radiocarbon date on a Belgian mosasaur. . ¶ This one got into the peer-reviewed literature.  ¶¶ Delta 13 values were similar to those for other dinosaurs. ¶ The abstract ends by saying we ought to do more of these kinds of studies. (I agree with them.)

So maybe they just didn't show up to the meeting to make their presentation.  ¶¶ Well, actually that's not true.  The presentation can be found on YouTube. ¶¶ Here’s a screenshot.

I’m going to skip most of the early part of the presentation, which gives the ¶ rationale, dig sites, bone extraction techniques, the gross appearance of specimens, and sample preparation techniques, which are pretty standard.  ¶ Some results are given. There are a couple of graphs. ¶ Some of the data match each other pretty well, ¶ while others don't seem to be quite as good, although when one takes into account laboratory errors in measurement, they're not that far off. ¶¶ It is of interest that the dinosaur bone carbon-14 dates tend to ¶ match those of mammoths, whereas ¶ most plant dates are lower for whatever reason.  The paper goes on to argue that contamination of the specimens from outside is unlikely. This is particularly true since there are higher concentrations of both carbon and carbon 14 inside the bone than outside, suggesting that any contamination would be from the bone to the matrix rather than vice versa. They believe that the carbon-14 which is detected in dinosaur bones is likely to be from the bone itself rather than transported in from the environment, although they argue that more work should be done .

¶ So why did the presentation disappear?  ¶ The Asia Oceania Geosciences Society and the American Geophysical Union officers in charge have now commented to the authors. ¶ The meat of their comments reads:

¶¶ As a result of comments from attendees at the recent AOGS-AGU (WPGM) meeting in Singapore we have examined your abstract which was delivered in session BG-02.

¶¶ The interpretation which you present in your abstract is that the age of various dinosaurs, previously interpreted as being Mesozoic in age, are less than ~50,000 years.  Your report that these ages were calculated using C-14 methods.  There is obviously an error in these data.  The abstract was apparently not reviewed properly and was accepted in error.  For this reason we have exercised our authority as program chairs and rescinded the abstract.  The abstract will no longer appear on the AOGS web site.

¶¶ The Paleo group itself released a statement before the letter I just quoted, which said, “After the AOGS-AGU conference in Singapore, the abstract was removed from the conference website by two chairmen because they could not accept the findings.  Unwilling to challenge the data openly, they erased the report from public view without a word to the authors or even to the AOGS officers, until after an investigation. It won't be restored.”

¶¶¶ The rest of this paper will consist of a brief and somewhat simplified explanation of how carbon-14 dating works, ¶ an explanation of why the Paleo Group’s data had to be suppressed, ¶ a history of creationist predictions regarding carbon-14 in fossil carbon and relevant data, and ¶ finally a summary and conclusions. For the ministers, we have an introduction, three main points, and a conclusion. For the teachers, I am saying what I will say, I will now say it, and I will then say what I have said.

¶ **How Does Carbon-14 Dating Work?**

¶ Carbon-14 is made in the atmosphere by cosmic rays, ¶ which shatter nuclei and produce neutrons. ¶ These neutrons then get absorbed by nitrogen-14, which spits out a proton at the same time and is transformed into carbon-14. ¶ This production rate is relatively constant at present. ¶¶ Carbon-14 is oxidized to 14CO2, which circulates through the atmosphere, then the biosphere. ¶ The biosphere may require a little explanation. It includes the atmosphere and plants and animals that are in rough equilibrium with the atmosphere, as well as, mostly, rivers and the upper ocean. ¶¶ Carbon-14 is found throughout the biosphere. ¶ The present concentration of 14C in carbon in the biosphere is just a little over 1 part in a trillion. ¶ Over time, Carbon-14 gradually decays to Nitrogen-14.

¶ The uniformitarian carbon-14 date works like this: ¶ The (uniformitarian) assumption is made that the 14C/C ratio in the atmosphere has always been constant. ¶ Plants pick up this 14CO2 and incorporate carbon-14 in their cells at about the present concentration. ¶ Animals that eat these plants also incorporate carbon-14, and animals who eat other animals eventually get similar carbon-14 concentrations. ¶ This continues until an animal or plant dies, or the plant lays down wood, at which time the carbon-14 is no longer replaced when it decays. ¶ It decays away exponentially and this decay forms the basis for measuring carbon-14 dates. ¶ If you measure the 14C/C ratio of the specimen and compare it to today’s 14C/C ratio, you can calculate when it had today’s ratio, and that is the standard uncalibrated radiocarbon age. ¶ One can find that age graphically, or one can use formulas to change from the 14C/C ratio to the radiocarbon age and vice versa.

Nowadays, no one actually believes the uncalibrated age. But it approximates the calibrated age, and is still considered useful if there is no known age material with which to calibrate the age. And since the Paleo Group’s data are beyond the calibration curve, they are dated using the uncalibrated age.

¶ **Why Did the Paleo Group’s Data Have to Be Suppressed?**

¶ Because residual carbon is incompatible with millions of years. You see, ¶ in 1 million years, the entire Earth's weight in carbon-14 would be gone. The calculations are fairly straightforward--you can do this at home. Just take the Earth’s mass in grams, multiply it by Avogadro’s number, and divide by the atomic weight of carbon-14, that is, 14. ¶ Take the log to the base 2 of that, ¶ subtract the quantity of 1 million years divided by the half-life of carbon-14, ¶ and you should be short seven half-lives, making the chance of the last atom surviving one in 2 to the seventh power, or one in 128. If some sample has truly residual carbon-14 in it, it simply can’t be millions of years old, ¶ or even 250,000 years old.

¶¶ Residual carbon 14 is compatible with short age. ¶¶ This is because there was probably less carbon-14 in the past because of the Earth's magnetic field, ¶ and there was probably more ordinary carbon in the past that was buried during the flood. And so, the dates of 40,000 radiocarbon years are actually compatible with something like 15,000 real-time years and ¶ could be compatible with the most recent Masoretic date for the Flood, 4300 years ago.

But even if these radiocarbon dates were not compatible with a conservative Biblical time frame, they are definitely not compatible with the standard geologic timescale, and therefore they must not get into the peer-reviewed literature where they could be quoted by other creationists. Since the meeting’s organizers could not find a specific flaw in the data, they opted to simply keep it off of the table on principle.

¶¶ **A History of Creationist Predictions Regarding Carbon-14 in Fossil Carbon and Relevant Data**

¶ Residual carbon-14 in very old carbon has been predicted by creationists since at least 1972, when L. G. Butler in 1970 proposed that we should date amber by carbon-14, in the *Creation Research Society Quarterly*. There have been several predictions before 2000.

¶ Apparent residual carbon-14 has been noted by creationists since 1988, when Robert Brown noted in the *Proceedings of the First International Conference on Creationism* that there were finite radiocarbon dates for fossil carbon in the journal *Radiocarbon*.

¶ I published the book Scientific Theology in 1997 and it noted literature evidence for carbon-14 in fossil carbon and called for further experiments. ¶ At about this time Andrew Snelling started publishing several fossil dates on wood.

¶ In 2000 (although the official date was 1997), I published an article on carbon-14 dating models and experimental implications in *Origins* in which, among other things, I argued that we should carbon-14 date fossil carbon, predicting that we might in fact find carbon-14 in it systematically. I did a literature review in 2001, which noted that carbon-14 was found in almost all fossil carbon and again argued that we should be carbon-14 dating fossil material

¶ That's why I am presenting here, even though my doctorate is in medicine. If one were to ask, “Are you a physicist?”, I would have to reply, “No, but I play one on the lecture circuit.” But I did stay at a Holiday Inn Express last night.

¶ I followed up on this with the RATE group who had expertise in coal and were doing a study on radiometric dating in general. They agreed to date coal samples and went on to also date diamonds as I suggested. Their results were published in 2004 in the fifth international conference on creationism and again in 2005 in the RATE book. They showed significant amounts of radiocarbon in Eocene, Cretaceous, and Pennsylvanian coal, higher than I would have predicted. ¶ The official laboratory background is the red line. There are good reasons to believe that the ¶ real background is the blue line. ¶¶ They also dated diamonds and noted significant amounts of radiocarbon in most of the diamonds.

¶ Taylor and Southon also dated diamonds and reported the results in 2007 in *Nuclear Instruments and Methods in Physics Research, Series B*. They found very low but significant amounts of carbon-14 in diamonds.

¶ This data is worth looking at carefully. Taylor and Southon’s date on ¶ one diamond is the oldest date in the literature, 85,000 radiocarbon years or 0.005 PMC. ¶ Two other diamonds statistically match that date. ¶ On another diamond they found what they called contamination, ¶ although their graphite control was actually slightly lower in that set of measurements than the first set. ¶ Another group of diamond measurements had a ¶ higher control and not many firm conclusions can be drawn from it

¶¶ In 2004, Russell Rotta published an article in the *Creation Research Society Quarterly* noting that carbon-14 could be produced as a direct result of radium decay but noting that it was so rare that to explain the amounts of carbon-14 that were being found in coal, it would require over 99% uranium and thus was not a viable method of getting carbon-14 into coal.

¶ In 2005, 2006, and 2007 John Doughty publish some articles in the *Creation Research Society Quarterly* noting that carbon-14 was found in both carbon dioxide and methane from natural gas. The percent modern carbon ranged from 0.32-1.48.

The Paleo group published data on carbon-14 in amber in 2006 in the *CRSQ* noting that it dated to greater than 46,450 radiocarbon years, which is equivalent to less than 0.308 pMC. ¶¶ Then in 2013 the Paleo group presented their paper on carbon-14 in Singapore, which noted the mosasaur data in PLoS ONE published in 2011.

¶¶ Where are we now? ¶ I think it is evident that carbon-14 is consistently measured in fossil carbon. ¶ For various reasons, machine error can be eliminated. ¶ Nuclear synthesis underground is orders of magnitude too small to account for the data. ¶ Underground contamination is unrealistic. ¶ Laboratory contamination is increasingly unrealistic, and for the Paleo Group's data is frankly ridiculous.

¶ As a matter of fact, the two defenders of long ages with the most experience in carbon-14 dating, Harry Gove and ¶ Kirk Bertsche, have given up on the idea that laboratory contamination can explain all the data. ¶ Bertsche states in the blog site TalkOrigins:

“While this conclusion [laboratory contamination] explains the higher values for the biological samples in general, it does not account for all the details. Some biological samples *do* have radiocarbon levels not explainable by sample chemistry. These samples are mostly coals and biological carbonates, both of which are prone to *in situ* contamination.”

¶  “Unlike the literature values, Baumgardner’s coal samples *do* show significant radiocarbon above background, inviting explanation.”

¶¶ Harry Gove, as summarized by Kathleen Hunt, ¶ again on TalkOrigins, states:

¶  “The short version: the 14C in coal is probably produced de novo by radioactive decay of the uranium-thorium isotope series that is naturally found in rocks (and which is found in varying concentrations in different rocks, hence the variation in 14C content in different coals). Research is ongoing at this very moment.”

This implicitly concedes that laboratory contamination is not an adequate explanation for all the data. ¶¶

¶ I think the comparison of fossil carbon and some other standard should be attempted, perhaps the very low carbon-14 in diamonds, or perhaps carbon that has had its carbon-14 removed by industrial mass spectrometry. ¶ However, at this time the most reasonable hypothesis is that there is residual carbon-14 in fossil carbon.

¶¶¶ So, to review, carbon-14 dating is based on the exponential decay of carbon-14 and the assumption that we know the initial amount of carbon-14, or more precisely, the initial ratio of carbon-14 to ordinary carbon. ¶ The Paleo Group’s data had to be suppressed because, for materials that are millions of years old, there cannot be any radiocarbon in them, and so when the Paleo Group said that there was carbon-14 in the dinosaur bones, this simply could not be allowed to stand. Otherwise, the entire geologic timescale would collapse. ¶ But history shows that the Paleo Group is not alone. There are multiple other creationist scientist who have predicted that carbon-14 could be found in ancient carbon, and several other reports, including one in the standard peer-reviewed literature, that indicate that carbon-14 is indeed found in fossils that are supposed to be millions of years old. ¶ That’s our summary. Now for the conclusions.

¶ Don't expect this to get into the peer-reviewed literature easily. ¶ There are four classes of creationist research. ¶ First, there is research that makes creationism harder to maintain. This, of course, can easily be published in the peer-reviewed literature. ¶ Second, there is research that is neutral. This can also be published in the peer-reviewed literature. ¶ Third there is research that does solve problems for creationism, but does not threaten atheism. This research can be published if one is careful in stating its implications. ¶ And finally there is research that strikes at the heart of atheism, either showing the need for an intelligent designer, or presenting a strong argument for short age. ¶ In this case the studies will only get published if someone does not realize the stakes involved.

¶¶ It is important to realize that one does not have to be venal and cynical to oppose such research being published. ¶ One simply has to “know” that the opposition can't possibly be right. So there must be some flaw in the research, and that this research will be unfairly damaging if published (and besides, one's opponents resist the truth and are dishonest). ¶ Before we get too upset about this state of affairs we need to remember that some of us have been known to do this also. And so we need to temper our criticism of evolutionists who do it.

¶ Where do we go from here? ¶ The Paleo Group has seen their access to professional carbon-14 dating labs dry up. ¶ For example, the University of Georgia now refuses to do AMS radiocarbon dates on their samples. ¶  ¶ Nor will commercial laboratories radiocarbon date for them. ¶  ¶ I have noted the same problem. ¶ The lab that cooperated with Baumgardner saw their funding dry up and their lab close. Their AMS machine has been cannibalized. And yet carbon-14 dating may be very useful for elucidating the age question, in a number of different ways, stretching beyond even the question of carbon-14 in fossil carbon. And there are a few people working at carbon-14 laboratories who are short-age creationists who may be willing to help us. But in doing so they would be putting their own jobs on the line.

¶ We may have to do our own work. I am currently seeing wheth