PICK YOUR AGE FOR THE EARTH

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ABSTRACT

Evolutionists have maintained that the age of the earth *must* be about 4.5 billion years old. This sort of dogmatism is unwarranted. The reader is encouraged to take whatever age for the earth that is compatible with his/her convictions.

THE NATURE OF HISTORY

To introduce the subject, it is necessary to understand some basic tenets of history, because the subject of the age of the earth purports to "measure" the length of the history of the earth. Therefore, an understanding of the nature of history is essential to understand the age of the earth. There are several unique characteristics with history:
1) unrepeatable;
2) irreversible;
3) principle of increasing uncertainty with time.

Historical events are unrepeatable because the reproductions do not duplicate history. All reproductions of history are man-made and therefore are driven by intelligence and design. The TV and movie industry routinely capture historical themes with intelligent design and often results in big financial profits. It would be more educational if Carl Sagan's series on the Cosmos also shows all the engineers, technicians, artists and workers behind the scenes in order to produce "documentaries" on the "origin" of the universe, the solar system, life on earth that supposedly happened eons ago.

No one can resurrect Alexander the Great and parade him on the streets. Historical events are irreversible in the sense like rewinding a movie backwards. Although showing a movie backwards invokes a great deal of laughter, this is not reality.

The principle of increasing uncertainty with time implies that the farther back we extrapolate or speculate, the less likely it became. To illustrate this point, let me say that I know my father dearly. I know my grandfather somewhat, but I know my great grandfather only scantly. I only have very little knowledge of my great great grandfather.

THE AGE OF THE EARTH NEEDS OBJECTIVITY

There is a difference in saying that "the earth is about 4.5 billion years old" and that "the earth is probably about 4.5 billion years old in view of the uncertainties and difficulties encountered." The former statement is dogmatic while the latter statement tends to be more objective. If the scientific community incorporates this aspect of uncertainty, science has gone a long way towards objectivity.

ALL MEASUREMENTS OF THE AGE OF EARTH ARE ONLY ONE-ENDED

All age estimates of the age of the earth can be exemplified by measuring a rod with only one end defined. In all cases, in order to measure the length of a rod, both ends must be well defined. What if you are asked to measure the length of a hypothetical rod. One of the ends is unknown. The result you get is at best hypothetical. We only know the *present*; the beginnings are highly speculative. Therefore, the results are likewise speculative. It is a self intoxication to say that the earth *must* be about 4.5 billion years old. Nobody knows the initial conditions except God!

THE AGE OF THE EARTH IS PART OF ORIGINS SCIENCE

Geisler and Anderson (1) classified all sciences to be either origins science or operational science. Origins science deals with all subjects that concern with historical events; while operational science deals with those that are happening now or will happen in the near future. Origins science, not only has elements of speculation, but also it has religious connotations, because it hinges on one's belief system.

THE AGE OF THE EARTH HAS RELIGIOUS CONNOTATIONS

"Right" and "wrong" interpretations of data depend on one's presuppositions. If one presupposes things *must* have come by naturalistically without intelligent design as evolutionists have consistently done, then one's conclusion is that of evolution; if one presupposes that origins are ultimately accountable to intelligent creation, one arrives at the opposite of evolution, that is creation. Furthermore, since origins science has religious and philosophical implications, alternative views *must* be presented to guarantee neutrality and objectivity in science. This, so far, has been rejected by the educational and scientific establishment. In so doing, they establish a blend of religion in evolution classes. Since the age of the earth is part of origins science, alternative views *must* be likewise presented to guarantee neutrality and objectivity in science.

THE AGE OF THE EARTH IS A TOTAL GUESSWORK

My view toward the age of the earth is that of a total guesswork. There is absolutely no way to determine the exact age of the earth even within experimental errors. The reasons are simple. None of the assumptions necessary for dating are verifiable. All dates, regardless old or young, has at least one other way to explain them. Based on the principle of decreasing certainty with time in history, I am tempted to suggest that the young ages are more probable than the old ages.

Let me define what I term "old ages" and "young ages". Old ages are estimates of the earth older than one billion years and young ages are age estimates less than one billion years. This demarcation is intentionally left to be vague, because indeed the origins science is vague in many aspects. Although there are more than 70 methods of dating the age of the earth, only a few of these methods suggest that the age of earth is billions of years old. All other methods suggest that the age of the earth to be less than one billion years old. To be fair, I now assign 50% probability to each of those dates, regardless whether they are young or old. Because this subject is basically unknowable, an agnostic position is more neutral and objective than a dogmatic assertion.

MAN-MADE LONG-LIVED ISOTOPES ARE INCREASING

Evolutionists have maintained than all naturally occurring radioactive nuclides having half-lives less than 400 million years are not found naturally. This fact, they say, is an iron-clad "proof" that the age of the earth *must* be over 4 billion years old. This argument can be easily refuted by presenting the fact that man-made long-lived radionuclides are increasing almost every year. From the Mallinckrodt Nuclear Trilinear Chart (Marshall Bruce, 1979), the number of stable nuclides has increased from 236 in 1968 to 252 in 1979.(2) (A stable isotope can be defined as one having a half-life greater than 10^{18} years.) During this same period, the number of megayear isotopes has decreased from 68 to 55. The sum of those stable nuclides and the megayear nuclides in 1968 does not equal to that of 1979. The former is 304 and the latter is 307 while the total number of all nuclides has increased from 1447 to 2131, an increase of 684 nuclides in eleven years, giving an average increase of over 60 man-made radioisotopes every year. In fact, most of these so-called "megayear isotopes" were manufactured in the laboratory. Does it mean that they exist in the laboratory for millions of years? Certainly not, because they were all freshly manufactured. For example, Ba-201 was created in the 1940s with a half-life of 10^{18} years. In 1977, Ba-201 was classified as a stable nuclide. Other man-made long-live isotopes include Nb-92 which has a half-life of 1.2×10^8 years; Sm-146 has a half-life of 1.03×10^8 years, Pb-205 has a half-life of 1.43×10^7 years, Pu-244 has a half-life of 8.26×10^7 years and Cm-247 has a half-life of 1.56×10^7 years.(3) Therefore, when these

long-lived radioactive isotopes were first created in the first day, they already have the appearance of having been there for "millions" to "billions" of years.

NORMAL DECAYS AND NATURAL DISTRIBUTIONS

Uranium-238 normally decays into lead-206 with a half life of 4.51 billion years. Uranium-235 normally decays into lead-207 with a half life of 710 million years. Thorium-232 normally decays into lead-208 with a half life of 14.1 billion years. In nature, the distribution of U-238 is 99.275% among all uranium and that of U-235 is 0.72% Although the half life of U-234 is only 0.247 million years, it is found in nature in a proportion of 0.005% of all uranium.(4) This is so because U-234 is a byproduct of alpha decay from U-238. The distributions of lead in nature are as follows: lead-206 24.1%, lead-207 22.1%, lead-208 52.4%, lead-204 1.4%.(5)

THE PROBLEMS WITH MINERAL CONTENTS

By looking into the mineral ores of uranium, thorium and lead, some very interesting conclusions can be drawn. Of all uranium minerals, none of them contain significant amount of lead. This is also true for thorium. None of the thorium minerals contain significant amount of lead. On the other hand, none of the lead minerals contain significant amounts of uranium or thorium. What do these findings mean? Assuming that the age of the earth is about 4.5 billion years, then in most uranium-238 mineral, we should find approximate 50% of lead-206. By the same token, in most thorium-232 mineral, we should expect to find about 30% of lead-208. This is in general not true. Then, either uranium and thorium are primordial, or lead is primordial or both. This implies that all decay equations are not applicable to uranium and thorium minerals!

Furthermore, there have been excessive amounts of lead known and consumed by humans for at least 5000 years. Uranium and thorium were discovered within the last 200 years. Full scale use of uranium did not start until the 1940s. If all lead were results of natural decays of uranium and thorium, then the age of the earth is many times more than 4.5 billion years. On the other hand, if only a small portion of lead is radiogenic, then most of the lead are primordial. This means that the uranium and thorium clocks started to tick fairly recently!

URANIUM RESERVE AND ITS AGE

The total uranium reserve in the world has been estimated to be about 3 million tons which has been reported in the Encyclopedia of Americana 1987.(6) But the "world consumption of primary lead for the 1970s exceeded 3 million tons annually"! This fact is recorded in the Encyclopaedia of Britannica 1976.(7) The Handbook of Chemistry and Physics (8) says that the thorium reserve is 3 times more than that of uranium. That means there are about 9 million tons of thorium in world reserve. If all uranium and thorium are combined on the continents, they are only a small fraction of what is required to generate the necessary lead consumption utilized by all industrial nations. In fact, if all uranium and thorium could be turned into useable lead tomorrow, it could only supply the world's demand for lead for only about 4 years! Therefore, the great majority of lead are primordial.

The world's oceans present quite a different story. The McGraw Hill Encyclopaedia of Science and Technology 1982 (9) records that the oceans hold 4.5 billion tons of uranium and this amount is increased annually by rivers carrying uranium down to the oceans. Using ocean concentrations of lead and thorium, the entire content of lead and thorium in the oceans can be estimated. Lead has an ocean concentration of about 0.03 microgram/liter whereas thorium has 0.01 microgram/liter. These numbers give us the oceans hold 41.1 tons of lead and 13.7 tons of thorium. These numbers only suggest that both uranium and thorium had only started their decay chains fairly recently, only thousands of years ago! Maybe lead has been deposited on the bottom of the oceans. If this is true, we would expect to find that there are literally over 4.5 billion tons of lead on the bottom of the ocean floor, assuming that the age of the earth is 4.5 billion years old. Nowhere is found this massive deposit of lead on the bottom of the ocean floor. This simply means that the assumption that the age of the earth is 4.5 billion years old is wrong! Marine plants and fishes do not consume significant amounts of lead, because lead is extremely toxic.

WHAT GIVES "GOOD" AGES FOR THE EARTH

It is important to know that in order to obtain 4.5 billion years for the age of the earth, only definite crystals are used. In every case, this is routinely practiced. The fact that mineral crystals with definite atomic structure consist of definite proportions of individual atomic species is well known. Bond energies of individual atoms require that definite proportions of each atom to combine to form individual mineral crystals. It is therefore not surprising to find that most crystals present definite isotope ratios. These ratios show the chemical composition of the mineral crystal and may not have anything to do with age determinations. In no case, however, the entire rock is analyzed on a statistical bases: that is, for example, to divide a given rock 100 parts and perform isotope concentrations of each part. If this were done, the results would be truly random with no definite and consistent age indications.

That is why the 1976 Edition of the Encyclopaedia of Britannica (10) says: "Unfortunately, such checks have painted a generally gloomy picture for those seeking a chronometric tool... Experience shows that, with the exception of results from the mineral uraninite, the three uranium-thorium-lead ages are almost always different." Then why do most of the dates obtained from uranium-thorium-lead methods show concordant dates such as those obtained in the "Lunatic Asylum" of Cal Tech? (11) (The term "Lunatic Asylum" is taken from SCIENCE 80 May, 1980 page 44, an article written by Leo Janos on TIMEKEEPERS OF THE SOLAR SYSTEM: The inmates of Gerald Wasserburg's "Lunatic Asylum" date the earth, moon, and stardust.) Furthermore, the SCIENCE 80 article reads: "Installing a Wasserburg instrument is no guarantee of producing Wasserburg results. 'The point often lost about his dating of the lunar sample,' says Arden Albee, chief scientist at NASA's Jet Propulsion Laboratory and a lunar-sample collaborator of Wasserburg's, 'was that Jerry's skill with a microscope enabled him to select the critical samples for instrumentation...' Imagine sitting at a microscope for a week to pick out individual crystals from a snippet of rock no bigger than a grain of salt, and efficiently separating the brown ones from the white ones, without contaminating the sample." (12) The formation of crystals requires that definite proportions of different variety of atomic constituents. Therefore, crystals always give good and expected dates. A detailed look at crystals turns up some surprises, too. If U-238 decayed into Pb-206 after 4.5 billion years inside a crystal that contains uranium and lead, we should expect both the uranium atom and the lead atom occupy the same lattice site, because one decayed into the other. This situation is generally not true. Using microprobe analysis and X-ray crystallography, the locations of the uranium atom and the lead atom are quite distinct from the other. In other words, they were there when the crystal was formed. In these crystals, uranium did not decay into lead. But rather, all required atomic species were there to start with. Thus, concordant dates derived from selected crystals are invalidated.

Evolutionists suggest that diffusion or migration process may account for the particular locations of the uranium and lead atoms in the crystal. If those atoms were due to diffusion or migration, then they are not the products of decay because radioactive decay is a continuous process whereas diffusion is a stochastic process under high temperatures and migration requires high transport mobility in solids. However, in low temperatures, both diffusion and migration in radioactive minerals are not known. It is futile to argue than it would take millions of years for atomic species to diffuse to other parts of the crystal. High temperatures in the range of 1000 to 2000 ^{o}C are required for effective diffusion and migration of atomic species. These temperatures are only expected when the crystals were formed deep inside the crust of the earth where rocks are molten.

R. E. Zartman et al. (13) reported that a single zircon crystal from Black Hills of South Dakota was dated in billions of years as follows:

U-238/Pb-206	1.67
U-235/Pb-207	2.10
Th-232/Pb-208	1.56
Pb-207/Pb-206	2.55

Why do these isotope ratios give inconsistent ages? Does it mean that it took more than one billion years for the zircon crystal to form? It is highly unlikely. A more reasonable

conclusion is that the assumption necessary for dating are faulty or inadequate and isotope ratios do not necessarily yield true ages. They simply yield the present ratios of isotope compositions. Furthermore, microprobe analysis of a tetragonal zircon crystal revealed thorium atoms are located on the outer parts, uranium atoms in the opague zones and lead atoms in the inner part of the zirconium silicate crystal.(14) If uranium decayed into thorium which in turn decayed into lead, we would expect all these atoms should locate at the same area inside the crystal. However, facts show that all these atoms occupy distinct and different locations inside the zircon crystal, suggesting that they were there when the crystal was formed. In other words, for isotope species inside a crystal, they may not be decay products. Therefore, the application of the radioactive decay equations to well defined crystals and minerals is inadequate and inappropriate.

A PROPOSAL TO TEST RADIOACTIVE DECAY RATES

One single most important factor to lean on old ages is that of the apparent constancy of decay rates of radioactive isotopes. Although this has never been fully challenged, I have good reasons to believe that decay rates depend on environmental conditions.

Radioactive decay is a form of weak force which most probably depend on external pressures and temperatures at least to a small extent. If outside forces are greater than the forces that cause a decaying atom to decay, then the atom becomes stable.

If radioactive isotopes are totally independent of pressure and temperature extremes, then the age of the earth must be as old as the nucleogenesis of uranium-238. Moreover, since nucleogenesis is believed to be at least as old as the solar system, then all uranium-238 datings must give the same result. That is, all uranium ores must be of the same age. In fact, most rocks should give the same age since all minerals should be as old as the time of nucleogenesis. The fact that this is not the case provides some hint that decay rates may not be constant since nucleogenesis.

If nucleogenesis happened only 1 million years after the Big Bang, then most uranium minerals would indicate the approximate age of the universe. That this is simply not the case means that the procedures I suggest below will probably not be negative. The results of the following procedures will greatly help to elucidate the age estimates of the earth with a possible spin-off to control the disposal of radioactive wastes.

Among the over 2000 radioactive isotopes, there are hundreds of candidate isotopes that can be chosen to test the above hypothesis. Isotopes having long half-lives of over 1000 years are easily obtainable from a local nuclear power generating plant. They probably would help financially to conduct such experiments in view of the possible financial promise of such projects.

When a particular isotope is under investigation, whether it is a gas or a solid, two or more Geiger counters are strategically placed around a diamond-anvil pressure cell which can generate millions of atmospheres in pressure. If the counts per minute recorded by these counters are decreasing functions of increasing pressures, then the above hypothesis will be tentatively strengthened. There will be some pressure points where the Geiger counters only record background counts, in which case, the radioactive nuclide has become stable, that is, non-radioactive! By steadily removing the pressure away, the Geiger counters will register high counts again.

If the above experiments are confirmed, then there exists high hopes to contain those damaging radioactive wastes.

SUMMARY

Considering the fact that there are excessive amounts of uranium and the absence of sufficient lead in the oceans, one is led to conclude that the age of the earth is very young. Therefore, one is free to choose whatever date for the age of the earth, including Bishop Ussher's date of 4004 B.C. for the age of the earth.

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