# RADIOCARBON CONFIRMS BIBLICAL CREATION (AND SO DOES POTASSIUM-ARGON)

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The C-14 method of dating not only confirms Biblical history, but creation also. Similarly the potassium-argon method cannot be used to establish ages older than about 7000 years.

Libby found a discrepancy indicating a non-equilibrium in the build-up of terrestrial radiocarbon. But, since he was convinced that the earth was millions of years old, he decided the difference between the C-14 production rate of 19 atoms/gm-min. and the specific activity of 16 dis/gm-min. was due to experimental error. Actually this difference is greater and is to be expected on the basis of a relatively recent Creation. Allowing for this difference and computing backward leads directly to the Biblical creation date. The vulnerability of the potassium-argon method of dating lies in the difficulty of knowing how

The vulnerability of the potassium-argon method of dating lies in the difficulty of knowing how much of the argon came from potassium, a determination absolutely vital to all age determinations. Since 99.6% of argon is Ar-40 and .337% is Ar-36, the ratio of 99.6 to .337 or 295.6 would give the amount of argon coming from potassium in the equation: Radioargon 40 = total argon 40 - 295.6 times argon 36. But this **assumes** the ratio of Ar-36 to Ar-40 since the beginning. If cosmic radiation began with Creation, the **present** Ar-36 concentration of .337% would have built up from zero since then, so that the "constant" of 295.6 must increase rapidly as one goes backward in time.

#### Introduction

Despite the undisguised evolutionary presuppositions that pervade the teaching of earth sciences today, particularly in the many attempts to "fit" the dating of rocks, fossils and artifacts into approved geological time-tables, when one looks carefully at the various "time-clocks" proposed, the Biblical Creationist finds himself on surer ground than ever before.

All these time-clocks fall into two classes, the *quantitative* and the *qualitative*. The quantitative clocks are those means by which an actual age in years might be determined. The qualitative are those phenomena that indicate greater or lesser age without determination of actual years.

Of the *quantitative* clocks, only two remain in scientific favor today: the Radiocarbon Method, and the Potassium-Argon Method. All others involve shaky assumptions, each assumption often contingent on the previous.

Turning to the *qualitative* time-clocks, two facts are found common to all: 1) Many positively point to, or require, a relatively recent origin of matter 2) Not a single one can be found to *establish* the evolutionary scale of time, or the order of the geologic ages, or even to refute the Bible!

### **Evolutionist Faces Dilemma**

Faced with this dilemma, the evolutionist today clings desperately to the faith that Radiocarbon, and Potassium-Argon — or some new clock undiscovered-can be made to support his theories. But when we look carefully at the basic constants and assumptions in the Radiocarbon Method, we find that it not only confirms Biblical history, but also points unmistakably to Biblical creation. And when we look with equal care at the highly-regarded K-Argon clock for dating rocks we find that it is meaningless *unless* one assumes a creation date; and one creation date turns out to be just as good as another!

In short, neither one of these much-quoted time-clocks is found to *establish* the date of any rock, fossil or artifact beyond the date of Biblical creation, namely about 5,000 B.C.

A word here is in order on Biblical creation, Does the Bible establish a date, as well as a method? In a specific sense it does not; but in a general sense it most assuredly does. The general *method* is fiat creation–a perfect natural order brought out of nothing by the word of a sovereign God. The general *time* is clearly at the creation of the first man and woman; a time delineated with sufficient clarity (Gen. 5 and 11 are not just casual genealogies!) that we can establish it about 5,000 B. C., yet also with sufficient obscurity that it is not merely an adding-machine problem as Ussher seemed to think. (See Chart 1)

#### The Carbon-14 Timeclock

This ingenious method by W. F. Libby<sup>12</sup> put in simple terms goes as follows: High energy cosmic rays from outer space are absorbed in the earths upper atmosphere by knocking free neutrons out of the nuclei of oxygen, nitrogen, argon, etc. These free neutrons, emerging at high energy, are slowed down by collision with air molecules, after which most of them are captured in the nuclei of nitrogen atoms which of course are everywhere abun-

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	Eras	Time	Reference
ERA	I: Antediluvian Age (Creation to Flood) (Sources: comparison & evaluation of LXX, Hebrew, Samaritan Pentateuch, et al.)	2000 yrs.	Gen. 5
ERA	II: Flood to the Crucifixion of Christ Flood to Abram's departure (1070 yrs.) Abram to Exodus (430 yrs.) Exodus to Temple (480 yrs.) Temple to Babylonian captivity (363 yrs.) Babylonian captivity (70 yrs.) Cyrus' edict to the Cross (567 yrs.)	2980 yrs.	Gen. 11 Ex. 12:41 Gal. 3:17 1 Ki. 6:1 Acts 13 Kings and Chronicles Jeremiah and Daniel Ezra 1 and Daniel 9
ERA	III: Present Age (since the Cross)	1938 yrs.	

Chart 1. Reconstruction of Approximate Chronology to Biblical Creation

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(Note: There is *no* reliable secualr means of dating any historical event prior to Christ *apart* from the Bible. Few historians know this, and fewer still are those who admit it. Almost all the elaborate charts and dates of ancient empires published today have been built up from Ptolemy's Canon, or supposed synchronisms with solar eclipses, or Greek archons. or olympiads, all of which methods can be shown worthless.)

dant. This capture in turn releases two isotopes, Carbon-14 and monatomic hydrogen, H-1. The C-14 soon combines with the oxygen of the air to form radioactive carbon dioxide which diffuses uniformly throughout the lower atmosphere along with natural carbon dioxide.

The radiocarbon in the carbon dioxide of the atmosphere thus enters into the "carbon exchange cycle" by which all life is sustained. On land, by the action of photosynthesis (in sunlight), all vegetation removes  $CO_2$  from the air. converting it into new growth, flower and fruit. Herbivorous animals eat the vegetation, and carnivorous animals eat other animals, thus diffusing the  $CO_2$  from the air throughout both vegetable and animal kingdoms. Meanwhile, all airbreathing animals take the oxygen of the air and exhale carbon dioxide from their bodies, thus completing the cycle.

In the sea, a similar cycle prevails. Phytoplankton remove the dissolved carbon dioxide and are then eaten, and shellfish exchange carbon dioxide for carbonate and bicarbonate ions in forming their shells.

The "turnaround time" for this cycle has been estimated as 500 to 1,000 years; so that after several thousand years from creation, all *living things* in the carbon exchange reservoir should be uniformly radioactive with each other and with the earth's atmosphere, *provided the intensity of the cosmic rays striking the earth varied little over a thousand years.* 

This was Libby's first assumption, which was reasonably substantiated by samples of flora and fauna from many parts of the earth. and the atmosphere itself, all showing specific activities between 14.5 and 16.3 disintegrations per minute per gram.

#### **Death Starts Radiocarbon Clock**

Now consider what happens when a living organism dies, whether plant or animal, for it is here that the C-14 clock begins to measure time.

At the instant of death, exchange of carbon with the world reservoir ceases, while the fraction of radiocarbon which was present at death continues to decay at the uniform rate (exponential) by which 50% changes back to nitrogen every 5568 years (this being known as its "halflife"). Thus, if a dead organism-whether it be a piece of wood out of Pharoah's tomb, a fossil leaf or bone-is analyzed for radioactivity centuries later, its intensity will be 50%, after 5568 years, 25% after 11,136 years, and so on.

(Editor's Note: Half-life for carbon is an estimate, and 5568 years, has been preferred. More precise values might be 5730 years or 5760 years.)

With such knowledge, it would appear to be a simple matter to calculate the elapsed time since death of such a specimen, provided that (a) no seepage of water or other factor had added C-14 to the specimen since death, and (b) the fraction of radiocarbon it possessed at death is known.

The first proviso can be met by selecting specimens with great care. The second is much more difficult. Libby and his colleagues tackled it as follows: They reasoned that if the *present rate of production* of radiocarbon in the atmosphere can be shown equal to the *present rate of disintegration*, then we could safely assume that cosmic radiation has remained constant at its present value throughout the history of living matter. (This assumption is not strictly valid for several reasons, but let us examine what they found.)

The *average* rate of production of free neutrons by cosmic rays in the outer atmosphere was computed by measurement to be 2.6 neuts/  $cm^2$  per second.

The production rate of radiocarbon was assumed equal to the "neutron production rate, since each neutron soon finds a nitrogen nucleus and produces an atom of C-14, except for about 1% which produce tritium.

The total amount of carbon in the world exchange reservoir was next estimated by careful analysis, and found to be:

gm	∕sq. cm. earth's
	surface
In ocean "carbonate"	7.25
In ocean dissolved organic	0.59
In biosphere and atmosphere	e 0.45

8.29

#### Total

Dividing the neutron production rate of 2.6 by the 8.29 grams of carbon in the exchange reservoir (for 1 sq. cm. of earth's surface) gives a *specific* production rate of radiocarbon today equal to .314 atoms/gm-sec, or 18.8 atoms/gmminute.

#### **Production**, **Disintegration Differ**

When Libby compared this production rate of 18.8 with the specific activities between 14.5 and 16.3 which he had found, he reconciled them by the statement: "the agreement seems to be sufficiently within the experimental errors involved so that we have reason for confidence in the theoretical picture. ..."<sup>3</sup>

That is to say, even though the present production rate of radiocarbon *differs* from the present disintegration rate (with the best of valid corrections applied) by almost 20%, *they were assumed to be the same.* For one reason this made reading the timeclock easy. But even more, if the discrepancy were allowed, a recent origin of cosmic radiation would also have to be allowed, which was unthinkable. Quoting Libby directly:

If one were to imagine that the cosmic radiation had been turned off until a short while ago, the enormous amount of radiocarbon necessary to the equilibrium state would not have been manufactured, and the specific radioactivity of living matter would be much less than the rate of production calculated from the neutron intensity. . .<sup>4</sup>

Thus, despite the discrepancy of almost 20% shown above, the investigators proceeded to reason that no such "turning on" of cosmic radiation could have occurred, and that "there exists at the present time a complete balance between the rate of disintegration of radiocarbon atoms and the rate of assimilation of new radiocarbon atoms for all material in the life-cycle."<sup>5</sup>

Still later, the dating method was applied to ancient matter. Yet no date older than about 30,000 years was found. A matter of no small consternation among uniformitarian scientists, to whom 30,000 years is just yesterday.

# Potential Means of Adjustment

What then is the truly objective approach to the radiocarbon production and disintegration rates reported? Clearly, it should be compared with the *total* scientific data before us, of which the Biblical record itself is a most important part, not lightly to be ignored. And in doing so, the Creationist quickly notes that the observed deficiency between disintegration rate and production rate is exactly what one would expect if Biblical creation be true. To explain the relative magnitudes of the two rates a number of possible explanations lie before us:

(1) Intensity of cosmic radiation has been constant since creation, giving the production rate of 18.8 C-14 atoms/gm.-minute calculated by Libby. The *present* average specific activity in the carbon-exchange reservoir of 16.1 dis/gm.-m. then leads us back to a creation date of 15,000 years ago. (See Figure 1)

(2) The cosmic radiation today is producing neutrons (and therefore C-14 atoms) at a rate more like 3.5 per second per sq. cm. of earth's surface, i.e., 35% higher than Libby estimated. The higher value is adequately supported by the 4% to 1 variation with latitude, and the 5:1 variation with altitude reported in Libby, 1955.

A similar re-evaluation of carbon in the exchange reservoir, in the light of data by Rubey<sup>6</sup> warrants reducing the amount from 8.29 to about 7.8 gm./sq. cm. The new and better value of specific production rate of C-14 atoms would then be 3.5/7.8 giving .45 atoms/gm.-sec. or 27 atoms/gm.-minute.

If 27 atoms/gm.-min. have been produced on the average since creation, and the present disintegration rate is only 16.1, this indicates creation about 7,000 years ago in accord with Scripture. (See Figure 2)

Thus it is that the Carbon-14 timeclock discovered by modern science not only points clearly to an early "turning on" of cosmic radiation, i.e., a universe that appeared quite recently;



Figure 1. Possibly the intensity of cosmic radiation has been constant since creation, giving the production rate of 18.8 C-14 atoms/gm.-minute calculated by Libby. The present average specific activity in the carbon reservoir of 16.1 disintegrations/gm.-minute then leads back to the creation date of 15,000 years ago.



Figure 2. Cosmic radiation today is producing neutrons and therefore C-14 atoms at the rate of 27 atoms/gm.minute. If 27 C-14 atoms/gm.-minute have been produced on the average since creation, and the present disintegration rate is only 16.1, this indicates creation about 7,000 years ago in accord with Scriptures.

but even better, the closer one examines the hands of this clock the more one confirms the very chronology of Scripture-as every true scientist should expect.

#### The Potassium-Argon Timeclock

Let us look now at the second timeclock to which scientists today have turned, finding scant support for their geologic ages in the Radiocarbon Clock.

The Potassium-Argon dating method is extensively analyzed in a recent book by Schaeffer and Zahringer<sup>7</sup>. The concept is basically simple except that it involves a thoroughly unscientific assumption which nullifies the whole method, as will readily be seen.

First, it was discovered (in 1905) that all natural potassium is radioactive, and second, that its beta activity is due to the tiny fraction of K-40 which it contains (12 parts in 100,000). It was then found that K-40 decays simultaneously in two ways, 92% of the decays being by gamma emission, and 8% being by electron, or beta-emission.

This latter emission has a half-life of 1.31 billion years and converts an atom of metallic K-40 into an atom of gaseous Argon-40. That is to say, every 1,310,000,000 years half of the original K-40 (which was less than 1/10,000th of the original potassium) would appear as Argon-40 gas.

Now since potassium-bearing rocks are plentiful in the earth's crust, this timeclock seemed made to order to verify the multibillions of years postulated by evolutionary geology. Only two problems needed to be solved: (1) how to measure the fantastically small quantities of argon trapped in the rock specimen?, and (2) how to determine what portion of this argon, in all those billions of years, came from potassium decay, and what portion came in from the earth's atmosphere where, unfortunately, it is very plentiful (almost 1% by volume)?

About 190 pages of Schaeffer and Zahringer's report are devoted to explaining the brilliant techniques by which the first problem has been solved, and to citing the many ancient dates thereby affixed to sediments, rocks and meteorites of all kinds. Only two pages (7-8) are given to solving the second problem-how much of the argon came from potassium decay?-a solution which is absolutely vital to any age determination.

It is this problem, and its solution, which demands careful scientific examination.

## Potassium to Argon Decay Studied

Since argon accounts for almost 1% of the earth's atmosphere, over a period of many years some atmospheric argon will be absorbed into any sample being taken. However, and this is of vital importance, the atmospheric argon trapped in a tiny sample of internal potassium that has supposedly been decaying for billions of years would have the isotopic distribution of billions of years ago which would by no means be that of today.

Now isotopic distribution in atmospheric argon today is 99.6% argon-40, 0.337% argon-36 and 0.063% argon-38, all the isotopes being stable. Armed with this information, the Potassium-Argon Method was then constructed on a brilliant deduction based upon a colossal oversight!

It was deduced that, if the tiny sample of argon taken in a rock specimen contained an infusion of atmospheric argon, it would show up by the presence of Ar-36, since the argon that decayed from potassium in the specimen would be pure Ar-40. (The trace of Ar-38 was dismissed as too small to be detected). This being so, it becomes a simple matter to measure the quantity of Ar-36<sup>î</sup> in the specimen, multiply it by 295.6 (i.e. the Ar-40/Ar-36 ratio in the air) to determine the amount of Ar-40 that came in from the atmosphere, and finally subtract this amount from the total Ar-40 found. Thus, the remainder would be the argon-40 formed over billions of years from potassium alone. The equation for this operation is given<sup>8</sup> as:

#### Radioargon-40 =

Total argon- $40 - 295.6 \times argon-36$  (1)

And the colossal assumption behind this equation, without a shred of data or logic to support it, is that over the eons of time the radioargon was being formed, the ratio of Ar-36 to Ar-40 in the atmosphere has remained exactly the same as it was the day the rock was formed. On e could scarcely find a more glaring example of the blinding power of the uniformitarian faith!!

## Facts Nullify K/Ar Timeclock

What then are the scientific facts and probabilities that nullify the above assumption, and even turn the hands of this timeclock toward creation?

**First**, it can be shown that Ar-36 is a probable product of cosmic radiation bombarding the earth's outer atmosphere, just as is radiocarbon. Several nuclear reaction sequences leading to Ar-36 in the presence of free energetic neutrons and photons can be shown.

**Second**, it follows that over a billion-year span (assuming such a span really occurred!) the Ar-36 in the atmosphere would have slowly increased compared to the Ar-40, barring some process of Ar-36 destruction not yet found.

**Third**, it follows that if cosmic radiation began with creation only a few thousands of years back, the present Ar-36 fraction may easily have built up from zero even in that short time.

Finally, then, it follows that the constant "295.6" in equation (1) must increase rapidly with specimen age, and for a specimen which trapped a piece of atmosphere at the instant of creation it would be highest of all, and completely unknown.

The conclusion is that equation (1)-but with a totally unknown constant-is just as valid for rocks formed at a Creation 7,000 years ago, as for rocks formed at a Creation 7,000,000,000 years ago. It tells absolutely nothing about the date of the rock until one first assumes a date of creation and a rate of buildup of Ar-36 in the air thereafter. Only then can the constant even be estimated, much less be determined exactly.

In closing it should be noted that the basic equation (1), even as it stands, is used to determine quantities of radioargon (left side of equation) in *trillionths* of a cubic centimeter, as the *difference* between two quantities on the right side each a thousand to ten thousand times greater. Every scientific investigator knows how untrustworthy is such a procedure. In this particular case the probable error in the result is well over 50%.

The errors of  $\pm 10\%$  cited for many samples in the latter pages of Schaeffer and Zahringer are estimated gravimetric errors only. The authors apparently ignore the dominating influence of uncertainty and variations in the constant 295.6 which of course swamps out all others.

This then is the timeclock without handswithout even a face—upon which evolutionary faith now depends to prop up its desperate belief in a world that never began, a creation that never occurred, and a Creator who never created and no longer exists!

And the record of Scripture was never so sure! References

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<sup>3</sup>Libby. W. F., 1955. p. 7.

Loc. cit. <sup>5</sup>Ibid., p. 8. <sup>6</sup>Rubey, W. W. 1950. Geological evidence regarding the source of the earth's hydrosphere and atmosphere, Science, 112: 20.

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# ON THE INVARIANCE OF THE DECAY CONSTANT OVER GEOLOGICAL TIME ROBERT V. GENTRY\*

Radioactiue inclusions such as zircon, which show a considerable volume increase due to isotropization from radioactiue decay, often fracture the surrounding mineral in a random pattern. On uniformitarian concepts the surrounding mineral should expand slowly over geologic time. Expansion cracks should occur first along cohesion minimums and grain boundaries, but instead individual cracks surrounding the radioactive inclusion are randomly distributed and occur sud-denly, in an explosive fracture. Anomalous decay rates would explain this world wide phenomena. Mathematical equations showing the relationships involved in pleochroic halos are given.

While the past several years have seen steady advances both in the techniques and precision with which isotopic ratio determinations are made, there has been relatively little discussion about the fundamental premise that translates these data into radiometric ages, namely, the invariance of the decay constant lambda  $(\lambda)$ over geological time.

#### **Pleochroic Halos: a Test**

It was noted early in the study of radioactivity that pleochroic halos presumably furnished an ideal way to test this premise via observing the ring structure of uranium-238 and thorium-232 halos in ancient rocks. The rationale was that since the halo ring radii (R) develop as a result of alpha emission from uranium-238 or thorium-232 and their respective daughter products, any change in  $\lambda$  would be reflected in a change in ring radii.

For example, if the alpha ranges were known in minerals of varying geological ages, then the Geiger-Nuttall Law<sup>2</sup> in the form

(1) 
$$\ln \lambda = A + B \ln R_a^{\dagger}$$

(A and B are parameters and R<sub>a</sub> is the alpha range in air.)

and the Bragg-Kleeman Rule<sup>3</sup>

$$(2) \quad \mathbf{R}_{m} = \mathbf{C} \mathbf{R}_{m}$$

 $(R_m is the alpha range, i.e., halo radius in the$ mineral; C is a parameter dependent on the mineral.)

may be combined to yield an expression equation for the fractional change in  $\lambda$  due to any variation, delta  $R_m$ , ( $\Delta R_m$ ) in the halo radius: (3)  $\Delta\lambda/\lambda = (1 + \Delta R_m/R_m)B \sim B(\Delta R_m/R_m)$  for  $\Delta R_{\rm m} < < 1$ .

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<sup>†</sup>This equation should be read: "The natural logarithm (ln) of the decay constant lambda (A) equals A + B times the natural logarithm of the alpha range in air, Ra.'