

RADIOCARBON AND POTASSIUM-ARGON DATING IN THE LIGHT OF NEW DISCOVERIES IN COSMIC RAYS

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*Potassium-argon dating method is totally dependent upon the assumption that the A-36/A-40 ratio in the atmosphere has been invariant throughout geological time. Having shown this earlier, the author now offers evidence that argon-36 may well have been building up from zero since Creation. The strongest such evidence now comes from startling new data on cosmic rays surveyed in **Science and Technology**, November, 1968. Also, these same data serve to confirm the author's earlier analysis showing that the radiocarbon clock points to Biblical Creation.*

Introduction

Of the various "clocks" proposed for dating events in geological history, the two in principal favor today are radiocarbon, for events in the biosphere, and potassium-argon, for events in the lithosphere.

The C-14 or radiocarbon clock presumes to date the death of any biological specimen, animal or vegetable, with reasonable accuracy up to six or eight half-lives of carbon-14 (about 45,000 years). It has been in extensive use since 1950 by leading universities of the world, as witness the exhaustive listings of almost 10,000 dates in the annual journal, *Radiocarbon*.

(It should be noted here, in passing, that these dates, available for any layman to read, have profoundly disturbing implication for the famous geological time scale and for the eons of time demanded by the evolutionist. Almost every uncovered biological specimen is found to be datable; every fossil, bone, cultural deposit, buried log, vegetation, gyttja, peat, and even much coal and petroleum; all appear to lie within the measurable 45,000 year figure!)

The potassium-argon clock presumes to date entrapment of any tiny sample of potassium-bearing rock, based upon assumptions and methods described earlier,¹ and generally yields dates between 1 and 10 billion.²

Both Clocks Based on Assumption

Both clocks are *absolutely* dependent upon accurate knowledge of a tiny constituent of the earth's atmosphere at the time of the event being dated. The radiocarbon clock (as proposed by Libby³ and faithfully adhered to by the scientific community since) *assumes* that the C-14 concentration throughout the living world was the same at the death of the specimen as it is today.

This assumption is based on two prior assumptions: (a) that the production rate of C-14 in the outer atmosphere had long before approached equilibrium with its decay rate, i.e., that

"creation," if it occurred at all, was long before living matter; and (b) that no cosmic events occurred in the last 45,000 years that could possibly change the C-14 production rate or decay rate.

A relatively recent creation date was, of course, too preposterous for any "respectable" scientist to contemplate, although other events far more preposterous, so long as they do not demand the hand of a Creator, are "scientifically" quite believable, as Wald' and others openly testify.

Assumptions of Potassium-Argon Clock

Turning to the potassium-argon clock, we find it hanging upon a thread of assumption even more tenuous than that of the radiocarbon clock.

The fraction of total argon in the atmosphere today is about $\frac{9}{10}$ of one percent, and about 0.337% of this (1 part in 300) is *now* known to be the isotope Argon-36, the balance being Argon-40. Furthermore, the very existence of A-36 in the atmosphere has only been known and measurable within the last 25 years, so that we cannot even say for sure what its concentration was a mere 100 years ago!

Nonetheless, in order to read the potassium-argon clock, its advocates blandly *assume* that when the tiny rock specimen was trapped in the molten state, no matter how many billion years ago, the fraction of A-36 in the total argon trapped with it *was the same as it is today!* And they further *assume* that whatever atmosphere infused next to the sample throughout geological time always had this same fraction of A-36.

In looking at these two sets of assumptions—those for the radiocarbon vs. those for the potassium-argon clock—we find an interesting disparity. From the very first, Libby made his case for the radiocarbon clock on the fact that the earth is *not* an isolated system; that its outer atmosphere is in fact constantly bombarded by high-energy cosmic rays (of energy and even substance unknown!); and that these rays produce free neutrons which in turn react with nitrogen nuclei to produce carbon-14.

Potassium-argon clock-readers, on the other hand, build their case essentially upon an opposite assumption. They demand an earth whose atmosphere maintains its ratio of A-36/A-40

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unaltered over time spans that dwarf the imagination. Billions of years of solar radiation, magnetic flares, interstellar dust—not to speak of notable eruptions and cataclysms upon the earth's surface—are swept aside as of no consequence.

Show us, we are told in effect, what could possibly change the atmospheric inventory of Argon-36; and until you do we will take our scientific stand upon the ratio A-40/A-36 being 295.6 yesterday, today and forever!

Which View of Atmosphere Correct?

Which of these two views of the earth's atmosphere is correct? To answer we need only let the scientific facts speak for themselves, and the later the facts the better the case, as we shall see.

With respect to radiocarbon being constantly produced in the outer reaches of the atmosphere by cosmic rays, clearly Libby was correct even though the actual nature of cosmic rays was not fully known. He was even correct in discovering that the production rate is apparently still some 20% greater than the decay rate, a fact which points directly toward a recent creation as detailed in a previous paper (See Whitelaw, 1968). His only significant error was in dismissing this 20% difference as "experimental error" on the grounds that a recent creation was unthinkable.

Next, let us look at the idea that the A-40/A-36 ratio has been fixed at 295.6 throughout geological time. This is certainly no fundamental, inviolate physical relationship like the gravitational constant, or $e = mc^2$! Rather, this ratio involves a temporary state of only one region of the geosphere, irradiated and bombarded from without, infused with dust and vapor from within, constantly being stripped of nitrogen, carbon dioxide and oxygen in one place and replenished elsewhere—and all these elementary processes only well-known since yesterday, so to speak!

Yet we are being asked to believe that two of the constituents of this atmosphere, the most active and unstable region of earth, have maintained the same ratio for billions of years. Surely by every canon of scientific method, the burden of proof is upon those who put forward such a theory.

Case Against Constant Argon Ratio

But the case against a constant argon ratio in the atmosphere—the main "prop" of the potassium-argon method—rests upon still better evidence.

First, it is not difficult to postulate a number of reasonably probable A-36 production processes: (a) If cosmic rays are rich in high-energy

photons, as in the Van Allen belt, one sequence of gamma-n reactions leads from argon-40 to argon-36. (Argon-40 bombarded by an energetic photon loses a neutron and becomes argon-39, and so on down to argon-36). (b) Another sequence may well employ the high-energy neutrons both in and from cosmic rays. An n-alpha reaction converts argon-40 to sulphur-37 which promptly decays to chlorine-37 with a half-life of 5.04 minutes. A further n-2n or gamma-n reaction produces chlorine-36 which slowly decays to argon-36 (half-life 3×10 years). (c) Still another source of argon-36, by similar processes, can be the chlorine in sea-spray carried to high altitudes by great storms, or potassium-bearing volcanic dust from the many eruptions that have shaken the earth.

The **second** and even more potent argument in favor of argon-36 build-up in the atmosphere is the astounding new knowledge of the nature and energy of cosmic rays themselves; information so new and unexpected that it is rocking the foundations of *any* notion of atmospheric equilibrium.

New Knowledge of Cosmic Rays

An excellent survey of this new knowledge of cosmic rays, still growing in its total implications, is given by Stephen Rosen in *Science and Technology*, November, 1968, pp. 22-30. The entire article is pertinent, but it suffices to quote a few passages for one to begin to realize how much "science" must now be unlearned, and how much has yet to be learned:

Since the advent of instrumented satellites and space probes, many new questions have arisen, and consequently there are now additional problems to solve. For instance, we are still not certain where cosmic rays come from, nor precisely how they travel here. We do not know how or why they are able to reach the energies they do—energies that far exceed those we can produce in our biggest accelerations. . . . (p. 22, second paragraph).

For instance, we have not always known that cosmic rays are energetic, extraterrestrial protons and nuclei of heavier elements. Until the 1930's they were thought to be electrons. . . . (p. 22, third paragraph).

The curve in Fig. 1. . . suggests that something is happening on a galactic scale—the sources of the cosmic rays maybe changing, or perhaps they are coming from different "storage regions." . . . (p. 24, first paragraph).

The highest energy of a cosmic ray observed -10^{20} eV—is *more than a billion times* the energy obtainable at present in the most powerful accelerators on earth. . . . (p. 24, fourth paragraph).

It seems likely, but is by no means a certainty, that all of these *high-energy* particles are protons. There is no doubt, however, that the great majority of *all* cosmic-ray particles are protons, exceeding nuclei heavier than helium by about 13 times. Particles representing helium nuclei amount to perhaps 8% of the total, and the remaining heavier nuclei less than 1%. . . . (p. 24, fifth paragraph).

Additional confirmation of these startling findings is given in a brief survey of work by P. H. Fowler which is reported in *Scientific Research*, October 28, 1968, page 25.

Conclusions

Further references and quotations would only enhance implications of these new discoveries, the key words being "energy," "changing," and "do not know"! Suffice it to say, in closing, that

the nucleus of argon-36 is only *nine* times heavier than helium, so that even if no mechanism whatsoever were found for conversion of other isotopes into argon-36, a *certain fraction of cosmic rays themselves* are now known to be the nuclei of argon. And since we are talking about a buildup of argon-36 to only 1/30,000th part of the atmosphere, the number of years of cosmic rays necessary may be well within the 7,000 years since Biblical creation!

References

- ¹Whitelaw, R. L. 1968. Radiocarbon confirms Biblical Creation, *Creation Research Society Quarterly*, 5:78-83.
²Schaeffer, O. A. and J. Zahringer. 1966. Potassium argon dating. Springer Verlag, New York.
³Libby, W. F. 1955. Radiocarbon dating. University of Chicago Press, Chicago.
⁴Wald, George. 1955. The origin of life, the physics and chemistry of life. Simon & Schuster, New York. p. 3.

BOOK REVIEW

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Animal Dispersion in Relation to Social Behavior by V. C. Wynne-Edwards. Hafner Publishing Co., New York. 1962. 653 pp. \$10.25.

Written by an Oxford-trained biologist, the theory introduced in this book is valuable to creationists for two reasons: first, Morris and Whitcomb, and others have interpreted Genesis 1:29-30 as teaching that prior to the Fall all animals were vegetarian. Evolutionists have argued that without predators the smaller animals would have no population checks and would have quickly over populated the world, thus negating any semblance of a perfect Creation.

Wynne-Edwards has shown in this book that, more often than not, animals can and do limit their own population by many diverse mechanisms, thereby adding scientific respectability to the interpretation of a perfect Creation without predation.

Second, and of considerably more importance, the possibility that animals automatically can and do control their own numbers greatly weakens the second of the three "legs" that support Neo-Darwinian evolution, e.g., excessive fecundity, tooth and fang competition for survival, and survival of the fittest. It is exactly for this reason, according to Dr. Wynne-Edwards during personal conversation with him, that his theory has met with some difficulty in England and the United States.

In Germany and Russia, where he said less narrow stereotyped evolutionary preconceptions exist, the theory has received wider acceptance. Although published only seven years ago, approximately ten thousand copies of the book have been sold.

The theory was reviewed in the August, 1964, issue of *Scientific American*, and was selected to appear in the recent, but popular reprint of *Scientific American* articles, *39 Steps to Biology* (W. H. Freeman and Co., San Francisco.)

Dr. Wynne-Edwards spoke at the recent American Association for the Advancement of Science meeting on Dec. 31, 1968, at Dallas, Texas. It is from the paper he presented there that the following summary of the theory was taken:

Seven years ago I put forward the hypothesis that social behavior plays an essential part in the natural regulation of animal numbers. (That was in the book to which Dr. Esser referred.) And some of you I know are familiar with the main contrite of this hypothesis. It has two main foundations: the first is the demonstration over a long period of years, that many of the higher animals especially in the vertebrates and arthropods are able to regulate their own numbers. This they do either by controlling the recruitment into the population, which comes from reproduction and emigration, or by controlling the losses due to mortality and immigration,—and still more often by a combination of both these processes. The

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