

Rating radiodating

A review of
*Radioisotopes and the Age
of the Earth*

Edited by Larry Vardiman,
Andrew A. Snelling
and Eugene F. Chaffin
ICR, El Cajon, CA & CRS,
St Joseph, MI, 2000

Michael Oard

A group of young-Earth researchers called RATE (**R**adioisotopes and the **A**ge of **T**he **E**arth) are investigating radioactive dating methods and developing alternative young-Earth explanations. The RATE project commenced as a joint collaborative effort between the Institute for Creation Research, the Creation Research Society and *Answers in Genesis*.¹ This book is the group's first major report of its research and findings.

There is no doubt that this is an excellent book. It will be difficult reading for laymen and most scientists not versed in the methods of radioactive dating. But what else should we expect from a book on the vanguard of a creationist solution to old age radiometric dating? The book is well written. To aid the reader with the terminology, it contains a 90-page glossary. Even then I found a few concepts that should have been defined in it, such as the 'nuclear potential well'.

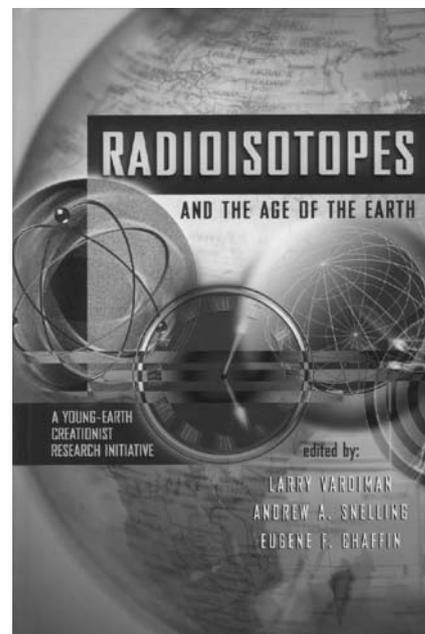
After a prologue by John Morris, Larry Vardiman introduces the RATE Project, for which the book is only a preliminary summary. Don DeYoung, in chapter 2, summarises the radioactive decay equation, the main dating methods, their major assumptions, and their major problems. He finishes by discussing the possibility of accelerated nuclear decay, either at Creation, as part of the curse described in Genesis 3, or during the Genesis Flood.

John Baumgardner provides a lucid account of geochemical models

of Earth evolution, such as the differentiation of the core and mantle, and the crust from the mantle. This is the only part of the book I would question because Baumgardner believes the evidence for these events in the past is overwhelming. There are probably myriads of evolutionary/uniformitarian assumptions that have gone into these Earth model deductions. These models and their assumptions need detailed documentation in the creationist technical literature before we should accept them. I do agree with Baumgardner that if the evidence for such events in the past is truly overwhelming, God could have used these processes during the Creation of the Earth. Towards the end of his article, he describes the very interesting correlation between high heat flow at the Earth's surface and the measured radioactivity—on an outcrop by outcrop level!

Steve Austin describes the three methods of radioactive dating: 1) the model age, 2) the whole rock isochron, and 3) the mineral isochron. He breaks new ground by categorizing four types of radioactive discordance. For the first three types, mainstream geologists have ready answers to dismiss aberrant dates. However, they have serious trouble with the fourth type where a mineral isochron is **older** than the whole rock isochron. When the isotopic data plots on a straight-line, it is claimed to form an isochron, and validates the initial isotope quantity and closed system assumptions. However, Austin provides six possible explanations for such linear plots of daughter versus parent isotopes.

Andrew Snelling produces a comprehensive summary of the major problems with the main dating methods. Along with Steve Austin, he has contributed to this literature by dating a number of recent lava flows and obtaining 'dates' of millions of years. There is so much contrary data in radioactive dating that one easily gets the feeling that they have enough



unresolved problems and *ad hoc* explanations for discordances for one to conclude they are all unreliable. Throughout chapter 5, he documents that the standard for judging 'good' dates is that the dates agree with the expected 'age' provided by the fossils, strata, or even other dating results. This is circular reasoning.

Eugene Chaffin provides theoretical possibilities for accelerated nuclear decay, which seems to be the main solution the participants of RATE lean towards. He concludes that the beta-decay mechanism is not well understood and may provide solutions for the amount of radioactive decay that appears to have occurred in the past. [See John Woodmorappe's perspective: Billion-fold in this issue pp. 4–6. Written after this book was published—Ed.]

He also proposes a solution for fission track dating where the number of fission tracks observed in rocks is more than anticipated for a young world. He suggests that the excess tracks may be explained by the decay of short-lived fissioning nuclides, such as super-heavy nuclei.

Russell Humphreys provides a very cogent argument for the possibility of accelerated nuclear decay in the past. The article becomes heavy in places, especially in dealing with



Dr Larry Vardiman



Dr Don de Young



Dr D. Russell Humphreys



Dr John Baumgardner



Dr Steven Austin



Dr Andrew A. Snelling



Dr Eugene F. Chaffin

The seven scientists involved in the RATE project.

particle physics and quantum mechanics. However, the reader who knows little about these subjects, such as me, can still pick up the main arguments. Humphreys also elaborates on several Scriptural references to support the idea of accelerated nuclear decay. He gently leads the reader through, knowing that there will probably be a fair amount of skepticism regarding these Scriptural references. I found them intriguing.

Andrew Snelling finishes the book with a much needed and extensive review of the polonium-halo controversy. He adds new information on the previously little-known geochemistry of polonium. There are still many mysteries associated with polonium halos.

The book ends with an appendix

setting out details of the research proposals resulting from this initial RATE report. Five proposals are categorised as high priority: 1) helium diffusion experiments in biotite to test accelerated nuclear decay, 2) mineral isochron studies to test radioisotope dating assumptions, 3) study of the theoretical mechanisms for accelerated alpha and beta decay, 4) the geological distribution of polonium radiohalos, and 5) a survey of fission track densities in recent volcanic tephra.²

I highly recommend this book to any creationists, or noncreationists for that matter, who are interested in the meaning of radioactive dating. There is much already in the literature, plus unpublished data from mainstream geologists and several of the participants in RATE, to conclude that the 'ages'

obtained from radioactive dating are open to serious question.

References

1. In the interim, the research scientist originally working for AiG is now with ICR, so AiG is no longer contributing staff to the project. However, AiG remains highly supportive of the RATE project.
2. Donations designated to fund the cost of the RATE Project research may be sent through any *Answers in Genesis* office.