

## Preface

I decided to write this book in 1983. Better late than never, I suppose. The impetus was the Arkansas “creationism” trial, *McLean v Arkansas*, held in December 1981 in Little Rock (529 F. Supp. 1255, E.D. Arkansas, 1982). Earlier that year the legislature had passed, and the governor had signed, Act 590, the Balanced Treatment for Creation-Science and Evolution-Science Act. This ill-advised law required that “creation science” be taught in the public schools of Arkansas whenever “evolution science” was taught. Act 590 defined creation science, an oxymoron if there ever was one, to include the concepts of a young Earth, the instantaneous creation of all living “kinds,” the denial of evolution, and numerous corruptions of science required by these tenets. “Evolution science,” as defined by the Act, included much of biology, geology, astronomy, chemistry, and physics as they are currently understood by scientists. The Arkansas law was challenged as a violation of the First Amendment to the U.S. Constitution and overturned in federal district court after a trial that attracted nationwide attention. (For an entertaining account, see Gilkey, L., *Creationism on Trial*, Minneapolis: Winston Press, 1985.)

I was called by the ACLU to testify in that trial as an expert witness on radiometric dating of rocks, the breadth of geologic time, the age of planet Earth, and the fallacies of “creation science” in these areas. Arkansas and the creationists lost that lawsuit, and the State of Louisiana lost the challenge to a similar law, in which I also participated, shortly thereafter (*Aguillard v Treen*, 634 F. Supp. 436, E.D. Louisiana, 1985). The U.S. Supreme Court affirmed the Louisiana decision in 1987, making such equal time laws invalid forever (*Edwards v Aguillard* 482 U.S. 578 1987).

As a result of the Arkansas and Louisiana cases (and another in California), I received numerous invitations to speak and write on the age of Earth and the fallacies of the creationist views on that subject. I was often asked if

there was a current book or review article on the subject. Unfortunately, there was none, so I decided to write one. What I had in mind was a book that explained, in a simple and straightforward way, the data and logic that have led scientists to conclude that Earth and the other parts of the Solar System are 4.5 billion years old, and the Universe older still. (There. I've answered the question posed by the book's title, so those interested only in the result need read no further. If, however, you are interested in *how* the answer was arrived at, please read on.)

What I ended up with five years later was a book I liked a lot, but it was more scholarly and detailed than I had originally intended. Entitled *The Age of the Earth*, it is 474 pages long, complete with the relevant mathematical equations, references, and notes. Stanford University Press published it in 1991. The book filled an obvious need and is still in print, but it is sufficiently detailed that it is of interest primarily to people with some knowledge of science.

The book you are now reading is updated, abridged, and greatly simplified compared to the original volume. It is free of the equations, many of the references and notes, and much of the detail contained in the longer version. Scientific terms are explained when they first occur in the narrative, where practical, and a glossary is included in the back of the book. I hope it will prove to be interesting and informative to nonscientists who want to know about the evidence for the age of Earth, the Solar System, the Milky Way Galaxy, and the Universe. Readers of this book who wish more detail or documentation than presented here are referred to the 1991 version, which covers all of the same ground and more, with the exception that it is current only to about 1988.

The purpose of this book, then, is to explain how scientists have deduced the age of planet Earth, the Solar System, the Milky Way Galaxy, and the Universe. The Universe is a large, old, and complicated place. Earth and the other bodies in the Solar System—the planets, the asteroids, the comets, and so forth—have endured a long and sometimes violent history, the events of which have largely obscured the record that scientists wish to unravel. Although in detail the journey into Earth's past requires considerable scientific skill, not to mention access to modern and complex technology, the basic story is not so complicated that it cannot be understood by anyone who has the desire to learn and understand a few things about the evidence.

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