

## Book Review

### Earth, Life and the Universe . . . Exploring Our Cosmic Ancestry

Keith Tritton. Curved Air Publications, Ltd., Suffolk, UK, 2001, 226 pp., ISBN: 0-9540991-0-9.

**I**N HIS BOOK, *Earth, Life and the Universe . . . Exploring Our Cosmic Ancestry*, British astronomer Keith Tritton has done a remarkable job of making the science of astrobiology accessible to the non-scientist. *Earth, Life and the Universe* reads easily and explains the concepts of cosmology, planetology, biology, and evolution without the overuse of jargon. The book was written with the assumption that the reader had no previous knowledge of science, and includes an extensive glossary.

The 10-chapter book is logically organized into three sections. The first section, "Earth and the Universe," discusses the formation of the universe, the life cycles of stars, the origins of the elements, and the formation of planets and solar systems in Chapters 1 and 2. Included in this section are relatively detailed, yet easy-to-read, discussions of the origin and future of the Sun, and of the formation of the Earth.

In the second and largest section, "Earth and Life," Tritton discusses current theories about the early history of the Earth and of the origins and evolution of life. Chapter 3 describes the first forms of life and the evidence that they left behind. Chapter 4 introduces the reader to the fundamental concepts of cell structure and metabolism, giving the non-scientist (or even non-biologist) reader the information necessary to fully appreciate life's evolution. Chapter 5 outlines the environmental extremes in which life has been found, and also introduces the concept of a solar system's "habitable zone." The remainder of this section, Chapters 6 and 7, describes how changes in Earth's climate over the eons, including mass extinctions, have influenced the course of evolution, and continue to do so today.

In the third and final section of the book, "Life and the Universe," Tritton spends three chapters discussing the search for life elsewhere in the Solar System and outside of the Solar System, and what the characteristics of that life might be. As with most books and papers on life in the Solar System, most of Tritton's discussion focuses on Mars and Europa as the most likely sites for finding extant or extinct extraterrestrial life. He balances his discussion of these two worlds with reasons as to why other planets in the Solar System are *not* good candidates for finding extraterrestrial life. Tritton also discusses past and current attempts to Search for Extraterrestrial Intelligence (SETI), and the relatively new discoveries of extrasolar planets. Tritton ends his book with a discussion of the panspermia hypothesis (that organic materials and even cells from other worlds seeded life on Earth), and some predictions of what the astrobiologists might find in the not-to-distant future.

In the introduction of the book, Tritton specifically identifies himself as an astronomer. As such, he has done a remarkable job at accurately discussing biology. The book contains some minor errors, mostly typographical, and the few topical errors that I found appear to be due to the author's attempt to make the biology accessible to the non-scientist. For example, Tritton states that only eukaryotic cells were complex enough to use respiration as a means of producing cellular energy (p. 53). In fact, while most eukaryotes do utilize aerobic respiration, the process evolved in prokaryotes hundreds of millions of years before eukaryotes appeared, and still occurs in many modern-day bacteria. However, this was the most serious error in biology in the entire book, which says a lot about Keith Tritton's interdisciplinary knowledge.

Tritton also does well in differentiating his own

opinions from the opinions of other scientists, and from established scientific fact. This is most evident in the last chapter when he discusses the panspermia hypothesis. Tritton states outright that his support of this hypothesis is purely his opinion. Personally, I think that he gives the hypothesis more credit than it deserves, but that is *my* opinion.

Although Tritton wrote this book for the non-scientist, I think that he could have done a bit more to make it more usable to the scientist as well. He mentions key scientists and research throughout the book, but does not provide a list of sources (i.e., journal references). While I understand that references within the text can be confusing to the non-scientist reader, a list of references at the end of each chapter or at the end

of the book would have been helpful. Tritton does provide a list for "further reading," but the list mainly consists of other trade books on astrobiology.

Overall, this is a very good book, and I highly recommend it for both scientists and non-scientists. Although apparently not intended as such, this book could possibly be used as a text for an introductory or non-major's course in astrobiology.

—Reviewed by Dr. David J. Thomas  
Lyon College, Science Division  
2300 Highland Road  
Batesville, AR 72501

E-mail: [dthomas@lyon.edu](mailto:dthomas@lyon.edu)