

understand human behavior, and in refusing to ask why, as a means of holding him accountable for that behavior, we may be invoking two mutually contradictory systems of thought. If so, a coherent, self-consistent worldview may not even be possible.

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### **An Evolving Dialogue: Theological and Scientific Perspectives on Evolution**

edited by James B. Miller. Harrisburg, PA: Trinity Press International, 2001. xi + 532 pp. \$40 (paper). ISBN 1-56338-349-7.

Religiously motivated attacks on “evolution”, “Darwinism”, or “neo-Darwinism” continue. As one battle ends, another begins. This volume provides a useful sample of the most current controversy in which the attack is waged under the banner of “intelligent-design theory”. At the same time the volume suffers from some of the common drawbacks of edited volumes, and it was quite inadequately proof-read (for instance “enthroned” and “faired” better). Some typos are best explained as resulting from unsupervised automated scanning, for example mc2 for mc<sup>2</sup>.

This review will focus on the most interesting or well done chapters.

Francisco Ayala (chapter 2) gives a splendid introduction to current views about evolution within biology. Charles R. Marshall in chapter 4 describes how molecular biology has confirmed the utility of evolutionary theory. “Levels of Selection: An Alternative to Individualism in Biology and Human Sciences”, by David Sloan Wilson, is a masterful discussion of the application of natural selection to the idea of group interest and group selection; Wilson shows that the ideas are subtle enough to be much misunderstood even by competent peers.

Chapters 7 to 11, collected under the heading “The History of Life”, are less satisfying, with much abstraction and some repetition. The chief message is that strictly random processes suffice to explain the presence of such complex beings as humans.

Ernst Mayr gives an authoritative explanation of the concept of “species” (chapter 12). Then Ayala explicates, again splendidly, “Chance and Necessity”, showing how something can and does occur all the time against huge apparent odds, for example things whose probabilities are as small as  $4 \times 10^{-16}$  happen continually in the evolution of characteristics of bacteria, since billions of bacteria can grow in a matter of hours. John Durant, in “A Critical-Historical Perspective on the Argument About Evolution and Creation” (chapter 14), points out that Darwinism has no necessary religious implications. Ronald Numbers summarizes the history of the creationist movement (chapter 15), but does not extend it to the present intelligent-design group.

Chapters 17 through 22 are heavily theological. John F. Haught in chapter 18,

“Does Evolution Rule Out God’s Existence?”, argues that, to the contrary, the concept of evolution can be stimulating within theological discourse. Elizabeth Johnson underscores that viewpoint by citing John Paul II: “Science can purify religion from error and superstition; religion can purify science from idolatry and false absolutism. Each can draw the other into a wider world, a world in which both can flourish” (chapter 19, p. 354). Stephen Pope in chapter 22 brings together ideas from sociobiology with Christian views of agape.

“Evolution and Design” is the heading for the last group of chapters, which has the most immediate pertinence. William Dembski is the technical-mathematical guru of intelligent-design theory. In chapter 23, he reveals himself as notably egotistical: the intelligent-design movement promises “to overturn the cultural dominance of Darwinism much as the freedom movements in eastern Europe overturned the political dominance of Marxism at the end of the 1980s”; it has “rapidly gained adherents among the best and brightest in the academy” (p. 439). Lapses or evasions of logic are quite discernible: thus a straw “Darwinism” is mis-defined (p. 439) as insisting on “undirected natural causes . . . [as] solely responsible for the origin and development of life”—*nota bene* “solely”. Dembski calls it an “observation” (p. 440) that intelligent causes can do what unintelligent ones cannot, when in fact Darwin’s achievement was to demonstrate the opposite. Bad analogy with archaeology and the search for extraterrestrial intelligence (SETI) is used to suggest that several sciences can reliably distinguish intelligent causes from undirected natural ones (p. 441): in point of fact, archaeologists *cannot* reliably distinguish possible Paleolithic tools from naturally occurring stones, and SETI has experienced apparently intelligent signals that turned out to be artefacts. In this chapter, Dembski reveals that intelligent-design theory is no new bottle for old wine, it is merely more new clothes for the emperor. In chapter 26, Dembski defines his crucial term, “information”, in such a way that a purely accidental occurrence qualifies: “the actualization of one possibility to the exclusion of others” (p. 472); and he then postulates a Law of Conservation of Complex Specified Information, brusquely dismissing as mistaken the notion held by (among many others) Nobelist Manfred Eigen, that this Complex Specified Information can arise through natural causes. A technical argument against Dembski’s propositions is given in chapter 27 by Fitelson, Stephens, and Sober.

Michael Behe (chapter 24) also illustrates poor logic and bad analogy. He makes the typical pseudo-scientific transition from “improbable” to “impossible”, and from science “cannot yet explain” to “absolutely unexplainable”, while trying to appear that he does not: “as the number of unexplained, irreducibly complex biological systems increases, our confidence that Darwin’s criterion of failure has been met skyrockets toward the maximum that science allows” (p. 448). Behe does not acknowledge that the vast majority of his peers has no difficulty envisaging that future explanations will emerge for what Behe regards as inexplicable under evolutionary theory.

Kenneth Miller emphasizes a point that intelligent design prefers to ignore,

namely that living systems incorporate innumerable instances of non-functioning bits and pieces whose presence is explicable on historical evolutionary grounds but not in terms of *ab initio* design. The final chapter is by a Christian believer who argues against the attempt to make intelligent-design theory a part of science.

This last set of chapters provides a good, brief overview of the intelligent-design movement.

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**Tales from the Underground: A Natural History of Subterranean Life** by David W. Wolfe. Perseus Books, 2002. 221 pp. \$18.00 (paper). ISBN: 0-73820-679-2.

This book is an engaging and fascinating look at discoveries concerning the nature of underground life. Some of the revelations are profound enough to radically change our intuitive perception of ourselves and our place in the world. The narrative contains just about the right degree of technical content. Except for the last chapter of the book, Wolfe's treatment is balanced and factual. The style is easy, and the book is a little difficult to put down at times. There are two primary messages to be derived from the text. The first is that all life on Earth depends on soil and crustal organisms; the second is that all life on Earth is interconnected and interdependent.

Chapter 1 deals with the origin of life. This is one of the great unanswered questions in science to which we do not have a clue. By 3.5 billion years ago, life was present on Earth, and perhaps earlier, although the evidence for organisms older than 3.5 billion years is highly problematic. The early Earth was an inhospitable environment. The lack of free oxygen in the atmosphere meant there was no ozone layer to absorb ultraviolet radiation. In an offhand letter, Charles Darwin speculated in 1871 that life began in a "warm little pond". Ten years later, Darwin remarked that the problem of explaining life's origin was *ultra vires*, or beyond the powers of science at the present time. The Miller-Urey experiments of 1951 resurrected Darwin's "warm little pond" and created a sensation. Miller, a graduate student of Urey, mixed hydrogen, ammonia, methane, and water in a beaker and passed electric sparks through it. He found that this simple process created amino acids. By the 1980s, it was apparent that the composition of the primitive atmosphere was not like that used in the Miller-Urey experiments. Biologists discovered that the most basic living unit, the cell, was not simple at all, but an incredibly complex machine. This led Fred Hoyle to remark that the expectation that life could be created by swirling chemicals together in a test tube