Mysterious beginnings

by Philip Hefner in the June 2, 1999 issue

> **The Fifth Miracle: The Search for the Origin and Meaning of Life.**
> *By Paul Davies. Simon & Schuster, 304 pp.*

What kind of book is Herman Melville's *Moby Dick*? Is it a book about whaling? In some ways it is—full of empirical information on the subject. Is it a novel about the perennial mystery of evil and its impact on the human spirit? It is that too.

Readers may wonder in a similar way about the kind of book Paul Davies has written. It is marketed as a popular science book, and is written by a distinguished physicist (winner of the 1995 Templeton Prize for Progress in Religion). It surveys the state of scientific knowledge on the question of life's origin. Davies leads the reader on a lively journey through thermodynamics, "the primordial soup," information science, molecular biology, the possibilities of life in the cosmos, hypotheses about life originating in hot volcanic vents on the ocean floor or in our planet's bedrock several miles below the earth's crust, life on Mars, and the possible transmission of life-producing forms between planets, particularly Mars and Earth.

These chapters are a gold mine of information. Davies reminds us that the study of the origin of life is a multidisciplinary undertaking; it involves both experimental and conceptual scientific approaches. Among the sciences that are connected with the origin of life are physics, mathematics, chemistry, cell biology, geophysics, astrophysics and cosmology. The author finds each approach persuasive, in part, but is skeptical of any current theory's claim to provide the final explanation for how life began. No single scientist can be expert in all the necessary sciences. Even though Davies covers a lot of bases, he does leave some untended, and each individual discussion points toward his own thesis. He has a tendency to discount improbabilities that he does not favor, while referring to others as "lucky mutants." He is also quite selective in his documentation, leaving many broad generalizations unsubstantiated.

However, just as *Moby Dick* is about something other than whaling, *The Fifth Miracle* has an important subtext, which presses this claim: the current understanding of

nature's laws is insufficient to understand the origin of life. Religious people have perennially perceived such insufficiencies as occasions to invoke the action of God, and no doubt this book will provide fuel for such efforts.

Davies himself takes another tack, however; he argues that the laws of nature must be augmented. His argument takes two forms. On the one hand, since life is an extraordinary information system, he advances a novel theory of information that proposes to "account for the origin of biological information." This is a theory that speaks of life's "transcendence" of the strictures of chemistry, activities that might "actually create information." Only a specialist can properly evaluate these proposals; they have already been criticized by some of Davies's scientific peers.

Of even greater interest, Davies argues that either the marvel of life is a product of pure chance, and therefore the outcome of an improbable accident, or it is the outcome of laws of nature that are as omnipresent as the laws of physics. If it is the latter (and despite his evenhandedness, he tilts toward this view), then the current scientific conception of nature must be revised at its most fundamental levels.

In calling for such revision, Davies joins other scientific voices that declare Darwinian theories to be insufficient for understanding what science itself is uncovering about the natural world. Referring to ideas suggested by Stephen J. Gould, Davies writes, "If evolution is nothing but a lottery, a drunken walk, there is no expectation whatever that it will advance obligingly towards intelligence and consciousness, still less develop humanoid characteristics."

On the other hand, Davies is not satisfied with the suggestion that life and mind are "written into the laws of nature" (he calls this "biological determinism"), because those laws, as we presently know them, simply do not allow for it. Those laws are predicated on randomness and probability, and neither could produce the "informational macromolecules" that compose life. If life is discovered elsewhere in the universe, we will face the question of whether life is a common property of the universe's evolution. From this question, it is a short distance to questions of meaning, of teleology and perhaps of God.

Whether he intends it or not, Davies's discussion of what is written into the laws of nature picks up themes that are much in vogue these days by proponents of the anthropic principle (the notion that evolution has had intelligent life in mind from the Big Bang onwards). Some of these thinkers go on to speak of the necessity for

theories of "intelligent design" that can account for the irreducible complexity of life forms in the face of the bankruptcy of Darwinian explanations.

Davies does not speak explicitly in such terms, but his response to Gould echoes comments by people like Michael Behe (in *Darwin's Black Box*) who think such complexity defies Darwin's theories. Like those authors, Davies chooses to overlook the critics of Gould who believe that evolution can indeed produce the complexity that Davies finds baffling. He also persistently assumes the anthropocentric bias of the intelligent-design theorists. In this line of thought, the fact that there are billions of galaxies does not warrant the conclusion that the cosmos is fine-tuned to produce them, but the appearance of life forms, including humans, immediately raises the question of whether evolution is rigged in their direction.

For nonscientists (like this reviewer), it is important to know whether we are witnessing the rise of a range of scientific opinions that Darwinian theory is inadequate and whether intelligent-design theories are making a comeback. If such a movement is forming, scientists must discuss these issues with much more care than Davies does here. Simply to exclaim, "Gee whiz, there's life!" will not suffice. We look to scientists of Davies's caliber to say more.

On the other hand, what makes Davies a good read is the darting manner in which he raises these larger questions, skipping over the issues so nimbly that one is not fully certain just where Davies himself stands, nor how deeply he is in fact willing to probe. Strangely, for a scientist, he frequently personifies evolution and implies teleology. He convinces us that science can provide no answers to the questions he raises, only to slip in later the opinion that "emergent laws of complexity offer reasonable hope for a better understanding," and that his "new" law of information "isn't all that new."

Near the end, Davies writes, "I concede that the ideas I have skimmed over in this section are highly conjectural, but the very fact that the problem of biogenesis prompts such speculation underscores just how stubborn a mystery it is." Melville's readers came to know that the mystery of the white whale interested the author far more than the rigging of the whaling ship. All the scientific rigging that Davies includes in his book cannot hide the fact that it is really driven by a mystery that is as deep as Melville's.