

Review: *Mars: The Living Planet*

By Barry E. DiGregorio with Gilbert Levin and Patricia Ann Straat

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DiGregorio Barry, E. with Levin Gilbert and Straat Patricia, Ann. *Mars: The Living Planet*. Berkeley, California: Frog. Ltd., North Atlantic Books, 1997. 365 pp. US \$25.00 ISBN: 1-883319- 58-7.

The August 1997 NASA announcement of the discovery of possible fossilized bacteria in meteorite ALH 84001 of Martian origin grabbed the attention of millions of people across the world. Cover stories of science and general interest newsmagazines, front-page coverage from the worlds leading international newspapers and extensive coverage on the nightly news renewed centuries-old interest in Earth's neighbor, Mars. The speculation of life on Mars stirred debates in scientific and technical circles, as well as raising philosophical and theological questions. However, this was not the first time in the second half of this century that the scientific community has had to struggle with the possible fact that there is life on Mars.

The quest for determining if there is life on Mars has its origins in fundamental research about Earth's environment. Sophisticated scientific experiments were part of the 1976 Viking Mission to Mars. The Viking Lander 1 and Lander 2 were carrying cargo for three biological experiments designed to determine if life forms were found on the surface of Mars, which was the primary objective of the Viking Mission. The Gas Exchange experiment (Gex), the Pyrolytic Release experiment (PR), and the Labeled Release experiment (LR) were selected from the 164 original proposals to develop automated, life-detection experiments to test Martian soil. A fourth test to measure the presence of organic matter only, the Gas-Chromatograph Mass Spectrophotometer (GCMS) test, was onboard the Viking Mission. This chemical test would discount the findings of the biological tests and play a pivotal role in the conclusions of the existence of life on Mars -- conclusions staunchly defended by NASA.

The first two chapters of DiGregorio's book provide a rather interesting history of the study of Mars. The story traces the planet's role from the ancient religions to the source of intensive scientific scrutiny.

Subsequent chapters provide detailed explanations of the scientific research that paved the way for the experiments carried on the Viking Landers. These sections describe not only the scientific research but also the researchers who were engaged in some of the most cutting edge scientific study in microbiology - the study of microbial life in Earth's most extreme, desolate, and hostile environments - searing hot deserts and the frigid ice fields of the Antarctic. This research would pave the way for the development and maturation of a new branch of microbiology examining extremophile bacteria (bacteria that can withstand the extreme environmental conditions of extremely low or extremely high temperatures, excessively salty, or other chemically challenged environments, including cryptoendolithic forms that live inside rocks!).

While a graduate student pursuing a Masters Degree in Zoology at the SUNY College at Brockport, I had the pleasure of attending various lectures and seminars. Several of these events at the University of Rochester and SUNY Brockport were presentations by one of those pioneering microbiologists, Wolf Vladimir Vishniac. Vishniac studied algae, molds, and bacteria. His research areas included the origins of life and exobiology (the study of life beyond the boundaries of Earth). Vishniac's development of an in situ test (done in real time on the spot), the Wolf Trap, would provide important insights for the concurrent tests by Gilbert V. Levin, whose LR design would be on the Viking Landers. Vishniac and University of Rochester graduate assistant, Stanley Mainzer, developed a series of tests to test for the evidence of microbial life in previously thought sterile ice fields of the Antarctic. It was Vishniac's belief that if life could exist and reproduce in the ice-cemented soils of the Antarctic, life could survive in the harsh environments of Mars.

Vishniac's work also describes the rigors and dangers of such research. On a December summer day in a valley between the Antarctic's Mount Baldr and Mount Thor, Vishniac set to explore a new area to place equipment to continue his studies. Tragically, Vishniac slipped and slid off the edge of a one thousand foot cliff in the Asgard Mountains. The second rigor of research at these levels deals with the acceptance and support of research, especially by NASA and NASA-supported scientists. Vishniac's Wolf Trap and life-testing experiments were not included in the Viking Landers. The official reason given by NASA for the exclusion was the "weight" of the equipment needed, and that Vishniac's experiments required water, which NASA scientists had already concluded would not be found on Mars.

DiGregorio outlines in the remainder of his book the mounting evidence that Levin's LR experiments did indeed discover life on Mars and how Levin endured the scorn, humiliation, and wrath of the scientific community. The major thrust of the remainder of *MARS: THE LIVING PLANET* is the decades-long cover up of scientific evidence of life on Mars. DiGregorio describes, in chilling fashion, the role NASA has played in altering, concealing, and distorting data from the Viking Mission. He also describes NASA's attempts to tarnish the careers of research scientists who dare to challenge prevailing NASA thoughts about life on Mars. DiGregorio establishes the premise that NASA has turned its back on settling this incredibly important issue, and then sets forth to answer his own question, "Why?"

MARS: THE LIVING PLANET is, as described on the book's jacket, "a highly readable science story." While some readers might get a little bogged-down in the scientific and technical aspects described in the book's middle chapters, it is this very essence of thoroughness that adds to the compelling story that DiGregorio unfolds. While reading this book, I was compelled to think of three other authors and their subject matter and manner of delivery: Carl Sagan's *CONTACT*, Kurt Vonnegut's concept of *Ice Nine*, and Michael Crichton's microbial thriller, *ANDROMEDA STRAIN*. The difference between these classics and DiGregorio is that Sagan, Vonnegut, and Crichton were writing fiction.

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