

Krafft Ehricke's Extraterrestrial Imperative

by Marsha Freeman

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Apogee Books, 2009,
302pp, \$27.95



From this new book the reader will gain an insight into one of the most creative minds in the history of space exploration.

Krafft Ehricke's contribution to space exploration encompasses details of new, innovative ideas, but also how to think about the importance and value of space exploration for society.

The reader will gain an understanding of the early history of the space pioneers, what they have helped accomplish, and how Ehricke's vision of where we should be going can shape the future.

At this time, when there are questions about the path of the space program for the next decades, Krafft Ehricke has laid out the philosophical framework for why space exploration must be pursued, through his concept of the "Extraterrestrial Imperative," and the fight that he waged, over many years, for a long-range vision for the program.

Readers will find it a very imaginative work, and a very up-lifting story.

Krafft Ehricke's *Extraterrestrial Imperative* is the summation of his work on encouraging the exploration and development of space. The book contains all of his reasons why we need to get off the planet and explore space.



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Mars: Some Optimism at Last!

by Charles E. Hughes

The Life and Death of Mars: The New Mars Synthesis

John Brandenburg, Ph.D.
Kempton, Ill.: Adventures Unlimited Press,
2011
Paperback, 275 pp., \$19.95

This book is well worth reading, because the author, who has a background in planetary science, is an advocate of manned exploration of the Solar System, and Mars in particular.

Brandenburg shows how the space science community has been split, since the Mars probes began in the 1970s, between those who believe that Mars was once Earthlike, and may still contain life, and those who believe that Mars is Moon-like, and never had life. Before the time of unmanned probes of Mars, in the 19th Century, the prevailing outlook concerning Mars was that it possibly harbored advanced life, or at least, vegetation.

The author presents us not only with some history of Mars, but with some startling aspects of conditions on Mars at the present time. As some readers of *21st Century* may already know, Mars shows evidence of emitting methane gas. This is a crucial indicator of life processes occurring right now.

It is revealed in *Life and Death of Mars* that this methane is not a trace, but hundreds of tons per year—a fact that the pessimists would not like to be well known!

Another crucial point: Mars is known as the red planet, not a reference to the planet's political preference, but the fact that its entire surface is covered with various oxides of iron. A stupendous amount of oxygen would be required to reduce the surface iron to this oxide; ergo, oxygen was very prevalent on Mars in its past. As far as we know, oxygen is a result of life processes, such as plants metabolizing carbon dioxide and emitting oxygen as a waste product.

Another indicator: Large deposits of hematite, a form of iron oxide, have been detected by Mars orbiters, and also by the two rovers on the Mars surface. On



Earth, iron oxide is produced in oceans with the aid of bacteria and simple plants. Oceans of water were once on Mars, and water may still be there, most probably frozen. Most of the northern hemisphere of Mars seems to have been ocean basin.

Brandenburg's chapter on meteorites, states that dozens of specimens of meteorites have been found on the glaciers of Antarctica, particularly near the Japanese scientific base. Some of these are believed to have come from Mars, and they show a unique oxygen isotope analysis, in agreement with rock samples examined by the Mars rovers.

The Life and Death of Mars is well illustrated with black and white and color plates. One such plate is labeled "Sunset on Mars, please note blue skies"—a jab at some NASA color photos which show bilious red skies, either a mistake or an effort to discourage colonization.

This is a book, at last, which shows the scientific optimism essential for our future exploration of this planet and beyond. I highly recommend it.

NOW ON KINDLE!

**How We Got to the Moon:
The Story of the
German Space Pioneers**

by Marsha Freeman

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