

in their efforts to rescue pure "German physics" from the contamination of Einstein's "Jewish science".

An unusual feature of *Einstein and the Ether* is a particularly lavish use of quotations, with all quoted material being presented both in English translation (usually Kostro's own) in the main text, and in the original (usually German) in a special section of endnotes. My spot-checking of the German leads me to the opinion that Kostro's translations, while quite free, are true to the intended meaning and even to the style of the original author. With the masses of quoted material it becomes quite impossible to believe that Kostro is misrepresenting the ideas of any of the principals involved.

The quotations also point up one of the book's shortcomings, a genuinely shoddy job of proofreading. Quotes "f13" and "f14" quietly disappear from the endnotes, having apparently fallen off the bottom of page 223 without quite making it to the top of page 224. In the running text there are repeated infelicities of missing, duplicated, or substituted words, with perhaps the most egregious case being the use of "quantitative" in a context where "qualitative" is surely meant. I suspect that Apeiron, the publisher, places excessive reliance on automatic tools rather than human proofreaders.

"Einstein and the Ether" will not resolve any of the current debates in physics, but it does present a readable and edifying excursion through the thoughts and career of one of the dominant figures of modern science.

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The New Paradigm: A Confrontation Between Physics and the Paranormal Phenomena by John O'M Bockris. Normangee, Texas: D&M Enterprises Publisher, 2004. 504 pp. \$34.95 (paper). ISBN 0-97-67444-06.

Is the current scientific paradigm outdated and harmful for the survival of our species? The author, Dr. John O'M Bockris, believes it is, and he tells us why, discusses the impediments for change, and suggests the elements for a New Paradigm. Dr. Bockris is a highly qualified scientist. His principal work has been in the fields of physical electrochemistry, energy, and environmental chemistry. He founded the International Society for Electrochemistry. He was a full professor at the University of Pennsylvania and at Texas A&M University. He has received numerous awards and has published 704 papers and 22 books, yet he has always remained a maverick unafraid to venture into new, controversial and cutting-edge areas like the hydrogen economy and cold fusion. I found the author

to be a man of great intellectual curiosity and breadth. In this book, he reminds me of the child in the fairy tale who says, "The Emperor has no clothes on."

John Bockris contends that science has become the religion of the West. It is like an invisible entity that we really believe in, and that provides us with the "truth." In the Western paradigm scientists are the priests. For anything to be acceptable it must be consistent with Science. In this book "paradigm" refers to "the way we think of the world." For the author's New Paradigm to become a reality, every aspect of modern science, i.e., physics, biology, mathematics, social sciences and medicine, along with philosophy, religion and metaphysics, must be reconsidered. The New Paradigm would lead to a reinterpretation of much in present science, particularly in biology and psychology.

To challenge the existing scientific paradigm you need to show data that are unexplainable by the current theories. But equally important, you need to address the assumption that underlies the current theories and the limitations that they impose upon these theories. The author does both! Models are ways to explain reality; however, all models are incomplete. Too often a model is treated as dogma. Few scientists highlight the weakness in a given model. The author takes the models that underlie present-day beliefs—quantum theory, relativity, cosmology, and evolution and the origin of life—and points to their weakness and presents alternative explanations.

The book starts off with a beautiful summary of the evolution of paradigms over the last 3000 years and how our current scientific paradigm has emerged from this past. The author then dissects the major support structure of today's science. Many people believe that there is certainty in mathematics and science; the author points out that this is not true and that we must live with uncertainty. The pillars of the current scientific paradigm are mathematics, relativity theory, and quantum theory. However, Dr. Bockris goes on to illustrate how modern science is a structure built on a foundation of sand. The author recognizes that mathematics is an indispensable tool in science and forms the bedrock of physics. However, he illustrates that "potholes in the mathematical highway do exist" and "there are parts of our existence which cannot be dealt with or described in mathematical terms." Thus, the bedrock foundation of physics is "at least occasionally, on unsafe sand." The author attempts to illustrate the limitations of the other two pillars of modern physics—relativity and quantum theory—and questions the basic assumptions in these theories. Many of the questions raised require much thought and research for the reader to evaluate. The author points out that an utterly wrong theory can give excellent agreement with experiment; for example, Ptolemy's model had influence for some 1400 years because it worked so well.

Dr. Bockris believes that Darwin's theory of the evolution of species by means of "natural selection" has had a greater effect in forming the paradigm of the 20th century than either quantum theory or relativity. The author challenges the postulate of "random" changes and believes that the presence of so many different forms of life on this planet cannot be explained by the chance oriented theories of biology. The author would like the long-suppressed views

of Lamarck to be reconsidered. Lamarck believed that evolution could occur through the inheritance of acquired characteristics.

To explain the beginning of life on this planet, one must explain the existence of DNA, since the shape of every species on earth is determined by the information contained in the structure of its DNA. The main paradigm of science depends upon chance collisions between simpler constituents. Dr. Bockris states that "the creation of a very long and complex organic molecule (with two intertwined strands) and having within it a series of amino acid arrangements each *in a series of groups of definite order* specific to the organism, is unlikely to occur as a chance happening." He goes on to illustrate that the chance of this occurring by a random selection is equivalent to zero. He therefore concludes that *there has been no credible answer to how the first DNA--and life--got started.*" In addition to a teleological explanation, he suggests we seriously consider the possibility of genetic material on board meteorites and the possibility of alien landings on earth.

Dr. Bockris goes on to point out that there are many phenomena with undoubted supporting facts that we have yet to adequately explain and that seem to be inconsistent with present science. There is no physical model that can tell us why attraction and repulsion occur, yet this is the basis of so much in physics and chemistry. We don't understand the placebo effect, Kirlian electrophotography, homeopathy, the purposeful behavior of insects, the data from QiGong masters and yoga experts or the data on alternative medical techniques, many of which have been unfairly suppressed.

Dr. Bockris then devotes four chapters to paranormal phenomena defined as "phenomena which appear to exist, independent of, but in parallel to, those observable through the five senses." It is his belief that the recognition of these phenomena will make the present paradigm obsolete. He goes on to discuss the extensive research and data on extrasensory perception, psychokinesis, apparitions, hauntings, poltergeists, possession, out-of-the-body experiences, near-death experiences, survival after death, anomalous healing and other "miracles." The author believes that consciousness cannot be created in the brain, because persons appear to be able to remain conscious when the organs of their bodies (including the brain) are inoperative. A more experimentally consistent model of Consciousness would be to regard it as a Primary of Existence. This Dr. Bockris considers to be a key element of the New Paradigm.

Dr. Bockris describes in no uncertain terms what happens to a scientist when he/she challenges the status quo by reporting anomalous facts inconsistent with the existing paradigm. He states that "scientists who give rise to new paradigm-threatening ideas are rejected by their institutions" and ostracized by their colleagues. He goes on to describe his own experiences as a Distinguished Professor at Texas A&M relating to his work both on splitting water photo-electrochemically and on cold fusion. He then gives another example and discusses what happened to Professor Dean Radin at the University of Nevada after he published a convincing book on psychic phenomena.

The author does not hesitate to venture out with his personal recommendation

on what needs to be done to achieve a sustainable world. Many of these futuristic projections can be considered highly controversial—for example, questions regarding free speech, restraints on capitalism, population control, approaches to education and renewable energy options, including a new possibility, zero point energy. Although one may or may not agree with Dr. Bockris, all are topics that society must seriously consider.

The book reflects the author's deep thinking and strength as a synthesizer. He addresses issues in hard science, philosophy, religion, paranormal phenomena and social issues. The style of the book ranges from that of a conventional textbook, to opinionated comments, to people's experiences. The breadth and variety of the topics discussed almost requires this. Thus, one must be open to moving from a chapter with a mathematical discussion of time dilation in relativity theory to a chapter that will contain a description of Dr. Bockris' personal experiences in a haunted house. Sometimes the references for statements challenging key beliefs of the current scientific paradigm occur in publications in non-mainstream sources. Thus, the reader must assess whether the case they make is weak, or whether such challengers are just unable to pass the peer review process of those supporting the current paradigm.

This book is over five hundred pages long and would benefit from being sharpened and tightened. The book also needs a more careful proofreading, especially regarding the references. It has a detailed Table of Contents that is without page numbers. The Index, however, is not as extensive or well done for a book of this breadth and page length. Hopefully, these minor but annoying limitations will be eliminated in the next edition, particularly since I envision this becoming an excellent text for an interdisciplinary exploration of the basis for our belief system and world view.

In summary, the New Paradigm that Dr. Bockris is hypothesizing would lead to a reinterpretation of much in present science. The focus of this book is upon the elements involved in challenging the existing scientific paradigm of the West, the need for such a challenge, and the beneficial effects of a new paradigm upon the future of civilization. Whether the author is right or wrong in the statements supporting his challenges is not the key issue. We have gotten in the habit of no longer questioning the underlying foundations and assumptions of the theories that buttress science. Dr. Bockris has provided us a road map to the available data that challenges the current scientific paradigm. He wants us to ask tough questions and then reflect upon the answers that emerge. It is his belief that this process will lead to a New Paradigm more suitable for the survival of our species.

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