

The Mass-extinction Debates: How Science Works in a Crisis

edited by **William Glen**, published in 1994 by Stanford University Press, ISBN 0-8047-2285-4, 370 pages, \$17.95.

Review by Christopher G. Kendall

This book is a compendium of papers which have their origins in association with a symposium convened in 1991. The meeting was the topic of bi-annual meeting of the International Society of History, Philosophies and Social Studies of Biology of Northwestern University and entitled 'The Mass-extinction Debates. This book is composed of a series of papers which investigate what drives scientific speculation and acceptance of scientific ideas. Two rival hypotheses are considered; one is that the earth was bombarded by one or a swarm of meteorites which triggered mass-extinctions; and the other is that gigantic eruptions have occurred which triggering mass extinctions. The consideration that the editor William Glen pursues is that as scientists we work in particular ways, and that these ways are usually hidden from the view. In fact, we are conservative in our approach to our science but when a geological or scientific crisis arises, the veil is rent and is possible to examine how scientists debate ideas as they are proposed. It is at this time these people can be viewed as they respond to new theories, methods, data and technologies. This is an extremely interesting book from two perspectives. One is that if you are interested in the mass-extinction debate you will find this a full and useful reference. The other perspective is that if you are interested in determining why new ideas don't take root easily, you may discover its cause. The book is well written, is a good read and full of data. It is something that you may actually choose to take to read when you go to bed at night. The book consists of a series of essays on the impact/volcanism and mass-extinction and why the different essayists think the proponents of these theories behaved as they did. The book starts with an introductory paper by William Glen which summarizes the different points of view of this controversy and provides some historical perspectives to it. This introduction is undoubtedly the most important paper of the book. It is brimming with information and if you are interested in mass-extinction it should point you at the article you may need to make a point, pro or con extraterrestrial impact. This is followed by papers by Clemens, McLaren, Sepkoski, Raup, Clube, Shaw, Valen, Hsu, and Briggs which focus on either scientific behavior, mass-extinction or both. The book ends with an epilogue in which the transcriptions of a panel discussion are recorded from the end of the mass-extinction debates.

For me, this is undoubtedly a great source book to this controversy and has fully 48 pages of references. William Glen appears to have had a penchant for summarizing geological arguments from the perspectives of both sides. He was able to trace the evolution of the developing ideas and determine how some scientists were able to change their precepts and go beyond the initial assumption that not only are extinctions caused by major extraterrestrial collisions but that other events have occurred in the earth's history that may have been triggered by extraterrestrial collisions. It is interesting to see is how conservatives are not interested in pushing new ideas and how most of us are these conservatives. Without a protagonist who has some stature within the field of the controversy to support a new idea, this idea is not likely to have much impact. Even then, the protagonists must persistent to get their idea accepted. Essentially it is as Machiavelli said, "There is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of new order of things, because the innovator has for enemies of those who have done well under the old condition, lukewarm defenders in those who may do well under the new condition". This book is for anyone who has interest in scientific ideas and needs to know how to promote their acceptance. It is a fun book to read and though it may seem not to lie within the realm of geophysics, the philosophical concepts could be important to you.