encompass case studies of societies failing to respond adequately to environmental variability.

This volume commends itself to a wide audience of archeologists, geographers, economic and ecological anthropologists, climatologists, and economic historians. With the caveat that it gives little attention to instances of overt adaptive failure, the conceptual tools and potential for historical analogies it presents should be of interest to anyone concerned with the implications of present-day or future environmental changes for human well-being.

BRUCE WINTERHALDER
Department of Anthropology, and Curriculum in Ecology, University of North Carolina, Chapel Hill, NC 27599

Asteroids Updated

Asteroids II. RICHARD P. BINZEL, TOM GEHRELS, and MILDRED SHAPLEY MATTHEWS, Eds. University of Arizona Press, Tucson, 1989. xii, 1258 pp., illus. $50. Space Science Series. Based on a conference, Tucson, AZ, March 1988.

Asteroids II is to asteroids as the *World Book Encyclopedia* is to the world: encyclopedic. As a 1258-page, overwhelmingly comprehensive book, it will serve as the reference work on asteroids for the next decade, as did its predecessor volume, *Asteroids* (University of Arizona Press, 1979), for the past decade.

This book is the 16th in the distinguished space science series published by the University of Arizona Press, under the general editorship of Tom Gehrels. As is characteristic of the series, the book was preceded by a conference on its subject. However, the standards and expectations of the editors, as well as a rigorous editor's pencil, ensured a stylistic unity that makes the book easy to read.

The introductory chapter by Binzel, which provides a good overview of the book's contents, is followed by more than 200 pages on astronomical observational techniques and laboratory experiments, grouped under the optimistic heading Explorations. Then follow almost 400 pages, 17 chapters, on structure and physical properties, 11 chapters on origin and evolution, and 2 chapters on future space-based studies. Useful features include almost 200 pages of tabulated data, the "Asteroids II Database," current as of March 1988, and a glossary of terms and symbols. The chapter on asteroid taxonomy by Tholen and Barucci is also a helpful reference.

Although not described as an encyclopedia, *Asteroids II* shares some of the advantages and disadvantages of one. That is, though it is comprehensive, its contents are not sorted; all chapters have equal weight. For example, the current state of virtually all the observational techniques that have been applied to asteroids is described, including ones that may never yield any new knowledge about asteroids, such as speckle interferometry, or that are no longer yielding new knowledge, such as polarimetry. Sizes, masses, shapes, rotation rates, colors, temperatures, texture, mineralogy, and other such properties are all described. Wading through this wealth of information to find the overall state of knowledge about asteroids is not easy, and providing such an overview is probably not the purpose of the book.

Following the descriptive sections of the book, challenges for the theorists emerge. Despite the tremendous progress in gathering observations of asteroids over the past two decades, major gaps in our knowledge persist. This problem is well stated by George Wetherill, writing on the origin of asteroids:

> The author regards it fortunate that this is only a review chapter, and therefore he is not under obligation to actually report the solution of any of these problems, but only to discuss their present status. We are probably far from understanding what is actually happening during the formation of the asteroids. To confine discussion to what is really known to be true would limit it to the trite. In such circumstances, it is preferable to consider what might conceivably be true, in hope that it may at least prove interesting.

And in fact much interesting theory and speculation can be found in part 4 of *Asteroids II*.

Reading an encyclopedia can be entertaining, as well as enlightening. This voluminous volume conveys the sense of the vigorous scientific community drawn from a variety of disciplines in many different countries. All the cadres in the field are represented, from such patriarchs as Dollfus and Wetherill to many who pushed the field in the 1970s—Chapman, Veverka, Matson, Greenberg, and Bowell—to the next generation full of new ideas and enthusiasm. Some of the chapters are truly outstanding. Gaffey, Bell, and Cruikshank's chapter on reflectance spectroscopy and surface mineralogy is a fine review of this topic, with a wealth of useful figures. Data from IRAS (the Infrared Astronomical Satellite), which constitute a new and important source of information about asteroids, are covered in three short chapters, which give a taste of what is to be learned from that successful space mission. Davis and coauthors take on the difficult challenge of the collisional evolution of the asteroid belt and present a clear exposition of the current inconsistencies between theory and observations.

Several chapters, including that of Gaffey, Bell, and Cruikshank, address the relationship between asteroids and meteorites. The chapter by Lipschutz, Gaffey, and Pellas draws on the breadth of knowledge about meteorites and gives the meteoriticist's perspective of the relationships to asteroids. Bell and coauthors have spun a nice tale in their chapter "Asteroids: the big picture." Such cosmopoetry requires major assumptions; these are clearly stated so the reader will know if the authors' "big picture" prevails or fails.

This book is a must for anyone studying asteroids. It's all here.

LAUREL L. WILKENING
Departments of Geological Sciences and Astronomy, University of Washington, Seattle, WA 98195

Superconducting Organics

Organic Superconductors. T. ISHIGURO and K. YAMAJI. Springer-Verlag, New York, 1990. x, 288 pp., illus. $59.50. Springer Series in Solid-State Sciences 88.

Although superconductivity in a metal (mercury) was first discovered in 1911, it was not until the mid-1950s that a detailed theory of the superconducting mechanism (phonon-mediated electron coupling) of electron pairing (Cooper pairs) was developed, in the form of the well-known BCS (Bardeen-Cooper-Schrieffer) theory. At about the same time, the first organic "synthetic metal" (a material that behaves as a metal even though it contains no metal atoms) was discovered by the Japanese. Then began a steady worldwide search for new organic conducting systems, stimulated by the theory of Little. The search culminated over two decades later (1979) in the discovery, by Bechgaard and Jérome, of the first organic superconductor, which was based on the organic electron-donor molecule TMTSF, tetramethyl(tetraselenafulvalene). In the decade since this discovery, increases in the superconducting transition temperatures (T_c's) have occurred regularly; they have risen from 1 K to 12.5 K along with a similar order-of-magnitude rise (to 125 K) for the ceramic copper-oxide superconductors over the same period.

Many review articles have dealt with organic superconductors, but this is the first book devoted entirely to the physics of these systems. It deals with all known types of organic superconductors—these are based on the molecular species TMTSF, BEDT-TTF or "ET", DMET, MDT-TTF, and $Ni(dmit)_2$—and the authors qualitatively describe the crystal structures associated