important oceanographers—Roger Revelle, Sir Edward Bullard, Carl Hubbs, and John Isaacs, to name a few—but we are not told how they work (or argue) together.

In sum, Scripps has itself a record-book—clear, accurate, and complete. Friends and associates of the Institution will enjoy reading about the people they have worked with, and historians of science will find the book a useful source of information.

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Malaria

Mosquitoes, Malaria and Man. A History of the Hostilities since 1880. GORDON HARRISON. Dutton, New York, 1978. xii, 314 pp., illus. $15.

The statement was made by Napier in the 1930's that malaria probably had killed more of mankind than all other diseases combined, and it is not surprising that the relationship between the disease, its extraordinary vector, and the human victim is intriguing.

October 1980 will mark the centenary of the discovery of the malaria parasite by Laveran in North Africa. Even before Romanowsky's stain (1891) made the study of parasites in the peripheral blood relatively simple, a group of intensely competitive Italian scientists (especially Golgi, Marchiafava, and Celli) led by Grassi correlated the stage of the parasite with clinical symptoms and made significant contributions in distinguishing the morphologic features of its three species. But it was Manson and his disciple Ross who elucidated the role of the mosquito as the vector despite the hostilities of their Italian "colleagues."

The first part of Gordon Harrison's book describes this vitriolic competition in an exciting fashion and includes the historical background prior to Laveran's discovery.

The second major theme of the book relates to the effort to eliminate the vector by mechanical and chemical means, especially in Panama and Italy. Finally, there is consideration of the major effort to eradicate the parasite by the use of DDT on a global basis, with work ending on the proper note of failure.

A reviewer must not write an author's book, but I missed several aspects of the malarial plague that might have been included. Nowhere is there a consideration of the clinical aspects of malaria, with a physician's appreciation of what the disease does to a village and its inhabitants. With the exception of quinine, drugs used in treatment, prevention, and eradication are not mentioned, and drug resistance is disregarded. Quinine is the only drug included in the text or index. The Ethiopian epidemic of 1963 is not mentioned, nor is there any consideration of the extraordinary problem of malaria control and therapy encountered during and since the Vietnam war.

The most recent significant reference in the book is dated 1974; the few dated 1976 and 1977 are inconsequential. The block of major information seems to have terminated about 1971.

There are a few errors. For example, Paul Mueller did not synthesize DDT (this was accomplished by Ziedler in 1874), though he certainly was responsible for appreciating its insecticidal properties.

The book is well written. Some parts will be especially exciting to old malaria "war-horses." It contains a large body of information accurately reported, with considerable anecdotal and scientific material known by few.

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Small Bodies in Space

Cosmic Dust. J. A. M. MCDONNELL, Ed. Wiley-Interscience, New York, 1978. xx, 694 pp., illus. $67.

The study of cosmic dust is very old and very new. Some phenomena, such as comets and shooting stars, are visible to the naked eye and have been observed for millennia. Others, such as the interplanetary dust in the region of Jupiter and beyond, can be seen only with the aid of the most sophisticated space technology and thus have only recently been observed.

Fashions too play a role in the study of cosmic dust. We could now do much more in the study of meteors in the earth's atmosphere than was possible in the 1940's, but we are actually doing less. The emergence or retirement of one scientist (or a change in the pattern of government grants) can change the whole tone of research on such a subject.

This book is in part a response to the uneven state of the field. McDonnell has solicited a series of complementary review articles that effectively span it, with the aim of bringing science students and other scientifically literate persons up to date.

To a remarkable degree he has succeeded. The quality of the papers ranges from pretty good to outstanding. There is generally a commendable willingness to grapple with controversial matters. There is some overlap, but, with few exceptions, no more than is needed to make each chapter reasonably self-contained.

A pedant might have excluded Fred Whipple's opening paper on comets, or insisted that it be confined to the role of comets as the main source of interplanetary dust. Actually the paper, which is a gem, ranges over a wide span of cometary phenomena. It brings out the many new insights obtained from the study of Comet Kohoutek and others, with the use of ultraviolet spectra and other new observational data obtained by space missions. We do not understand comets yet, but we are certainly closer to doing so.

Another first-rate paper is Donald Brownlee's on the collection of extraterrestrial dust in the stratosphere and the early studies of this material. Brownlee and his colleagues appear at last to have made an old dream a reality, for it seems highly probable that true cometary debris now exists in the laboratory. Its study is a major challenge to experimentalists.

McDonnell has contributed a scholarly review of our present state of knowledge of interplanetary dust, particularly the mass distribution, as derived from satellite studies. This is the only recent critical review of this subject of which I am aware. The traditional log-log plot, covering 26 (or more) orders of magnitude, which allows flux discrepancies of a factor of 10^4 to appear minor, may perhaps finally be discarded.

There are as always some flaws. One or two authors have chosen to include in their broad coverage some topics to which their expertise does not quite extend. Occasionally the writer's model of a process becomes a little confused with reality. These lapses are, however, remarkable for their rarity. Less excusable is a standard of proofreading well below that to be expected of a major technical publisher.

This book will be a valuable reference work, and a stimulus to new activities, for quite a few years to come.

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