Books

Astrophysique générale. By J. C. Pecker and E. Schatzman. 756 pp. Masson et Cie, Paris, France, 1959. Clothbound 13 000 fr.; paperbound 12 000 fr. *Reviewed by C. C. Kiess, Georgetown College Observatory.*

WHEN William Herschel, professional musician, turned amateur astronomer, he led the way into the field of physical astronomy, the domain now designated as astrophysics. Although the tempo of progress since his day has fluctuated, yet the net result of nearly twenty decades of research has been the accumulation of a surprisingly large amount of information on the physical properties of the stars and systems of stars that make up the universe. There are many books that classify, analyze, and interpret various aspects of this information. Only a few, however, attempt to organize and systematize it for the use of students; that is, to present it in textbook form.

The book by Pecker and Schatzman does just that. It was written primarily for students of mathematics and physics at the Sorbonne and other French universities, who are preparing for a certificate in astronomy. For non-French students with a similar goal translations of the book should not be long in forthcoming, for the book is outstandingly good. It is comprehensive and thorough in its treatment of each of the five main topics under which the subject matter is presented. The first two, which take up about one-third of the book, discuss the principles of physics on which modern astronomy is built and the observational procedures by which the materials for the structure are acquired. The third and fourth topics take up more than half of the book to describe the properties of individual stars, of the classes to which they belong, and of the systems, or galaxies, of stars that constitute the universe. The fifth section, of about 100 pages, is devoted to the sun and the members of the solar system. Each of the five parts of the book is a self-consistent presentation of the subjects it discusses, and could be issued as a separate book.

The text is clarified with numerous diagrams, halftone illustrations, and tabulations of data, many of them with explanatory legends and captions, frequently omitted in French publications. Two indexes, one of symbols and notations, the other of authors and subjects, are appended to the book. They are extensive and thorough, and by giving directly the page number on which an item is mentioned avoid cross references to other index entries to which a reader would have to turn before he could locate what he is looking for. Although the price of the book appears to be high, its excellence recommends its wide usage. It should be within easy reach of all advanced students of astronomy.

The Transits of Venus: A Study of Eighteenth-Century Science. By Harry Woolf. 258 pp. Princeton U. Press, Princeton, N. J., 1959. $6.00. *Reviewed by Ernst Öpik, University of Maryland.*

THE transits of Venus of 1761 and 1769 offered to the contemporary scientific community a long-awaited opportunity of fixing the scale of the solar system. Expeditions were dispatched all over the world, and scientific cooperation between the nations was realized for the first time in the history of mankind. The importance of the observations of the transits went far beyond the immediate objective and had a deep influence on the subsequent development of modern science and international cultural relations. The numerical outcome was a value for the distance of sun to earth which exceeded by about two percent the currently adopted value.

The author is master of his task. In an epic style he gives an account of the technical problems and results, as well as of the vicissitudes and fate of the actors of the drama, not forgetting the environment and people of near and distant lands. A bibliography numbering 44 entries of manuscript sources and 561 titles of printed sources bears testimony to the completeness of documentation and the amount of work involved.

The monograph makes pleasant reading and is a valuable source in the history of science.

Fast Neutron Physics. Part 1, Techniques. Edited by J. B. Marion and J. L. Fowler. Vol. 4 of Interscience Monographs and Texts in Physics & Astronomy, edited by R. E. Marshak. 983 pp. Interscience Publishers, Inc., New York, 1960. $29.00. *Reviewed by H. H. Barschall, University of Wisconsin.*

WHILE research in fast-neutron physics is carried out by a relatively small number of investigators, an increasing number of those concerned with nuclear energy need to have information about this field. This book is the first volume of a reference work and describes techniques used in the production and detection of monoenergetic neutrons of energies between about 1 kev and 40 Mev. A second volume will treat experiments and theory.

It is difficult to make comments which would be applicable to all twenty-four chapters written by thirty-three authors. One of the most valuable features is the fact that much of the information contained in the book had not been previously published, at least not in readily accessible form. For example, those who use "long counters" can find a discussion of the energy dependence of the sensitivity of this supposedly flat-response counter, and those who use