

BOOK REVIEWS

Reports on Progress in Physics, Vol. 23 (1960). Edited by A. C. Stickland. 629 pp. The Physical Society, London, 1960. *Reviewed by D. Keefe, Lawrence Radiation Laboratory.*

THE ten review articles in this latest volume of *Reports on Progress in Physics* may be divided into three broad categories: solid-state physics, low-energy nuclear physics, and optical spectroscopy. Broad classification of the articles in any volume of these *Reports* is misleading since they are usually devoted to quite special topics and are rarely general or synoptic. Indeed, the high reputation this series enjoys among all classes of physicists derives largely from the basic and, above all, enduring nature of its reviews; in time it has become a very valuable source book upon a wide range of subjects. The format remains characteristically attractive and, as usual, there are a large number of highly legible figures.

O. S. Heavens gives a comprehensive account of the construction and use of thin films in optics and a summary of the underlying electromagnetic theory and its extension to multilayer systems. Recent sophisticated and ingenious developments in the field of interference spectroscopy are discussed by P. Jacquinot; following a description of new types of Fabry-Perot instruments he contrasts the two classes of spectrometers which select different wavelengths, in the one case by the amplitude, in the other by the frequency of their interferometric modulation. There is a brief summary of the many applications of photoelectric detectors in photometry by H. J. J. Braddick. The article on planetary nebulae by M. J. Seaton includes a specialized discussion of the spectroscopical data and the inferences which may be drawn therefrom about the structure of these gas clouds which surround certain hot stars.

There are three long articles on solid-state physics, two theoretical, the other on experimental analysis. The paper by D. F. Johnston is a fundamental and comprehensive account of the uses of group theory in this field; basic theory is developed in the first half, and the second is devoted to a discussion of more special applications, such as time-reversal theorems, many-electron systems, etc. The various methods of calculating band structures in solids are critically reviewed by L. Pincherle. A. E. Pippard describes how different experimental methods are used to elicit the various details of models of the electronic structure of metals.

Following a review of the general properties of orbital electron capture by the nucleus, R. Bouches and P. Depommier present formulae for transition probabilities using the latest results on the β interaction and discuss how the calculated L/K and K/β ratios agree with experiment. For experimentalists, the most readable paper in this volume is that by G. A. Bartholomew,

J. W. Knowles, and G. E. Lee-Whiting on precision gamma-ray spectrometers where the various forms of instruments are described and their relative advantages appraised. The survey of experimental results on ^3He -induced reactions by D. A. Bromley and E. Almqvist is unlikely to have much appeal to other than the specialist.

Individual articles published in this volume are available singly from the publisher at prices depending on their length.

Source Book in Astronomy 1900-1950. Edited by Harlow Shapley. 423 pp. Harvard U. Press, Cambridge, Mass., 1960. \$10.00. *Reviewed by C. C. Kiess, Georgetown College Observatory.*

THE function of a source book is to bring together the documentary material from which lecturers and authors of books may derive their factual information. A debt of gratitude is owed, therefore, to the collector of source material who compiles it in book form for ready reference. Of prime importance in selecting an article for this purpose are its priority in introducing new ideas and its impact on the subsequent development of research.

In Dr. Shapley's compilation the selected articles are grouped into thirteen categories, of which the first deals with the new instrumental aids to observation. Two categories are devoted to the sun and the planetary system; seven to stellar systems, including nebulae and the interstellar medium; and one each to galaxies, cosmogony, and astrophysical progress. Each category is introduced with a brief preface relating the selections to their historical and scientific backgrounds. In making the selections the compiler's judgment evidently was not limited by the requirements of priority and impact; for in several instances, apparently with the purpose of reaching a wider than purely technical circle of readers, the more popular rather than the technical version of an original work was chosen.

More selections might have been added to these categories; and more categories might have been included in the compilation. These criticisms, however, have been met in the compiler's general preface on the grounds that the originals are "too technical", or "too fragmentary", or "too specialized". Their omission abridges the scope of the book, and limits the meaning of the words "source book" in the title. That these original contributions to astronomy exist and were made during the first half of this century may be news to many students and searchers for source material. If a companion volume containing them is not contemplated, the value of the present book would have been enhanced if a bibliography of the omitted work had been