

SHORT REVIEWS

Atlas of the Moon

Astronomy—Astronautics. By Vincent de Callatay, translated by R. G. Lascelles, preface by Sir Bernard Lovell. Pp. 160 (78 illustrations). (London: Macmillan and Co., Ltd.; New York: St. Martin's Press, Inc., 1964.) 70s.

THE French edition of *Atlas of the Moon* was reviewed in *Nature*, 201, 5, 1964, and an excellent and accurate translation has now been made by R. G. Lascelles. The quality of the English production is the same as that of the original and it remains sufficient to recommend this work as a standard reference source for libraries, colleges and schools.

The book is in three parts. Part one deals with fundamental astronomy—nature and motions of the Moon. These chapters will be of particular value to mathematicians and physicists at present engaged in broadening the science and mathematics curricula in schools.

The third part deals with astronautical principles and describes lunar satellites. It is to be hoped that in the years to come scientists will be able to deal with the design problems of satellite instruments, for these also have a bearing on the broader curricula.

The second part, which for many will be the most important, is the Atlas with 22 plates, each of which has one shot in detail from the area under consideration, a schematic diagram of the area, and the area shown against the surface of the disk.

It is to be hoped that this work will be revised from time to time to keep it up to date. J. HEYWOOD

Physical Processes in Stellar Interiors

By D. A. Frank-Kamenetskii. Translated and edited by the Israel Program for Scientific Translations. Pp. xi+337. (London: Oldbourne Press, 1963.) 100s.

PHYSICAL Processes in Stellar Interiors is one of a number of translations of Russian books being published by the Israel Program for Scientific Translations in Jerusalem. The original was published in Moscow in 1959, and is addressed both to the astrophysicist interested in the physical foundations and to the physicist interested in the astrophysical applications. Nearly one half of the book is devoted to a discussion of the basic processes of radiative transfer and nuclear reactions. This part of the book will probably prove to be its most valuable part, providing a summary of material none too easily available elsewhere, and in a form suitable for astrophysical application. The other half of the book includes a discussion of homogeneous and inhomogeneous stellar models, and chapters on stellar pulsation, on stellar evolution, and on the formation of chemical elements in stars. The latter chapters are somewhat brief, and, connected with rapidly developing subjects, are likely to be outdated sooner than the chapters on the basic physics. The translation appears to be well done, and the book is a useful addition in a field where books are few.

R. H. GARSTANG

Unified Theory of Nuclear Models

By Prof. G. E. Brown. Pp. viii+178. (Amsterdam: North-Holland Publishing Company, 1964.) 40s.

THIS small book is in the same tradition as the classics by Fermi and Bethe that appeared more than ten years ago. It covers most of the significant developments in nuclear theory made since its predecessors were written. Like them, its main aim is to give the uninitiated a general view of the subject. By cutting out unnecessary distractions,

such as formal proofs and angular momentum coupling, Brown has produced a snappy account that will surely achieve this aim. However, the reader must not expect the new book to be quite so painless as the earlier ones. For example, the use of the formalism of second quantization is nearly unavoidable in discussing recent theories. Brown accepts this hard fact and begins the book with an introduction to the formalism. This is done from a novel point of view which (Brown suggests) may help learners to grasp the subject more readily. This will not be true of all readers. Some will prefer the more traditional treatment in which the formalism is presented simply as a change to a new representation (that of occupation numbers), which can reproduce a sample range of familiar results. In any event, the reader should not be put off if he does not find Chapter 1 helpful, because the rest of the book makes no further reference to its special point of view.

Brown discusses theories of collective motion, both vibrational and rotational, the pairing force model and the optical model. (There is no mention of Brueckner theory as such.) Considering the vast amount of pruning and condensation involved in producing this concise account of nuclear theory, the level is remarkably even. Almost all significant concepts and theories are mentioned, sometimes only briefly. Perhaps the account of the optical model is relatively less complete in omitting items such as 'doorway states' and the problems of antisymmetry.

A. M. LANE

Handbook of Microwave Measurements

Edited by Prof. Max Sucher and Jerome Fox. Third edition, completely revised and enlarged. Vol. 1: pp. xix+416. Vol. 2: pp. xv+417-804. Vol. 3: pp. xv+805-1145. (Brooklyn: Polytechnic Press of the Polytechnic Institute of Brooklyn. Distributed by Interscience Publishers, a Division of John Wiley and Sons, Inc., New York and London, 1963.) 300s.

THE third edition of the *Handbook of Microwave Measurements* was initiated, and supported in part, by the U.S. Army Electronics Research and Development Agency. The publication attempts to cover, with reasonable thoroughness, the complete field of microwave measurements. This aim is achieved with a fair degree of success.

The various methods of measuring the more fundamental quantities such as frequency, standing-wave ratio, power, etc., are described, together with the techniques for measuring the performance of items of equipment of which transmit-receive cells and parametric amplifiers are typical examples. Measuring techniques are illustrated by block diagrams and any theory required for understanding or carrying out the measurements is given. The necessary equipment is listed, precautions which have to be observed are stated and the accuracy of results is discussed. Each chapter is followed by a list of references.

The scope of the handbook may be gathered from the fact that chapters dealing with multi-mode techniques, the intrinsic properties of ferrites and the extension of measuring techniques to open non-conventional waveguides are included. It was, however, disappointing to find only 16 pages devoted to aerial measurements. Communication engineers will regret that group delay measuring techniques have not been included. The omission of field methods of measuring radiation power densities likely to cause injury to health is unfortunate. The chapter dealing with radio-frequency leakage would have been of greater utility if methods of preventing leakage from test equipment had been described.