

Electrons (+ and -), Protons, Photons, Neutrons, Mesotrons and Cosmic Rays

By Robert Andrews Millikan. Revised edition. Pp. x+642. (Chicago: University of Chicago Press; London: Cambridge University Press, 1947.) 30s. net.

THIS book is a revised and enlarged edition of Prof. Millikan's book "Electrons" which appeared in 1935, and was itself based on his celebrated work "The Electron" (1917), which in its day occupied a unique position in the literature of atomic physics. It is pleasing to note that the early chapters of the new edition still conform closely to the text of "The Electron", for they contain one of the few accurate accounts in English of the early history of the measurement of the atomic charge. The first fifteen chapters are essentially the same in the new edition as in the 1936 edition, except for emendations to the text, the most important of which is to the value of the atomic charge as obtained from observations of falling drops. This now appears as $e=4.807 \times 10^{-10}$ e.s.u. It is also stated that the value $e=4.803 \times 10^{-10}$ e.s.u. obtained from a comparison of X-ray diffraction from a ruled grating and a crystal lattice is the more precise.

The book is essentially a text on modern atomic physics with special emphasis on the discoveries of the various fundamental particles, and of cosmic rays. The new edition differs from its predecessors in giving more recent information in five additional and valuable chapters, which include a brief discussion of the utilization of nuclear energy and its international control.

The material is everywhere clearly and vividly presented with many illustrations, but the use of the first person singular throughout has rendered it difficult for the author always to give the impression of that scientific detachment which is desirable in an introductory text.

L. G. H. HUXLEY

British Sources of Reference and Information

A Guide to Societies, Works of Reference and Libraries. Compiled under the direction of a Committee of ASLIB and edited by Theodore Besterman. (Published for the British Council.) Pp. vii+56. (London: Association of Special Libraries and Information Bureaux, 1947.) 6s.; to ASLIB members, 5s.

THIS useful desk tool could have been much more useful had its scope been limited and the defined objectives kept closely in mind. The accounts of the National Central Library, the copyright libraries and library organisations are admirable and adequate, though the references to the Association of Special Libraries and Information Bureaux itself and to the British Society for International Bibliography are already out of date. The sections covering the university libraries and the public libraries of Britain are also adequate although some expansion would have been welcome, particularly as Colonel Newcome's book and the "Yearbook of Learned Societies" are out of print. It is the 'select' list of special libraries that is most open to criticism. No attempt is made to indicate the basis of selection, but while it may be pardonable to omit St. Deiniol's Gladstone Memorial Library at Hawarden, it is difficult to know what to make of a list which omits, for example, the John Ryland's Library in Manchester or the libraries of the Manchester and of the Newcastle-on-Tyne Literary and Philosophical

Societies and includes a number of bodies without a library at all. If the compilers in future editions discard the list of general works of reference, leaving this field, for example, to L. McColvin's "How to Find Out", and give the space thus saved to the sections indicated, the value of a promising little guide will be considerably enhanced.

R. BRIGHTMAN

Manual of Mathematics and Mechanics

By Prof. Guy Roger Clements and Prof. Levi Thomas Wilson. Second edition. Pp. ix+349. (New York and London: McGraw-Hill Book Co., Inc., 1947.) 3.25 dollars.

THIS manual, first published in 1937, has an unusual title, but, as the authors point out in their preface, the book "contains facts and formulas that are useful in courses of mathematics and mechanics in colleges and engineering schools, arranged and presented in a form that makes them readily available for *rapid work with minimum eye strain*". Here we have the key to the title, for the book is not a text-book in the generally accepted meaning of the term. This is the second edition, and consists of many useful tables and formulæ for reference, covering algebra, trigonometry, calculus, statics, kinetics of a particle, and the dynamics of rigid bodies. In the new edition, the section on spherical trigonometry has been expanded to include the needs of courses in navigation. New matter has also been added to meet the demand of the applications of mathematics to electrical engineering, including radio circuits, while formulæ and tables have been appended to meet special demands of courses in physics. The book is therefore very comprehensive, and excellently printed in clear type so that essential data may be readily selected. This applies especially to the many tables provided.

There is room for a book of this nature, provided it is properly used and does not displace the legitimate text-book. Such a reference book is really most useful to the student who has completed courses in mathematics and mechanics and thus has an intelligent fundamental knowledge of the principles upon which the various results here quoted are based. It would be profoundly dangerous to use a book of tables and formulæ as a text-book. With this reservation, the volume may be confidently recommended as a comprehensive and useful adjunct for mature students.

An Analysis of Volitional Life

By C. Lambek. Translated from the Danish by Agnete Kortsen. Pp. 104. (Copenhagen: Einar Munksgaard; London: Williams and Norgate, Ltd., 1947.) 8 Danish Cr.

ONE of the great difficulties of pure introspective psychology has always been the function of the will. The processes of motivation in the human being are complex and elusive if only consciousness is to be considered. Indeed, the exponents of dynamic psychology have suggested that this is due to the strength of the unconscious, and have propounded the well-known analogy of conscious volition being regarded as comparable to a baby on an elephant, the baby (consciousness) believing that it controls the behaviour, but the elephant (unconscious) in reality going where it wishes.

In this book a Danish psychologist attempts to define and dissect the nature of will. He disregards the possibility of feeling-tones (emotions) being the