

do occur in individuals who are of normal intelligence. They are disorders of conduct and as such are very difficult to deal with; further the law is frequently no help and the individual too cunning to help society, often his greatest enemy.

PHYSICS

Cosmic Rays and Mesotrons

By Dr. H. J. J. Braddick. (Cambridge Physical Tracts.) Pp. x+68. (Cambridge: At the University Press, 1939.) 5s. net.

IN a subject that has been developing as rapidly as that of cosmic rays, the writing of books is a difficult and often not very fruitful task. Anything in the nature of a treatise is as yet impossible, and treatment of special branches may be out of date by the time a book can be prepared and published. But special circumstances have enabled the author of this work to avoid this pitfall. The small size of the Cambridge Physical Tracts, in this case only 65 pages, calls for extreme condensation, but makes possible rapid publication. Revision has been made to June 1939, so the book may be considered as up to date as is humanly possible. The author does not pretend to cover completely the whole subject. The first part is a useful digest of the more significant experimental results, while the second is a review, from the theoretical side, of the passage of cosmic rays through matter, and in particular of the shower phenomenon. One chapter is devoted to the mesotron, and contains the evidence for assuming the existence of a new particle of mass intermediate between the proton and the electron. There is also a short discussion of its theoretical implications.

A selected bibliography will enable the reader to pursue the subject more deeply.

Absolutkolorimetrie

Von Prof. Dr. A. Thiel. (Arbeitsmethoden der modernen Naturwissenschaften.) Pp. xv+215. (Berlin: Walter de Gruyter und Co., 1939.) 10.80 gold marks.

PROF. THIEL is to be congratulated on the clear and comprehensive account which he has given of his work on the application of colorimetry, which has enabled him to elaborate a technique whereby many inorganic and organic substances can be quantitatively determined optically with an accuracy not before achieved by this method of analysis.

The book is divided into two parts, in the first of which is explained the general principles of colorimetry, the technique used and the apparatus employed. The second section gives details of the practical application of Thiel's method of analysis for the quantitative determination of both inorganic substances and of many organic compounds which are of special interest to biologists and medical workers, notably the vitamins and hormones.

The book is a welcome addition to the essential text-books of chemical and biological laboratories.

A Text Book on Light

By Dr. A. W. Barton. Pp. x+426+6 plates. (London, New York and Toronto: Longmans, Green and Co., Ltd., 1939.) 8s.

THERE are several features of interest in this new book on light by the headmaster of King Edward VII School, Sheffield. The method of presentation is historical, but only "in the sense that the discovery of facts and the development of ideas is presented as they occur historically". There is an unusually good account of Newton's experiments and of his deductions from the facts of observation. It is then pointed out how the mass of evidence grows until one theory fails and another has to take its place. The author adopts the convention as to signs which counts distances measured from the pole of a refracting surface in the *same* direction as the initial direction of the light positive, and the diagrams in the book are drawn with the incident light travelling from left to right so as to give agreement with the usual convention of co-ordinate geometry. Special mention must be made of the beautiful photographs supplied for the plates by Mr. J. W. Cottingham of Barnsley Grammar School and Dr. J. W. Mitchell of Repton School.

A Text Book of Applied Hydraulics

By Prof. Herbert Addison. Second edition, revised and enlarged. Pp. xii+435. (London: Chapman and Hall, Ltd., 1938.) 21s. net.

THE issue of a second edition of Prof. Addison's manual is evidence that it has served the purpose which he had in view in writing more especially for "those whose work is not directly connected with hydraulics, but who require to be kept in touch with the main outlines of hydraulic practice".

The new edition makes good a deficiency in the earlier issue in that it contains a useful bibliography of the works to which allusion is made in the text, and there is an additional chapter devoted to propeller and screw pumps. A commendable feature is the number of examples with solutions, numbering 125 and occupying 73 pages. These should be helpful to the teacher, as well as to the student reader who may be working without oral help.

The author is careful to point out that hydraulic formulæ, purporting to be based on identical data, can, and often do, yield different results. This warning is particularly necessary in the case of students and young engineers, who are apt to imagine that a formula is an infallible, as well as a labour-saving, device.

Theoretical Mechanics

A Vectorial Treatment. By Prof. Carl Jenness Coe. Pp. xiii+555. (New York: The Macmillan Company, 1938.) 21s. net.

IN this book on theoretical mechanics, Prof. Coe, of the University of Michigan, has adopted from the outset the methods and notation of vector analysis, which provide a language common to all the branches of mathematical physics. His aim has been to present an introduction to classical mechanics, and through