

Theoretical Physics

Thermodynamics, Electromagnetism, Waves, and Particles. By Prof. F. Woodbridge Constant. (Addison-Wesley Physics Series.) Pp. xiii+364. (Reading, Mass.: Addison-Wesley Publishing Company, Inc.; London: Academic Books, Ltd., 1958.) 64s.

THIS excellent book is the second of two volumes on theoretical physics by Prof. Constant. The first volume treats mechanics and vector analysis and the second, thermodynamics, electromagnetism, waves and particles. Vector methods are used throughout the second volume and frequent references to the earlier volume are made. For these reasons, it is probably best to use both books together. The vector equations in both volumes make use of the operator ∇ only, the shorthand terms grad, div and curl not being used. The main disadvantage of the second volume for students in the honours schools of physics in English universities is that it does not go quite far enough; the level reached approximating to two-thirds of the way along an honours course. On the other hand, students taking a general science degree would find the approach rather sophisticated as such students are not usually brought up to the use of vector algebra. It would appear, therefore, that such an expensive text will not find favour with students at English universities. Nevertheless the book is well planned and the consistent use of vectors seems to make for a logical presentation. It is a book that will probably be used more by teachers of physics than by students of physics in Britain. Text and diagrams are admirably clear and the binding is excellent. Examples are given at the end of every chapter and answers to alternate questions provided.

R. M. TENNENT

High Speed Computing

Methods and Applications. By Dr. S. H. Hollingdale. (Applied Physics Guides.) Pp. xii+244. (London: English Universities Press, Ltd., 1959.) 25s. net.

IN recent years the automatic digital computer has become available to a wide field of potential users, either directly or through the agency of various computing services. It is to these users rather than to the computer engineer that Dr. Hollingdale's book is addressed.

After a brief introduction to the binary system and to the representation of numbers in a computer, the author devotes nearly one-half of the book to the problem of how a computer obeys a programme. This theme is elaborated with special reference to *Edsac* and to *Deuce*, which are examples of a typical single-address machine and a rather less typical multi-address machine. The circuit techniques of digital computing are confined to two short chapters on storage devices and the logical design of computing circuits.

It is the final chapters of this book that many will find of greatest interest. A valuable chapter on the operation of a computing service, written mainly from the author's experience of such a service at the Royal Aircraft Establishment, is followed by four chapters on applications. In addition to general topics, these cover the Monte Carlo method, the control of industrial processes and the machine translation of languages.

This book is thus in the main concerned with the operation of machines as a whole rather than of their component parts, while the mathematics assumed

is not above ordinary level of the General Certificate Examination. This approach provides an ideal introduction to the subject for potential user and non-specialist alike.

E. M. DEELEY

The Chemistry of Vegetable Tannins

A Symposium. (Being the Papers presented at a Symposium held in the University, Cambridge, on April 12th-13th, 1956, under the auspices of the Society of Leather Trades' Chemists.) Pp. 160. (Croydon: Society of Leather Trades' Chemists, 1956.) 30s. net.

IN view of the efforts made in the last decade to bring order to the vast and complex arena of tannin chemistry this volume of collected papers by leading authorities in this branch of organic chemistry is particularly welcome. A general paper on vegetable tannins (T. White) is followed by a detailed account of estimations of components of vegetable tannin extracts (H. G. C. King and T. White). Descriptive papers on gallotannins and ellagitannins (D. Burton and H. G. Munster), polyphenols of tobacco (W. W. Reid) and paper chromatography of polyphenols of tea (E. A. H. Roberts) together with an account of the work on the constitution of chebulinic acid (O. T. Schmidt) and a summary of aromatic biosynthesis leading to tannins (Hathway) complete the first section. The second part of the symposium is devoted to papers on leuco-anthocyanins (T. Swain and E. C. Bate-Smith; W. E. Hillis), catechins of oak and sweet chestnut (W. Meyer) and dihydroflavonols (J. E. Gowan, E. M. Philbin and T. S. Wheeler). The final paper (W. B. Whalley) consists of an account of the stereochemistry of chromans and related compounds. I feel that another instalment of this symposium would now be most welcome, especially in view of the intense activity in the subject.

A. I. SCOTT

Handbook of the Petroleum Industry

Edited by G. Sell and H. A. Dossett. Pp. viii+213. (London: George Newnes, Ltd., 1958.) 25s. net.

AS the editors are at pains to stress, this is not a text-book on petroleum, but rather a guide to those of the younger generation who contemplate a career in this vast industry. It proves of interest, too, to those oil technologists and others so engaged because of the modern overall picture it presents of the manifold ramifications of the industry. Besides the editors, ten specialists have contributed sections, devoted to geology, history, exploration, drilling and production, world oil resources, distribution, refining, oil shales, tar sands, petrol from coal, oil as fuel, petroleum chemicals, uses and future prospects, careers in the industry and the industry surveyed as a whole. Generally, in the larger oil organizations, the recognized inter-related divisions to-day comprise (a) exploration and prospecting, (b) drilling and production, (c) transport and storage, (d) refining and petroleum chemicals, (e) research, (f) marketing and distribution. Thus a candidate for a career in oil has a wide choice for his or her talents, depending largely, apart from educational attainments and bias, whether overseas travel and work in the more remote parts of the world make fundamental appeal. "Oil is where you find it"; this little handbook tells much about this, as it does about what is done, once found, to make it of universal service to mankind.