REVIEWS

Proceedings of the International Conference on the Peaceful Uses of Atomic Energy. Vol. 4. (*Cross-sections Important to Reactor Design.*) (United Nations Publication, New York), 1956. Pp. vii + 357. Price $ 7.50.

One of the most important developments of the International Conference on the Peaceful Uses of Atomic Energy held in Geneva during August 1955 was the declassification by all countries of the fundamental cross-section information on which the reactor design is based. This volume includes technical papers and discussions of the measuring techniques and the results of measurements on all fissile and other reactor construction materials.

The first section is devoted to a review of crystal spectrometers, mechanical velocity selectors, choppers and pulsed accelerators being used in U.K., U.S.A. and U.S.S.R. Special electronic circuits for the measurement of milli-microsecond time intervals have been described. This section also includes a survey of the recent developments in neutron detection techniques, together with the methods employed for the determination of elastic and inelastic scattering cross-sections.

The second and third sections include measurements on the delayed neutrons and the values of cross-sections of fissionable and non-fissionable materials. The method of measuring very small absorption cross-sections by the pile oscillation method is described by Breton (France). The cross-sections for U^{233}, U^{235} and Pu^{239} measured at several laboratories employing different techniques are presented. The world averages of the values of total and fission cross-sections of the above materials have been summed up by Hughes (U.S.A.). An exhaustive survey of the absorption cross-section of fission product poison Xe^{135} by Bernstein (U.S.A.) is included. The value of the fundamental cross-section of boron and gold is also presented. The last section deals with properties of fissionable materials. Results of the measurements of yield of fission neutrons, capture to fission ratio and the theoretical analysis of neutron resonances in fissile materials are presented.

This volume should prove of immense value to all neutron physicists.

V. P. Duggal.

The Cathode Ray Oscilloscope—Circuitry and Practical Applications. By J. Czech. (Philips Technical Library. Available from Philips Electrical Co., Ltd., 7, Justice Chandra Madhab Road, Calcutta-20), 1957. Pp. xii + 340 Price Rs. 29-4-0.

This book is broadly classified into four parts. In the first part, the theory of the design of an oscillograph is discussed in great detail. The various factors which affect the deflection sensitivity of the cathode ray beam and the maximum possible luminous intensity in the fluorescent screens used are described. The construction of the power supplies for the oscillograph and the various time-base generators, starting from the earliest neon saw-tooth generator to the more recent multivibrator and transitron Miller circuits, has been explained in a clear manner. Further, much attention is paid to the construction of deflection amplifiers which have a high and uniform amplification free from phase changes and amplitude distortions within a given frequency range. It would have been highly useful if some methods of obtaining very high amplification had also been described.

The second and third sections include measurements of amplitudes, frequencies and phases with an oscillograph This part also deals with the applications of the oscillograph in A.C. bridge circuits and in the display of hysteresis loops. The book would be of greater value if applications of the following types had been included in this part: Investigations in radar systems; industrial applications such as the study of vibrations in machinery, pathological studies as in electro-cardiograms and electro-encephalograms.

In the third part, the author has presented the results of his measurements which are very important for familiarising one with the uses of the oscilloscope. The applications of the oscillograph in television and in recording the wave-forms of luminous flux, current and voltage of fluorescent lamps and flash bulbs are explained. Two standard methods of determining the opening time of camera shutters and their limits of applicability have also been discussed. The last part deals with the design technique of a simple oscilloscope and a simple time-base expansion unit.

The book is well got up, and the reproduction of a large number of figures and photographs enhances its value. Necessary references are cited, and a good index is given at the end of the book. It is hoped that this book will be a good introduction for those who are new to the technique of oscillography.

E. V. KRISHNAMURTHY.

An Introduction to the Theory of Seismology. Second Edition By K. E. Bullen. (Cambridge University Press.) Pp. xv + 296. Price 35 *sh.*

This well-known volume by one of the important contributors to the development of seismology belongs to that admirable class of text-books which, within a brief compass, gives a wide authoritative coverage on important branches of natural science. A presentation of the elements of the Elasticity Theory and Vibrations is followed by the treatment of the propagation, reflection and refraction of bodily and surface elastic waves, the features of the Raleigh and Love waves and the reflected and refracted seismic waves. The spherically stratified earth models are treated for propagation of seismic rays and the resulting amplitudes of surface motion. The theory of the seismograph for horizontal and vertical motions, and a reference to the special types of Wood-Anderson, Galitzin, and Benioff is explained in relation to the general nature of the basic data in seismology. The different features of the seismograms, the construction of travel time tables for the main P-waves, and other phases and the general working of seismological observatories are briefly described.

Two illuminating chapters describe the properties of the earth's crustal layer, the mantle, and central core as derived from the extensive seismological data. The concluding chapters on earthquake occurrence and other topics include a description of energy, magnitudes, distribution, and after shocks with earthquakes of tectonic and other origins. By way of conclusion, reference is made to an era of expectancy arising from a substantial advance in the subject from studies of nuclear and thermonuclear detonations, but one has to be content with the author's advice of a patient wait for the unveiling of secrecy, in due course.

There is an extensive bibliography at the end of original contributions and classical works on the subject.

S. K. ROY.
S. L. BANERJI.

Tables of Chemical Kinetics, Homogeneous Reactions. (National Bureau of Standards Circular 510, Supplement 1, Issued November 14, 1956.) (Order from the Superintendent of Documents, U.S Government Printing Office, Washington-25, D.C.) Pp. 472. Price $ 3.25.

This volume is the first supplement to *Tables of Chemical Kinetics, Homogeneous Reactions,* issued as NBS Circular 510 in 1951. Circular 510 and Supplement contain a critically evaluated compilation of the available numerical data on rates and rate constants of homogeneous chemical reactions. The emphasis is placed on experimentally ascertained facts, and data depending on interpretations are not generally included. The program is jointly sponsored by the Bureau, the National Research Council, and the Army Office of Ordnance Research.

Supplement I includes new tables, additions to the published tables, and revised sheets cancelling and replacing parts of the present tables The tables are issued in the form of punched loose sheets which can be kept in a suitable loose-leaf binder. Further supplements will be issued as new or revised material warrants it.

Advances in Carbohydrate Chemistry, Vol. 10. (Academic Press Inc., New York, N.Y.), 1955. Pp. xx + 437. Price $ 10.50.

The present volume begins with a chapter on the stereochemistry of cyclic derivatives of carbohydrates During the past decade, striking advances have been made in our knowledge of the stereochemistry of saturated rings, especially of six-membered rings. In this chapter the stereochemistry of six- and five-membered rings and of structures containing fused rings is first discussed in detail and this knowledge is applied to a study of the stabilities and transformations of several types of cyclic derivatives of carbohydrates. This chapter is well worth close study by all organic chemists interested in stereochemical problems. Chromatography has revolutionised sugar chemistry by making possible the analysis of complex mixtures encountered in degradative as well as synthetic studies and the second chapter gives a most useful account of the technique of column chromatography applied in the carbohydrate field The next chapter gives an exhaustive account of glycosylamines, which are of great importance in many biological systems. The Amadori rearrangement which involves the isomerisation of an aldosylamine to

a 1-amino-1-deoxy-2-ketose forms the subject of another chapter. In view of the growing recognition of the usefulness of the Amadori rearrangement in several technical processes, this chapter will be found quite useful. Other chapters are devoted to the chemistry of glycosyl halides and their derivatives, of the methyl ethers of the aldopentoses, of the methyl ethers of D-galactose and of the polysaccharides associated with wood cellulose. The volume concludes with a critical summary of the present knowledge of the chemistry of heparin, the blood anti-coagulant factor. All the chapters are of uniformly high standard, and the volume will be a most useful addition to any chemical library.

T. R. GOVINDACHARI.

An Introduction to Modern Organic Analysis. By Siggia and Stolten. (Interscience Publishers, New York), 1956. Pp. vii + 250. Price $ 4.50.

The organic analyst is often confronted with problems which are inherently difficult, because of the extreme diversity of type and complexity of organic molecules. Most organic analytical problems require the application of diverse procedures, such as separation of pure components from a mixture, elemental analysis, analysis of functional groups and the measurement of physical characteristics. A book of about two hundred and fifty pages as the present volume under review, cannot ordinarily be expected to be of value as a practical manual of organic analysis, considering the vast scope of the subject. The authors have, however, succeeded in their objective of acquainting the reader with all the methods that may be of importance in the solution of organic analytical problems. The book may be said to fulfil this limited purpose quite well.

T. R. GOVINDACHARI.

The Amphibia of Ceylon. By P. Kirtisinghe. (Published by the author, 2, Charles Circus, Colombo-3, Ceylon), 1957. Pp. xiii + 112. Price not given.

The Amphibia rank next only to birds in their appeal to the naturalist in us. Their haunts are easily located, their habits are interesting to watch and they are easily reared as pests. Yet there are but few books wholly devoted to them and of these, those which combine a popular presentation along with scientific and precise descriptions are extremely scarce. Hence we are thankful to Dr. P. Kirtisinghe for giving us such a book.

From the many different accounts of the various forms collected and labelled in different museums and his study of his own personal collections and notes, the author has with infinite care identified each form which has been masquerading under more than one name and recognised the many forms which resemble and have borne the same name. This task requires not only patient and laborious examination of material and types—scientific work of a high order—but sound scholarship which will enable one to be sure of one's decision and differ, if necessary, from the opinion of earlier authorities like Kelaart, Gunther and Boulenger.

The author has listed 33 frogs and two cæceelians, and has classified them into four families. His claim that 14 of them are Ceylonese is supported by the findings of earlier authors as well. The ten sub-species identified as such can be accepted and his identification of the remaining 23 species of anura are accurate. His classification is sound and up-to-date. One would have, however, wished for a fuller discussion or clarification of the reasons why he differs from earlier authors. To illustrate Kirtisinghe considers *R. Eques* as a sub-species of *R. Cruciger* because of the resemblances he lists on page 10. Boulenger who has mentioned these resemblances, however, considers *R. Cruciger* as a species distinct from *R. Eques* because of nearly five features of difference. Again, Boulenger treats *Rhacophorus nasutus* as distinct from *Ixalus nasutus* and records both as Ceylonese. Why the author should accept *Rhacophorus (Philautus) nasutus* and omit the other could have been explained. Further, even Ahl, who has treated the Rhacophoridæ at length and in detail, recognises *Philautus* as a subgenus of *Rhacophorus* and a brief comment why a generic status has been accorded to *Philautus* would have helped students of taxonomy

The descriptions of the species are precise and clear and the notes on field identification packed with information. It is often forgotten by authors that a name alone is of little value but is incidental to a knowledge of the animal itself. But each of the 33 frogs Kirtisinghe has described, stands out clear and distinct in the reader's mind through descriptions and sketches of both the adults and larvæ, in a way which leaves nothing more to be desired. Notes of the occurrence of each form in different parts of the island not only show the extent of the field work accomplished but enhances the value of the book to any resident of Ceylon.

The interest of the reader is excited even at the outset by the statement that it is very probable, that the 14 forms peculiar to Ceylon may have been evolved since the separation of the island from South India. While not questioning the value of such a statement in making the book readable, one who is painfully aware that our only account of the amphibia of India (namely, Boulenger's), is over 70 years old, would expect that intensive investigation of the amphibian fauna of especially South India (including Pondicherry, and native states), may yet reveal several which are at present recorded from Ceylon. The author's admission that *Bufo stomaticus* may be a recent immigrant implies the possibility of transportation and raises a doubt whether all the 14 forms now recorded only from Ceylon are autochthonous or recently evolved as claimed by the author. Taxonomy appears to be a very unreliable basis for such a generation.

On the whole, the author must be congratulated on his achievement. The book has an excellent get-up and the numerous illustrations enhance its value. Every college, university and public library should have this book on its shelves, both for the wealth of information between its covers, as well as to serve as a model of a popular treatment of a very technical subject.

C. P. GNANAMUTHU.

Books Received

High Speed Diesel Engines. By Arthur W. Judge. (Chapman & Hall), 1957. Pp. vii + 578. Price 65 *sh.*

Pharmacognacy of Ayurvedic Drugs. By K. Narayana Aiyar, A. N. Namboodiri and M Kolammal. (The Central Research Institute, University of Travancore, Trivandrum), 1957. Pp. 109. Price not given.

Relaxation Methods in Theoretical Physics—The Oxford Engineering Series, Vol. II. By R. V. Southwell. (Copies available from: Oxford University Press, Mount Road, Madras-2), 1956. Pp. vi + 250-522. Price Rs. 44.

Microphotography—Photography and Extreme Resolution. By G. W. W. Stevens. (Chapman & Hall), 1957. Pp. xvi + 326. Price 50 *sh.*

Fusion Methods in Chemical Microscopy. By Walter C. McCrone Jr. (Interscience Pub.), 1957. Pp. vii + 307. Price $ 6.75.

Text-Book of Polymer Chemistry. By Fred W. Billmeyer, Jr. (Interscience Pub.), 1957. Pp viii + 518. Price $ 10.50.

THE FIRST ONE HUNDRED AND FIFTY YEARS*

RANKING among the oldest publishing houses in the United States, the House of Wiley had its beginnings in a bookstore established at No. 6, Reade Street, New York City. The City Directory for the year 1807 lists Charles Wiley as the establishment's proprietor, and, in the absence of conclusive evidence proving an earlier founding, the business is considered to date from that year.

Charles Wiley, although initially a bookseller and printer, branched out into the publishing field prior to 1814 and, with various partners, printed the work of some of the best American and English authors of the period. Among these were James Fenimore Cooper and Fitz-Greene Halleck Cooper's "The Spy", now considered one of the first great American novels, was published by Wiley and Halsted in 1821, at No. 3. Wall Street. Some of Cooper's later novels bore the Wiley imprint alone.

Charles Wiley died in 1828 and was succeeded by his son, John, whose name the Company now bears. Under John Wiley's supervision the business progressed through a number of changes, although his publishing interest continued to centre on books of a general literary nature. After the Civil War, Charles and William, two sons of John Wiley, joined the firm, which in 1875 became known as John Wiley & Sons. To the younger of these, Major William H. Wiley, a Civil War veteran and civil engineering graduate, belongs much of the credit for carrying the Wiley name to the front rank in technical publishing at such an early date.

It was during the 70's and 80's that the firm began publication of the condensed engineering pocket works, which, over the years, have evolved into the tremendously comprehensive and useful handbooks of today.

By the time John Wiley & Sons was incorporated in 1904, with Major Wiley as the Corporation's first President, the publication of general literature had been virtually abandoned. In the years intervening to the present, as the Wiley imprint became more and more associated with works of a scientific and educational nature, extensive coverage has been achieved in all major branches of engineering, the pure, applied, and social sciences, and in many collateral fields.

* John Wiley and Sons, Inc., have brought out a *tasteful volume with the above title, tracing the history* of the firm from 1807 to 1957.