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 NEW BOOKS
 

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**Grundlagen der Quantenmechanik.** (Fundamentals of Quantum Mechanics.) By DR. H. DÄNZER, Assistant at the Physics Institute of the University of Frankfurt A.M. Verlag von Theodor Steinkopff, Residenzstrasse 32, Dresden-Blasewitz, Germany, 1935. xi + 163 pp. 11 figs. 15.5 × 22.5 cm. Price, RM. 12; bound, RM. 13.

The author aims to present compactly and logically the fundamental content of quantum-mechanical theory, in the forms which may now be regarded as standard. Emphasis is placed upon clear exposition of principles, rather than exhaustive rigor or completeness, so that the book may be useful to those whose specialties lie in other directions, but who require a working knowledge of the subject. The statistical interpretation of wave-mechanics is stressed, and frequent analogies from optics are adduced. The purpose of the book does not include applications to concrete problems, which are discussed only sparingly and by way of illustration.

In the reviewer's opinion, the author has succeeded in accomplishing his aim.

A. S. COOLIDGE

**Molekülspektren und ihre Anwendung auf Chemische Probleme. II. Text.** (Molecular Spectra and Their Application to Chemical Problems.) By H. SPONER. Verlag von Julius Springer, Linkstrasse 23-24, Berlin W 9, Germany, 1936. xii + 506 pp. 87 figs. 14.5 × 22 cm. Price, RM. 36; bound, RM. 37.80.

The first volume of this work has already been reviewed in *THIS JOURNAL*, 58, 861 (1936). The present and final volume contains the theory of molecular spectra with many excursions into allied fields and also additional tables of molecular constants, bringing these up to date.

After a brief introduction into atomic spectra and the structure of atoms, the author takes up the theory of quantization of diatomic molecules, with many examples taken from analyzed spectra. Chapters on polyatomic molecules and on the determination from spectroscopic data of such chemically important molecular properties as internuclear distances, heats of dissociation, heat capacities, entropies, etc., follow. Some seventy pages are devoted to the problems of chemical binding and valence, the theories of the homopolar and the ionic bond being discussed in detail. The next chapter deals with different types of inelastic collisions, while the last sixty pages contain remarks on a variety of problems of interest to many chemists, such as photochemical processes, chemiluminescence, etc.

The discussion is carried on in a rather elementary manner and, considering the subject, very few equations will be found in the book. Results and conclusions of various theories are stated without attempts to derive them, but with extensive explanations and illustrations which are well chosen and give the reader some idea of the present status of the theoretical development in this field.

Perhaps if the subject matter were more restricted and instead more details were given occasionally, the book would have been even more useful. It can be recommended, however, as a reference source and should thus find extended use in conjunction with the first volume containing numerical data.

G. B. KISTIAKOWSKY

**Über katalytische Verursachung im biologischen Geschehen.** (On Catalytic Causation in Biological Processes.) By ALWIN MITTASCH. Verlag von Julius Springer, Linkstrasse 23-24, Berlin W 9, Germany, 1935. x + 126 pp. 14.5 × 22 cm. Price, RM. 5.70.

This small book represents the reflections of a distinguished chemist, long deeply concerned with catalysis and its industrial applications, on catalytic phenomena in biology. After a brief but penetrating discussion of catalysts in general and of enzymes, the author turns his attention to hormones, vitamins, genes and other constituents of the living organism, and inquires how far their basis of operation may also be catalytic. Finally there is an extensive discussion of the possible relation of such processes to the higher integration of the living organism.

The book bears witness, not only to the author's deep knowledge of his own field, but to a wide acquaintance with many aspects of current philosophical thought. Many of the problems raised lie far beyond the present scope of experimental science, but others have much more immediate application. In the author's words, the book is "a question to the biologist"; it avoids dogmatic pronouncements, and its aim is to stimulate inquiry into regions still unexplored.

JOHN T. EDSALL

**Collected Scientific Papers of Sir William Bate Hardy.**

Published under the Auspices of the Colloid Committee of the Faraday Society. Cambridge University Press, The Macmillan Company, 60 Fifth Avenue, New York, N. Y., 1936. 922 pp. 18 × 26 cm. Price, \$18.00.

This collection is of value for at least two reasons; it makes readily available the many scattered contributions of an unusually stimulating and suggestive investigator; also, by virtue of the chronological arrangement that has been adopted, it discloses the genetic relationships among Hardy's researches and the progressive development of his ideas.

Hardy's initial researches were concerned chiefly with problems of morphology, particularly the morphology of blood corpuscles and other wandering cells in both vertebrate and invertebrate organisms. These researches led him naturally, at about the beginning of the present century, to the study of colloidal solutions and colloidal phenomena in general, and it was in this field that the largest number and perhaps the most important of his investigations were conducted. Although some of these dealt with

such inanimate phenomena as adhesion and lubrication, most of them were fundamentally concerned with the physical and chemical processes taking place in the living cell.

Interspersed among the accounts of his experimental investigations and his theoretical speculations are a number of noteworthy summaries and recapitulations, some of them constituting important occasional lectures, namely, the Croonian, the Guthrie and the Bakerian Lectures.

The collection as a whole and these special lectures in particular afford a veritable mine of information, entertainment and stimulation.

ARTHUR B. LAMB

**Poggendorffs biographisch-literarisches Handwörterbuch** für Mathematik, Astronomie, Physik mit Geophysik, Chemie, Kristallographie und verwandte Wissensgebiete. (**Poggendorff's Biographical and Bibliographic Encyclopedia** for Mathematics, Astronomy, Physics, Geophysics, Chemistry, Crystallography and Related Sciences.) Vol. VI, 1923-1931, Part I. A-E. Edited by Dr. HANS STOBBE. Verlag Chemie, G. m. b. H., Corneliusstrasse 3, Berlin W 35, Germany, 1936. lxxii + 696 pp. 16 × 25.5 cm. Price, RM. 63.75.

This is the first part of the sixth Volume of this very useful and unique Encyclopedia. The first Volume appeared in 1863 and the following Volumes, II to V, contain the scientific biographies of workers in the field of the exact sciences throughout the whole world during the intervening period.

Volume VI when completed will cover the year 1923 to 1931 and will give biographical data for some eight thousand scientists, together with information as to the books, pamphlets and articles which they have published. The second part is already in print and will be published during the current year; Parts III and IV are to be published in the summer of 1937 and the spring of 1938, respectively.

This Encyclopedia is not only of great current utility but it will also be of permanent value as well, and the scientific community certainly owes a debt of gratitude to the several German Academies of Science who are sponsoring its publication. However, it is unfortunate that in this as in similar monumental bibliographic undertakings, more prompt publication cannot be attained. A delay of five years, such as obtains in this instalment, detracts perceptibly from its current usefulness.

ARTHUR B. LAMB

**Annual Tables of Constants (A.T.C.) and Numerical Data**, Chemical, Physical, Biological and Technological. Published under the Patronage of the International Union of Chemistry. Volume X (1930), Part II. McGraw-Hill Book Co., Inc., 330 West 42d St., New York, N. Y., 1936. Two parts, about 1800 pages. Price (for subscribers), cloth, \$20.00.

This instalment completes Volume X and with it the Second Series of the Tables, except for the Index to Volumes VI-X, inclusive, which is soon to appear.

As the years elapse since the appearance of the International Critical Tables, the continued publication of these

Annual Tables becomes even more essential. It is devoutly to be hoped that the gallant efforts of Dr. Maric and the Editors of the Annual Tables receive that international support which is absolutely necessary for their existence.

It should be pointed out that all the texts in the Tables are given in both English and French; also that the full Tables of Contents in each Volume make it easy to locate the information desired.

ARTHUR B. LAMB

**Gmelins Handbuch der anorganischen Chemie.** (Gmelin's Handbook of Inorganic Chemistry.) Edited by R. J. MEYER. Eighth edition. System-Number 55, Uranium and its Isotopes, with an Appendix on Transurania. Issued by the Deutsche Chemische Gesellschaft. Verlag Chemie, G. m. b. H., Corneliusstrasse 3, Berlin W 35, Germany, 1936. 278 pp. 17 × 25 cm. Price, RM. 34.50.

The publication of this instalment of the Gmelin Handbook is opportune particularly in view of the current interest in the radioactive phenomena connected with uranium; for instance, the new radioactive elements recently discovered by Fermi during the bombardment of uranyl salts with neutrons. Although the nature of these truly synthetic elements is still somewhat obscure, it is certain that they are intimately related to uranium, the element of highest atomic number and atomic weight known to occur in Nature. For this reason it is appropriate that the information relative to these elements should be presented in an Appendix to this volume under the caption "Transurania." It is also appropriate and a striking coincidence that this name should be so similar to that assigned to the planet Neptune after its existence had been deduced but before it had actually been discovered.

The literature on uranium has been covered to the end of 1935 and with this instalment the volume on molybdenum, tungsten and uranium is now completed.

ARTHUR B. LAMB

**Mikroskopische Methoden in der Mikrochemie.** (Microscopic Methods in Microchemistry.) By Prof. Dr. LUDWIG KOFLER and Dr. ADELHEID KOFLER, with the collaboration of Prof. Dr. ADOLF MAYRHOFER. Emil Haim and Co., Maria-Theresien-Strasse 10, Vienna I, Austria, 1936. vi + 134 pp. 21 figs. + 12 plates. 17.5 × 25 cm. Price, RM. 9; bound, RM. 10.80.

One of a series of monographs in the general field of microchemistry by Austrian writers, this book is intended to acquaint chemists with the extraordinary advantages of applying the microscope to everyday work. It is illustrated by examples of the isolation and identification of a number of organic compounds of pharmacological interest. The first two sections, by L. K., describe the use of a hot stage microscope in the determination of melting points, and in the purification by sublimation, of small amounts of material. The third section, by A. K., deals with the more formidable technique of the measurement of optical constants of crystals by the immersion method; it is addressed to readers without special training in crystallogra-

phy. The concluding brief section by A. M. treats liquids used with the immersion method.

The subject with which this book is concerned deserves consideration by the generality of chemists such as it has not heretofore received here or abroad. In the examination of any sort of transparent solid material the microscope should be as a matter of practice the first, not the last, resort of the chemist. The limitations of the methods are discussed by the present writers; in section 3 they are overstressed. In the same section reference to some useful American work is absent. An obvious error occurs in the description of potassium nitrate on p. 114.

C. D. WEST

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### BOOKS RECEIVED

May 15, 1936–June 15, 1936

- A. BÖMER, A. JUCKENACK AND J. TILLMANS, Editors. "Handbuch der Lebensmittelchemie. Vol. III. Tierische Lebensmittel." Verlag von Julius Springer, Linkstrasse 23–24, Berlin W 9, Germany. 1049 pp. RM. 129; bound, RM. 132.60.
- H. J. BUNKER. "A Review of the Physiology and Biochemistry of the Sulphur Bacteria." Chemistry Research, Special Report No. 3. H. M. Stationery Office, Adastral House, Kingsway, London W. C. 2, England. 48 pp. 9d., net.
- ROBIN CHARLES BURRELL. "Organic Chemistry." McGraw-Hill Book Company, Inc., 330 West 42d St., New York, N. Y. 331 pp. \$2.75.
- K. R. BUTLIN. "The Biochemical Activities of the Acetic Acid Bacteria." Chemistry Research Special Report No. 2. H. M. Stationery Office, Adastral House, Kingsway, London W. C. 2, England. 47 pp. 1s./0d., net.
- N. I. CHERNOSCHOUKOV, Editor. "Transactions of the First All-Union Scientific-Technological Conference on Production and Use of Lubricating Oils." (In Russian.) Central Publishing Office for Petroleum Literature, ONTI, NKTL, Leningrad, U. S. S. R. 576 pp.
- CARL J. ENGELDER. "Elementary Quantitative Analysis." Second edition. John Wiley and Sons, Inc., 440 Fourth Ave., New York, N. Y. 270 pp. \$2.75.
- E. CH. FRITZMAN. "Nature of Water. Heavy Water." (In Russian.) ONTI—Chimtheoret, Leningrad, U. S. S. R. 314 pp.
- GERHARD HERZBERG. "Atomspektren und Atomstruktur. Eine Einführung für Chemiker, Physiker und Physikochemiker." Verlag von Theodor Steinkopff, Residenzstrasse, 32, Dresden-Blasewitz, Germany. 188 pp. RM. 13; bound, RM. 14.
- K. IMHOFF. "Taschenbuch der Stadtentwässerung." Seventh edition. Verlag von R. Oldenbourg, Schliessfach 31, München, 1 Germany, 195 pp. RM. 5.40.
- ALEXANDER LOWY AND BENJAMIN HARROW. "An Introduction to Organic Chemistry." Fourth edition. John Wiley and Sons, Inc., 440 Fourth Ave., New York, N. Y. 429 pp. \$3.00.
- M. C. NEUBERGER. "Die Allotropie der chemischen Elemente und die Ergebnisse der Röntgenographie." Verlag von Ferdinand Enke, Hasenbergsteige 3, Stuttgart W, Germany. 106 pp. RM. 9.30.
- CARL OPPENHEIMER. "Die Fermente und ihre Wirkungen." Supplement. Lieferung 4 (Band I: Spezieller Teil; Haupt-Teil IX–XII). W. Jung Verlag, Den Haag, Holland. 160 pp. \$6.80.
- WILLIAM F. PETERSEN AND MARGARET E. MILLIKEN. "The Patient and the Weather. Vol. I, Part 2. Autonomic Integration." Lithoprinted by Edwards Brothers, Inc., Ann Arbor, Mich. 781 pp. \$9.00.
- E. JOHN RUSSELL. "Boden und Pflanze." Second edition, edited by K. W. Müller. Verlag von Theodor Steinkopff, Residenzstrasse 32, Dresden-Blasewitz, Germany. 446 pp. RM. 30; bound, RM. 32.
- T. J. WEBB. "Elementary Principles in Physical Chemistry." D. Appleton-Century Company, Inc., 35 West 32d St., New York, N. Y. 344 pp. \$4.00.
- "The New Hilger Wave Length Spectrometer for Visible, Ultra-violet and Infra-red." Adam Hilger, Ltd., 98 Kings Road, Camden Road, London N. W. 1, England. 54 pp.
- "Official Directory of the British Chemical Plant Manufacturers' Association." 1936. Distributed by the Association, 166 Piccadilly, London W 1, England. 140 pp.