

NEW BOOKS

Radioelements and Isotopes: Chemical Forces and Optical Properties of Substances.

By KASIMIR FAJANS, University of Munich. The George Fisher Baker Non-Resident Lectureship in Chemistry at Cornell University. The McGraw-Hill Book Company, Inc., 370 Seventh Ave., New York, 1931. x + 125 pp. Illustrated. 15.5 × 23.5 cm. Price, \$2.50.

This volume, for the most part, contains the subject-matter of Professor Fajans' lectures given in the spring of 1930 at Cornell University as George Fisher Baker Non-Resident Lecturer. The systematic discussions of Radioactivity and of Isotopes given in these lectures have been omitted as they are covered fully in other publications of the author.

Part I of this volume is devoted to The Origin of the Actinium Series and the Stability of Isotopes; Part II to Chemical Forces and Optical Properties. Part II is much the longer and is particularly useful as a presentation in brief and convenient form of the important researches of Professor Fajans upon these subjects.

Both in content and in physical appearance this volume maintains the high standard of excellence characteristic of the earlier volumes of this series.

ARTHUR B. LAMB

Atlas der physikalischen und anorganischen Chemie. Die Eigenschaften der Elemente und ihrer Verbindungen in graphischer Darstellung auf 29 Tafeln. (Atlas of Physical and Inorganic Chemistry. The Properties of the Elements and their Compounds Graphically Illustrated on 29 Charts.) By PROF. DR. A. VON ANTROPOFF and DR. M. VON STACKELBERG, University of Bonn. Verlag Chemie, G. m. b. H., Corneliusstrasse 3, Berlin W 10, Germany, 1929. 64 pp. 19 figs. 29 × 36 cm. Price, RM. 40, cardboard; RM. 42, cloth binding.

This Atlas consists of a collection of 29 charts, each 11 by 14 inches and provided with a key printed in English, German and Spanish. These charts cover the important physical and chemical properties and the distribution of the elements. An explanatory text in German of 64 pages containing many tables and diagrams accompanies the charts.

This Atlas should be very useful to the teacher in presenting vividly the numerical data characteristic of the chemical elements, and to the professional chemist as a means of quick and ready reference.

ARTHUR B. LAMB

Introduction à l'étude de la mécanique ondulatoire. (An Introduction to the Study of Wave Mechanics.) By LOUIS DE BROGLIE, Maître de Conférences à la Sorbonne. Librairie Scientifique Hermann et Cie., 6, Rue de la Sorbonne, Paris, France, 1930. xvi + 292 pp. Illustrated. 16 × 25 cm. Price, unbound, 85 fr.; bound, 95 fr.

Wave mechanics from its beginning has been a many-sided science, and the side to which de Broglie has contributed, and which he writes about,

is the connection of wave mechanics with classical mechanics. For that aspect of the subject, the present book gives a very complete and readable discussion. On the other hand, the specific problems of atomic and molecular dynamics for which wave mechanics has proved so valuable are treated to only a very slight extent by de Broglie. For this reason, the book is less likely to appeal to a chemist or experimental physicist than many other works which have appeared. On the other hand, the reader interested in analytical mechanics will enjoy the clear account of the relation of wave mechanics to the methods of Lagrange, Hamilton and Jacobi, a relation which is made the basis of the author's treatment. The discussions of wave packets, of the uncertainty principle, and of various other branches of the subject are valuable. The book is, however, mathematical throughout, and could hardly be read with profit except by one who already had some familiarity with the subject.

JOHN C. SLATER

Handbook of Chemical Microscopy. Vol. II. Chemical Methods and Inorganic Qualitative Analysis. By ÉMILE MONNIN CHAMOT, B.S., Ph.D., Professor of Chemical Microscopy and Sanitary Chemistry, Cornell University, and CLYDE WALTER MASON, A.B., Ph.D., Assistant Professor of Chemical Microscopy, Cornell University. John Wiley and Sons, Inc., 440 Fourth Ave., New York, 1931. ix + 411 pp. Illustrated. 15 × 23.5 cm. Price, \$4.50.

In Volume II, "The inclusive field of 'microchemistry,' which comprises all chemical procedures dealing with small amounts of material, is discussed only as regards those portions of it which involve microscopical qualitative reactions." After two introductory chapters which give clear and detailed descriptions of the necessary technique, the specific tests used in the detection of the various elements are discussed, under the groups of the periodic table. In addition to the detailed description of the procedure by which the various crystalline products are obtained, and to the verbal description of the products themselves, excellent photomicrographs of the characteristic crystals are given. The reviewer regrets that the optical constants of these various characteristic crystals are not given; the need of such constants is often felt, and they may be of positive aid in the identification of poorly formed crystals. A curious slip was found on page 156: in the thallium alums it is the alkali, not the aluminum, that is replaced by thallium, hence it is incorrect to state that "Its analogy to aluminum is shown by its property of forming alums." The discussion of the detection of anions is especially good. The "Handbook of Chemical Microscopy" will be found an indispensable aid to those who use the microscope in chemical problems; and the clear exposition of the technique given therein should greatly increase the number of those who make use of these rapid and satisfying methods.

GEORGE W. MOREY

Berl-Lunge Taschenbuch für die anorganisch-chemische Grossindustrie. (*Berl-Lunge Handbook of Inorganic Industrial Chemistry.*) Edited by E. BERL, Ph.D., Professor of Industrial and Electrochemistry at the Technical High School of Darmstadt. Seventh, revised, edition. Second part, Nomograms. Verlag von Julius Springer, Linkstrasse 23-24, Berlin W 9, Germany, 1930. 31 tables, with legends and descriptions. 23.5 × 31 cm. Price, RM. 37.50.

This publication consists of thirty-one unbound nomographic charts which are designed to be useful in the control laboratories of manufacturers or users of inorganic heavy chemicals. The charts are well printed and will doubtless permit interpolations and interpretations of the observed data with greater speed and less danger of blunders than by the use of tables or computations.

GRINNELL JONES

The Terpenes. Vol. I. The Simpler Acyclic and Monocyclic Terpenes and their Derivatives. By J. L. SIMONSEN, D.Sc., F. I. C., Professor of Chemistry, University College of North Wales. The Macmillan Co., 60 Fifth Ave., New York, 1931. xv + 420 pp. 14 × 22.5 cm.

The author states in his preface that, while the constituents of the various essential oils have been adequately dealt with in the English language by Parry, "The Chemistry of the Essential Oils," and by Finnemore, "Essential Oils," with the exception of Brooks' monograph, "The Non-Benzenoid Hydrocarbons," which covers a somewhat wider field, no book is available which deals with the chemistry of the terpenes.

In order to supply this deficiency the author has written this work.

Special attention has been directed to the methods used in the determination of constitution and synthesis.

The author has traced the development of the views on the constitution of the various terpenes in a clear and pleasing manner, and with adequate references.

Where further research is desirable he has so indicated, and his comments are valuable and to the point and show a broad knowledge of his subject. Structural formulas have not been spared, and the student of terpene chemistry will find no difficulty in following the trend of thought.

The work is well written and will be of value to those interested in this fascinating field of organic chemistry.

Very few errors in printing were noted.

E. K. NELSON

The Carbon Compounds. A Textbook of Organic Chemistry. By C. W. PORTER, Professor of Chemistry in the University of California. Second revised edition. Ginn and Company, 15 Ashburton Place, Boston, Massachusetts, 1931. ix + 469 pp. Illustrated. 15.5 × 24 cm. Price, \$4.00.

The latest edition of this well-known text is not only revised but is, to a very large extent, rearranged and rewritten. In almost all cases the changes have been in the direction of simplification and clarification.

"In this edition the structure of sucrose has been revised on the basis of the researches of Haworth and his associates. Thyroxine and two other amino acids have been added to the list of the hydrolysis products of proteins. The discussion of Robertson's theory of protein salt formation has been replaced by a statement setting forth the views of Osborne, Cohn, Vickery and Schmidt. Dissociation constants of acids and bases have been added."

In addition to these major changes and additions all the tables of constants have been revised according to the latest data. The two indexes have been combined in one. The Questions and Problems have been almost entirely changed and have been somewhat expanded.

Very few adverse criticisms can be made. The carbon tetrahedron on page 15 is wrongly constructed. The explanation of the Geneva system of naming substances with complex side chains remains unsatisfactory. Occasional loose statements creep in, like that on page 92 regarding the hydrolysis of cyanides.

The author has taken full advantage of the opportunity to improve an already excellent text.

FRANK C. WHITMORE

Jahrbuch der organischen Chemie. (Yearbook of Organic Chemistry.) By Professor Dr. JULIUS SCHMIDT, Stuttgart. Vol. 16, 1929. Verlag von Franz Deuticke, Vienna, Austria, 1931. xvii + 299 pp. 17 × 26 cm. Price, M. 30, unbound; M. 33, bound.

The sixteenth annual report on Organic Chemistry deals with the publications of 1929. The material is organized in the same manner as in previous reports but the new volume is somewhat larger, mainly because it contains an additional chapter which deals with "glucosides, resins and organic colloids." Author and publisher are evidently making a praiseworthy effort to have these reports appear more promptly.

E. P. KOHLER

The Development of Physiological Chemistry in the United States. By RUSSELL H. CHITTENDEN, Professor of Physiological Chemistry in the Sheffield Scientific School of Yale University, 1882-1922. American Chemical Society Monograph Series. Published by The Chemical Catalog Company, Inc., 419 Fourth Avenue, New York, 1930. 427 pp. 15.5 × 23.5 cm. Price \$6.00.

Professor Chittenden has undertaken the difficult task of writing an account of a half-century's progress in this country in the field of physiological chemistry. The task is difficult because it is not always possible with our perspective to distinguish between progression and retrogression, between the important and the unimportant. Nevertheless this monograph will be a valuable source of information to the advanced student, to the teacher and to that future historian who will write a critical review of science in this era.

It is particularly fitting that Professor Chittenden should be the author of such a monograph. The lead taken by his laboratory in the study of physiological chemistry is indicated by the fact that of the twelve chapters, No. 10 and significant parts of six others deal with researches at New Haven. The author points out that Yale has had 93 successful candidates for the degree of Ph.D. in physiological chemistry up to 1927 and of these, 57 hold or have held important positions in American universities or medical colleges.

One can make few criticisms of a specific character. In view of the author's association with Osborne it is surprising to read (p. 93) that zein "constitutes nearly one-half of the maize kernel." A statement that smacks of radio science appears on p. 151 where reference is made to Reichert's 600 photomicrographs of hemoglobin crystals "coming from the blood of every conceivable species of animal." Presumably because the literature references, with but few exceptions, terminate with 1927, no reference is made to Fiske's work on phosphocreatine. Many will be disappointed because of the decision to confine the monograph to the United States. If the author, like our scientific societies, had disregarded the Canadian boundary he would not have excluded that happy patriarch of physiological chemistry in America, A. B. Macallum.

D. B. DILL

The Vitamins. By H. C. SHERMAN, Mitchill Professor of Chemistry, Columbia University, and S. L. SMITH, Senior Chemist, Office of Experiment Stations, United States Department of Agriculture. American Chemical Society Monograph Series. Second edition. The Chemical Catalog Company, Inc., 419 Fourth Avenue, at 29th Street, New York, 1931. 575 pp. Illustrated. 15.5 × 23.5 cm. Price, \$6.00.

To those interested specifically in the field of nutrition, Dr. Sherman's book presents in available form excellent abstracts of the most important investigations. Many chemists wish to obtain a survey of this field and Dr. Sherman has most carefully, and in his usual unbiased critical manner, presented a well classified, chronological review of the fundamental contributions in the field of vitamins. The large number of citations makes the book exceedingly valuable as a reference book and as an aid to research.

It is believed that the excellent subdivisions of each chapter will enable students to classify, for the first time, the problems in the respective fields. It is unfortunate that the nomenclature was not definitely standardized. To those not directly concerned in vitamin research, a critical correlation of the various researches would be helpful. The evidence more recently published indicating the presence of several new factors in yeast, wheat and casein deserves a fuller discussion.

This book differs greatly from his first edition. It consists of 336 pages of text, 184 pages of literature containing over 3000 citations. Eighteen

pages are devoted to author index and 24 to subject index. A number of excellent photographs are included. No illustrations on vitamin D are given. The original chapter on B is divided into two chapters, vitamin B and vitamin G. There is an excellent chapter on vitamin E and also one on vitamin D. The chapter on "Vitamins in the Problem of Food Supply," has been omitted and the material combined with the other chapters.

CHARLES N. FREY

BOOKS RECEIVED

June 15, 1931–July 15, 1931

- A. E. VAN ARKEL AND J. H. DE BOER. "Chemische Bindung als elektrostatische Erscheinung." Deutsche von den Verfassern autorisierte Ausgabe von Li Klemm und Wilhelm Klemm. Verlag von S. Hirzel, Königstrasse 2, Leipzig C 1, Germany. 320 pp. M. 15, unbound; M. 17, bound.
- MAX BLOCH. "Über einige Gesetzmässigkeiten im Schaffen hervorragende Chemiker." Verlag Chemie, G. m. b. H., Corneliusstrasse 3, Berlin W 10, Germany. 56 pp. M. 3.50.
- MAX BOËTIUS. "Über die Fehlerquellen bei der mikroanalytischen Bestimmung des Kohlen- und Wasserstoffes nach der Methode von Fritz Pregl." Verlag Chemie, G. m. b. H., Corneliusstrasse 3, Berlin W 10, Germany. 113 pp. RM. 7.
- ROBIN CHARLES BURRELL. "Chemistry for Students of Agriculture and Home Economics." McGraw-Hill Book Company, Inc., 370 Seventh Ave., New York. 459 pp. \$3.50.
- J. C. COLBERT. "A Shorter Course in Organic Chemistry." The Century Co., 353 Fourth Ave., New York. 352 pp. \$3.60.
- SVEN FAGERBERG. "Die Kathodophosphoreszenz der seltenen Erden in Kalciumoxyd." Inaugural Dissertation, Uppsala, 1931. Almqvist & Wiksells Boktryckeri-A.-B. Uppsala, Sweden. 58 pp.
- GEORG GRASSER. "Kurzes Lehrbuch der Chromgerbung. Ein Leitfaden für Praktiker und Theoretiker." Verlag von Ferdinand Enke, Stuttgart, Germany. 223 pp. RM. 15, unbound; RM. 16.50 bound.
- JOSEF F. HEUBERGER. "Reaktionskinetische Studien an der spontanen Kohlensäureabspaltung der Nitroessigsäure." Inaugural Dissertation, Uppsala, 1928. Almqvist & Wiksells, Boktryckeri-A.-B., Uppsala, Sweden. 119 pp.
- WALTER HÜCKEL. "Theoretische Grundlagen der organischen Chemie." Akademische Verlagsgesellschaft m. b. H., Schlossgasse 9, Leipzig C 1, Germany. Vol. I, 410 pp. M. 22, unbound; M. 24, bound. Vol. II, 352 pp. M. 18, unbound; M. 20, bound.
- K. IMHOFF. "Der Ruhrverband." Dritte Auflage. Carl Heymanns Verlag, Berlin W 8, Germany. 66 pp.
- EDVIN JÖNSSON. "Absorptionsmessungen im Langwelligen Röntgengebiet und Gesetze der Absorption." Inaugural Dissertation, Uppsala, 1928. Almqvist & Wiksells Boktryckeri-A.-B., Uppsala, Sweden. 102 pp.