

gland into adrenocortical steroids. While cholesterol appears to be a more efficient precursor than acetate, further experiments are necessary to accurately define the percentage conversion with both precursors. Since in adrenal slices cholesterol has been shown to arise from acetate condensation⁹ it is not inconceivable that cholesterol may be an intermediary in the reactions leading to corticos-

(9) Srere, Chaikoff and Dauben, *J. Biol. Chem.*, **176**, 829 (1948).

teroid synthesis from acetate. We hope in further studies to determine whether cholesterol is an obligatory intermediate in steroidogenesis.

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BOOK REVIEWS

Principles of Ionic Organic Reactions. By ELLIOT R. ALEXANDER, Assistant Professor of Chemistry in the University of Illinois. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1950. viii + 318 pp. 15.5 × 23.5 cm. Price, \$5.50.

This book applies ionic principles in presenting the mechanisms of those organic reactions where the ionic concept has been established or appears very likely. The treatment is entirely from the point of view of the organic chemist and actual kinetic data and mathematics are omitted. The author has not merely presented reaction explanation but has also presented the important data leading to the validity of the ionic mechanisms. The documentation is adequate but not exhaustive.

The book will serve admirably as a primary textbook for an advanced course in organic reaction mechanisms to follow a more orthodox advanced chemistry course, or as a supplementary book for a comprehensive advanced organic course. The research organic chemist whose formal schooling was completed say ten years ago will find this an indispensable means of mastering the newer concepts.

The style and treatment are, for the most part, quite clear although more explanation of the symbolism employed might be suggested. More detail would be helpful in explaining the actual physical nature of carbonium ions and the sequence of events leading up to their transitory existence. Conspicuous omissions include ionic oxidation reactions and the application of the transition state concept to ionic processes.

The complete objectivity of the book impresses this reviewer. Although Dr. Alexander is a firm believer in ions he accepts them, applies them, and submits the evidence without any apparent attempt to crusade for them. This is a healthy attitude in a book of this type; one regrets that the same approach has not yet been used in free radical books. The book is excellent and highly recommended.

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Technique of Organic Chemistry, Volume I, Part II. Physical Methods of Organic Chemistry. Edited by ARNOLD WEISSBERGER. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1949. xi + 1024 pp. 15.5 × 23 cm. Price, \$12.50.

The chapter headings, and the authors, are as follows: X-Ray Diffraction, by I. Fankuchen; Electron Diffraction, by L. O. Brockway; Refractometry, by N. Bauer and K. Fajans; Spectroscopy and Spectrophotometry by W. West; Colorimetry, Photometric Analysis, Fluorimetry and Turbidimetry, by W. West; Polarimetry, by W. Heller; Determination of Dipole Moments, by C. P. Smyth; Conductometry, by T. Shedlovsky; Electrophoresis, by D. H. Moore; Potentiometry, by L. Michaelis; Polarography, by

O. H. Müller; Determination of Magnetic Susceptibility, by L. Michaelis; Determination of Radioactivity, by W. F. Bale and J. F. Bonner, Jr.; Mass Spectrometry, by D. W. Stewart.

This book is necessarily of encyclopedic proportions and character, and like other encyclopedias it must suffer from obsolescence setting in before the ink is dry. Indeed, if a book of this nature is to be any good, its publication must accelerate its own obsolescence, for if the authors are conscientious in pointing out the pitfalls and the weaknesses of existing procedures and instruments this must in turn stimulate new advances. By this criterion the book is not a very good one. On the whole it shows little dissatisfaction with present-day instrumentation.

The authors have been faced with the necessity of compromising between theory and experimental techniques; for the most part they have elected to present an adequate treatment of fundamental principles at the expense of detailed experimental procedures. The book is thus in no sense a working manual but it is a comprehensive and authoritative reference source of material not otherwise readily available to the analyst.

If any one chapter excels in excellence and thoroughness, the reviewer would choose the discussion of polarimetry by W. Heller. Granted the advantage of dealing with a quiescent, maturely developed field, this presentation is worthy of special comment for the abundant illustrations, the preciseness of its formulation, and for the wealth of information it contains.

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Fortschritte der Alkaloidchemie Seit 1933. Scientia Chimica, Band 2. By HANS-G. BORT, Chemisches Institute der Universität, Berlin. Akademie-Verlag G. m. b. H., Presseabteilung, Schiffbauerdamm 19, Berlin NW 7, Germany. 1950. xxxii + 425 pp. 18 × 25 cm. Price, paper, 49 DM, bound, 53 DM.

A progress report is one of the devices which a busy worker in one field can use to keep abreast with advances in another field. The present monograph serves this purpose excellently. It does not present the extensive background in alkaloid chemistry which preceded 1933, the year chosen for the start of the report. It does attempt to supplement some of the excellent reviews available at that time, such as Winterstein-Trier, with a broad account of the work which has been completed in the intervening years. In spite of this, the book is self-contained. The author follows the practice of giving sufficient information in each discussion to pick up the thread of the argument.

The major portion of the book is devoted to a discussion of the chemistry of alkaloids whose structures are either completely elucidated or tentatively assigned. These are

presented according to their chemical classifications. The second section of the book gives late information concerning numerous alkaloids whose structures are not yet understood. These are presented according to the botanical classifications of the species from which they are obtained. In both sections the literature is reviewed into the year 1949. An appendix then attempts to present the 1949 literature as a series of paragraphs supplementary to sections of the main text. There are nearly 2200 literature citations, including repetitions.

The craftsmanship displayed in printing and binding and the care in proof-reading are distinctly inferior to the American standard. The uncut pages would lead the reader to expect a collector's item, which the present product distinctly is not. These shortcomings do not detract from the utility of the book to the scientist wishing to review the alkaloid field, however.

In the third edition of "Plant Alkaloids" by T. A. Henry we find, "Abrine," $C_{12}H_{14}O_2N_2$, "is liable to be confused with 'abrin,' a toxic, albuminous product also found in the seeds" (of *abrus precatorius*). Dr. Boit has succeeded in bringing about this confusion by dropping the final "e," which would be the German plural sign. To avoid propagating this confusion, workers in the field should adopt a new name such as "abrinine" for the alkaloid.

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Inorganic Syntheses, Volume III. L. F. AUDRIETH, Editor-in-Chief, University of Illinois. McGraw-Hill Book Company, 330 West 42nd St., New York 18, N. Y. 1950. xi + 230 pp. 16 × 23.5 cm. Price, \$3.75.

Like its predecessor, Volume III contains complete and tested directions for the preparation of more than sixty inorganic compounds, most of which are impossible to obtain from commercial sources. The fifty-three contributions are arranged in eight chapters according to the Mendeleef groups, and are indexed according to contributors, compounds and formulas. Of particular value to the research worker are the cumulative subject and formula indexes in this volume, covering all of the two hundred syntheses that have appeared since the start of the series.

The survey articles in this volume are devoted to basic beryllium derivatives of organic acids, the preparation of strontium sulfide and selenide phosphors, organosilicon compounds, the poly- and metaphosphates, the extraction of zirconium and hafnium, and the preparation of anhydrous metal fluorides. These articles reflect the points of current interest in the inorganic field, and so are of interest to the general reader as well as the seeker after specific information. The remaining contributions range in subject from sodium peroxide 8-hydrate through ammonium metavanadate to bis-(N,N'-disalicylaethylenediamine)- μ -aquo-dicobalt(II). The new nomenclature recommended by the International Union of Chemistry is used throughout as in Volume II. The type, paper and format are pleasing, and the editing is wellnigh perfect.

Any other comments on the scope and contents of Volume III undoubtedly are influenced by personal predilection. It seems to your reviewer, however, that the syntheses of

cyanamide, dicyanodiamide and aminoguanidonium hydrogen carbonate will be of interest to organic as well as inorganic chemists, and that the dozen or so syntheses of various phosphates will be of great interest to those colloid chemists who are interested in phosphate detergents. Similarly, anyone who is engaged in the synthesis of fluorocarbons will be glad to find complete directions for making nickel(II) fluoride, cobalt(III) fluoride, silver(II) fluoride, bromine(III) fluoride and tantalum(V) fluoride; in effect the commercial availability of the dependable laboratory fluorine cell now makes possible the preparation of all the popular fluorinating agents at the time of use. It may be concluded that (a) Volume III has even more general usefulness than its predecessors, and (b) the vanishing borders between organic and inorganic chemistry have now disappeared quite completely in some areas of endeavor.

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BOOKS RECEIVED

January 10, 1951–February 10, 1951

H. E. BUCKLEY. "Crystal Growth." John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1951. 551 pp. \$9.00.

ROBERT C. ELDERFIELD (edited by). "Heterocyclic Compounds." Volume II. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1951. 571 pp. \$15.00.

ROBERT S. HARRIS AND KENNETH V. THIMANN (edited by). "Vitamins and Hormones. Advances in Research and Applications." Volume VIII. Academic Press, Inc., 125 East 23rd Street, New York 10, N. Y. 1950. 342 pp. \$6.80.

CLAUDE S. HUDSON AND SIDNEY M. CANTOR (edited by). "Advances in Carbohydrate Chemistry." Volume V. Academic Press, Inc., 125 East 23rd Street, New York 10, N. Y. 1950. 322 pp. \$6.80.

JAMES W. PERRY. "Scientific Russian." Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1950. 816 pp. \$7.50.

L. ROSENFELD. "Theory of Electrons." Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1951. 119 pp. \$2.25.

JAMES B. SUMNER AND KARL MYRBÄCK (edited by). "The Enzymes. Chemistry and Mechanism of Action." Volume I, Part I. Academic Press, Inc., Publishers, 125 East 23rd Street, New York 10, N. Y. 1950. 724 pp. \$13.50.

ALEXANDER N. WINCHELL, with collaboration of HORACE WINCHELL. "Elements of Optical Mineralogy. An Introduction to Microscopic Petrography." Fourth Edition. Part II. Descriptions of Minerals. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1951. 551 pp. \$12.50.