
BOOK REVIEWS

Advances in Enzymology and Related Subjects of Biochemistry. Volume XII. By F. F. NORD (Editor), Fordham University, New York, N. Y. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1951. xi + 570 pp. 16 × 23.5 cm. Price, \$9.75.

The current volume continues the valuable annual series of reviews in enzymology and "related subjects of biochemistry." A related subject is that of the present status of starch chemistry (K. H. Meyer of Geneva and G. C. Gibbons of Birmingham) which affords a study of the fundamental developments of the structure of the starch molecule and thus serves as an admirable introduction to the review immediately following, enzymes of starch degradation and synthesis (Bernfeld). It is of interest to note that one of these authors (Meyer) reviewed this same subject in 1942 as a contribution to Volume I of the "Advances in Colloid Science," another of the Advances series.

The subject of biological methylation (F. Challenger) is fully and critically discussed. With the current interest in the relation of vitamin B₁₂ to methylation, other aspects of biological methylation have not always received the attention they merited. It is of particular value and timely to have this review, written by one who has actively participated in much of the investigation which is here summarized.

Other reviews are concerned with oxidoreduction in chloroplasts (Hill), mechanisms of fixation of carbon dioxide by heterotrophs and autotrophs (Utter and Wood), enzyme-substrate compounds (Chance), specificity of certain peptidases (Smith), enzymic hydrolysis and synthesis of acetyl choline (Nachmansohn and Wilson), and reactions of borate with substances of biological interest (Zittle).

The present contributions, well documented, serve as admirable sources for further studies of each topic and maintain the high standards set in earlier volumes of the series. As in previous years, a valuable feature is the cumulative author and subject index of the 12 volumes now available, which include reviews of most of the important fields of enzymology from 1940 to 1952.

DEPARTMENT OF BIOLOGICAL CHEMISTRY
UNIVERSITY OF MICHIGAN
ANN ARBOR, MICHIGAN

HOWARD B. LEWIS

Fortschritte der Chemie Organischer Naturstoffe. (Progress in the Chemistry of Organic Natural Products). Sixth Volume. Edited by L. ZECHMEISTER, California Institute of Technology, Pasadena. Springer Verlag, Molkerbastei 5, Wien 1, Austria. 1950. viii + 392 pp. 16.5 × 23.5 cm. Price, \$12.00. Seventh Volume. Edited by L. ZECHMEISTER, California Institute of Technology, Pasadena. Springer-Verlag, Wien 1, Molkerbastei 5, Austria. 1950. vii + 330 pp. 16.5 × 23.5 cm. Price, \$12.00.

In spite of the numerous journals and annuals devoted to the publication of review articles, Dr. Zechmeister has been notably successful in obtaining authoritative articles on topics of current interest, which do not duplicate reviews elsewhere. This may be partly due to the fact that German- or French-speaking authors are allowed to write in their own language, and hence a more cosmopolitan coverage is attained.

A considerable proportion of the articles deal almost exclusively with degradative and synthetic structure determinations of the classical organic type; among these are the chapters discussing the triterpenes (O. Jeger), the cardiac aglycones and glycosides (H. Heusser), the active principles of senna (A. Stoll and B. Becker), odoriferous materials of animal origin (E. Lederer) and the cactus alkaloids (L. Peti). Another group of chapters contains material of more general biochemical and biological interest; this includes the account of thyroxine and related compounds (C. Niemann), the composition and nutritional relationships of fats (H. J. Deuel and S. M. Greenberg), plant proteins (J. Bonner), naturally occurring quinones (O. Hoff-

mann-Ostenhof), and recent work on the chemistry of antibodies (J. W. Williams). The application of physical methods to problems of structure is represented by Ch. Dhéré's chapter on the fluorescent properties of natural products.

The connoisseur will find much admirable organic chemical work described in these volumes, such as the elegant deduction of the structures of the sennosides by Stoll. However, the successful structure determination and synthesis, fascinating and fundamental though these operations are, do not completely define a natural product. Before our knowledge of a naturally-occurring compound can be considered complete, we should know how and why it is formed in its natural source, what its function is, if any, and what becomes of it. This information, which is extremely scanty at present, requires the efforts of several types of workers, and we may hope that future volumes of this series will keep us informed of advances in this difficult field.

The reviewer regrets that the references to the literature are not put where they belong—at the bottom of the page. The practice of alphabetizing references in review articles is extremely time-consuming for the authors, and is always a potential source of error. It also seems unnecessary to print the titles of all papers quoted.

DEPARTMENT OF CHEMISTRY
UNIVERSITY OF ROCHESTER
ROCHESTER 3, N. Y.

D. S. TARBELL

Copolymerization. Volume VIII. High Polymers. By TURNER ALFREY, JR., Physical Research Laboratory, The Dow Chemical Company, Midland, Michigan; JOHN J. BOHRER, International Resistance Company, Philadelphia, Pennsylvania; and H. MARK, Director, Institute of Polymer Research, Polytechnic Institute of Brooklyn, Brooklyn, New York. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1952. x + 269 pp. 16 × 23.5 cm. Price, \$6.80.

In spite of the fact that vinyl copolymers appear in forms ranging from surface coatings and plastics to synthetic rubbers and fibers and are the basis of several major chemical industries, a book on copolymerization might at first glance appear of interest to only that group of specialists concerned with polymer manufacture. Actually, this is far from the case for copolymerization is one of those fields (not as rare as we might suppose nor as common as we should like them) in which a systematic investigation of the principles underlying a technological problem has led to considerable advances in basic science. In the case of copolymerization, the problem has been to determine the sort of copolymer compositions which may be obtained from different combinations of monomers, and the fields which have profited have been those of polymerization kinetics and of the reactions of organic free radicals.

The emphasis of the present book is primarily upon the kinetics of the copolymerization process and the principles governing copolymer composition; and, as would be expected of the authors who have made so many contributions to the theory of polymerization, they have done a fine piece of work in pointing out the place of copolymerization studies in the over-all pattern of physical and organic chemistry. Starting with an examination and discussion of the copolymerization equation of Mayo and Lewis and Alfrey and Goldfinger, they summarize first the manner in which the equation has been used and the various monomer pairs which have been studied. (The total reaches the rather striking number of 275 pairs from the first publication in 1944 to the present.) The next four chapters are given over to a detailed and comprehensive discussion of the relation between structure and reactivity in free radical copolymerization, the section which, together with Chapter XI dealing with copolymerization rates, will probably be of greatest interest to the general reader.

Most of the remainder of the book takes up more specialized topics including the copolymerization of multicompo-

ment systems, the statistical composition of copolymer chains, and the copolymerization and crosslinking of dienes. The treatment of some of these subjects proves to be largely theoretical, since little experimental work is available, and some of the mathematical discussion of crosslinking does not appear to have been published elsewhere. Finally, although free radical copolymerization is the major topic, ionic copolymerizations and the relations between copolymer structure and physical properties are each allotted a chapter. The treatment of this last subject is perhaps a bit of a disappointment, and serves to emphasize the point that, so far, we are only able to predict the physical properties of copolymers in rather general terms.

Not surprisingly, considering the activity of the field, some controversy has arisen over the evaluation and interpretation of copolymerization data. The authors have in general taken an impartial position on controversial points and their discussion of experimental errors in determining monomer reactivity ratios (and Q and e values) is the most comprehensive which has appeared. Although some readers (including this reviewer) may differ with it at certain points, this discussion certainly deserves study by anyone planning to apply the copolymerization equation to actual problems.

In general, what the authors have produced is a comprehensive piece of work covering the basic principles of the copolymerization reaction, written in a clear and readable style, and with adequate introduction to each topic to orient the more general reader. It should not only be a valuable reference book for workers in the field of high polymers, but also easy and rewarding reading for anyone interested in the more general field of organic free radical reactions.

LEVER BROTHERS COMPANY
CAMBRIDGE, MASS.

CHEVES WALLING

Dosages Colorimétriques, Principes et Méthodes. By G. CHARLOT, Professeur à l'École Supérieure de Physique et de Chimie industrielles and R. GAUGIN, Sous-chef de travaux à l'École Supérieure de Physique et de Chimie industrielles. Masson et Cie, Éditeurs, 120 Boulevard Saint-Germain, Paris VI^e, France. 1952. 243 pp. 42 figs. 17 × 25 cm. Price, 1500 Fr.

This book on colorimetric analysis consists of two parts: one (94 pp.) dealing with the basic principles, laws, types of apparatus, precision, accuracy, sensitivity, elimination of interferences, separation of trace constituents, etc.; the second part (145 pp.) is devoted to laboratory procedures for the determination of about three-fourths of the elements, though often very briefly, for example only a half page to the rare earths. Usually each procedure is preceded with one or more methods for the separation of trace quantities of the desired constituent. Many citations to the original sources are given and these will need to be consulted in many instances for pertinent details, the omission of which is a neces-

sity in a book of this size. The manual is up-to-date and contains hundreds of literature references, each listed on the appropriate page which facilitates their use. A few fluorimetric, turbidimetric and nephelometric methods are included.

The book has a paper binding; it would have had a neater appearance if the pages had been cut. The order and treatment of the subject matter is good and much useful general information is given, considering the size of the book. The authors are to be congratulated for making available in the French language a good monograph on colorimetric analysis. Once more the attention of chemists is directed to the rapidly increasing role color reactions are playing in modern analytical chemistry, especially in the relatively new field of "trace analysis."

UNIVERSITY OF VIRGINIA
CHARLOTTESVILLE, VIRGINIA

JOHN H. YOE

BOOKS RECEIVED

July 10, 1952—August 10, 1952

M. L. ANSON, KENNETH BAILEY, AND JOHN T. EDSALL (edited by). "Advances in Protein Chemistry." Volume VII. Academic Press Inc., 125 East 23rd Street, New York 10, N. Y. 1952. 411 pp. \$8.50.

ERIC G. BALL (Editor-in-Chief). "Biochemical Preparations." Volume 2. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1952. 109 pp. \$3.00.

RICHARD J. BLOCK, RAYMOND LESTRANGE AND GUNTER ZWEIG. "Paper Chromatography, A Laboratory Manual." Academic Press, Inc., 125 East 23rd Street, New York 10, N. Y. 1952. 195 pp. \$4.50.

HANS EBRING (edited by). "Kolloid-Tagung Köln 1951." Verlag Dr. Dietrich Steinkopff, Darmstadt, Germany. 1952. 227 pp. DM 30.-.

NATIONAL BUREAU OF STANDARDS. "Tables for the Analysis of Beta Spectra." Applied Mathematics Series 13. United States Government Printing Office, Washington 25, D. C. 1952. 61 pp. 35 cents.

H. A. STUART. "Die Struktur des Freien Molekuls. Allgemeine Physikalische Methoden zur Bestimmung der Struktur von Molekulan und ihre Wichtigsten Ergebnisse." Springer-Verlag, Reichpietschufer 20, Berlin W 35, Germany. 1952. 609 pp. DM 69.-.

W. THEILHEIMER. "Synthetic Methods of Organic Chemistry, An Annual Survey." Volume 6. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1952. 401 pp. \$12.90.