BOOK REVIEWS

Methods of Quantitative Micro-Analysis. Second Edition. Collected and Edited by R. F. MILTON, Ph.D., B.Sc., F.R.I.C. and W. A. WATERS, M.S., Sc.D., Ph.D., F.R.I.C., F.R.S. St. Martin's Press, Inc., Publishers, 103 Park Avenue, New York 17, N.Y. 1955. xi + 742 pp. 15.5 × 23.5 cm. Price, $15.00.

The progress in the field of microchemical techniques during the last few years, caused by the increased need for such procedures in nuclear reaction problems, is so rapid that the analytical chemists await any new text with great interest. The demand for text books on microanalysis in Europe must be exceptionally great in order to explain a second edition of "Methods of Quantitative Microanalysis" after the short period of six years.

This edition covers in 8 chapters the following topics: gravimetric apparatus and general microchemical techniques; microanalysis of organic compounds; volumetric analysis; colorimetric analysis; electrochemical methods; gasometric methods; chromatographic analysis and biological methods of microanalysis.

The last two chapters can be easily recognized as additions because only here working techniques developed after 1948 are considered and described more in detail. It is unfortunate that the other chapters have not been brought up to date. Only the tables with the summaries of procedures show a few literature references which appeared later than 1950.

The primary purpose of a book of this type is to create some interest in the field. The very broad selection of chapters, however, does not permit in the small space more than just to mention a few examples. This is not a handbook on microchemical techniques and, therefore, the teaching profession should benefit mostly by the carefully written book. Print and general appearance are of highest quality; special credit must be given to the uniformity and clarity of the illustrations, which are rarely found in similar books.

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The Roger Adams Symposium. Papers Presented at a Symposium in Honor of Roger Adams at the University of Illinois, September 3 and 4, 1954. Contributors: WALLACE R. BRODE, JOHN R. JOHNSON, SAMUEL M. MCELVAIN, RALPH L. SHRINER, WENDELL M. STANLEY and ERNEST H. VOLWILER. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N.Y. 1955. ix + 140 pp. 15 × 23.5 cm. Price, $3.75.

This book consists of scientific papers presented at the Symposium honoring Professor Roger Adams, who retired as chairman of the Department of Chemistry at the University of Illinois, September 1, 1954, after service in that department since 1916. The presentation of scientific papers seems a fitting tribute to a man whose long career has been so characterized by devotion to chemical research.

In the introductory comments by Ernest H. Volwiler, President, Abbott Laboratories, the scope of Professor Adams' research interests and the originality of his thinking are emphasized. It seems appropriate to mention that the range of subjects covered by the papers in this book, presented by former students of Professor Adams, is a convincing testimonial to these characteristics of the man. Other comments of Dr. Volwiler are certain to evoke nostalgia in the host of former Illinois students; for example, the famous query, "Well, what's new?".

The first paper, "Steric Effects in Dyes," is by Wallace R. Brode, Associate Director, National Bureau of Standards. There is discussed the experimental evidence of steric inhibition of resonance in a wide variety of dyes, including *ortho*-substituted benzenes, various types of azo compounds, and several types of alkenes. There are also described compounds which change from one geometric isomer to the other as a result of irradiation, dyes which transmit the energy of light to the material dyed, and studies on the theory of dyeing.

The second paper, "The Structure of Gliotoxin," is by John R. Johnson, Todd Professor of Chemistry, Cornell University. There is described the work carried out during 15 years by Professor Johnson and some 15 collaborators on this antibiotic from the wood fungus, *Gliocladium fimbriatum*, whose formula is $C_{13}H_{14}N_2O_4S_2$. Although there remain a few uncertain structural features a most probable formula containing five rings is presented.

In the third paper, "The Structure of Nepetalic Acid," by Samuel M. McElvain, Professor of Chemistry, University of Wisconsin, there are described the investigations of the structure of the active principle in catnip oil, which is so attractive to members of the cat family. In addition to the degradations leading to the establishment of the bicyclic lactol formula, there are also described recent investigations of the stereochemistry of this molecule.

The fourth paper, by Ralph L. Shriner, Head of the Department of Chemistry, State University of Iowa, is devoted to the "Chemistry of Flavylium Salts." There are discussed the physical structure as well as the chemical reactions of these compounds. The reactions are shown to be "consistent with the concept of a highly reactive cation, a resonance hybrid, combining with an electron donor reagent."

The final paper, by Nobel Laureate Wendell M. Stanley, Professor of Biochemistry and Director of the Virus Laboratory, University of California, Berkeley, is entitled "Some Chemical Studies on Viruses." Professor Stanley outlines the fascinating development of the thinking of biochemists which eventually led to the concept that a virus is not some special odd sort of bacteria, but is rather a discrete chemical molecule which "can carry within its own structure all that is necessary to predetermine reproduction." This places the virus in the position of representing "so gradual a transition from the living to the non-living world that the boundary line between the two is doubtful and perhaps nonexistent." These characteristics have placed viruses largely in the area of investigation of the biochemist, and many of these investigations are outlined by Professor Stanley.

As indicated by the above comments, this book contains papers which represent surveys in areas of interest to large numbers of chemists. It is highly recommended for their attention.

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Annual Review of Biochemistry. Volume 24. By J. MURRAY LUCK, Editor, Stanford University, HUBERT S. LORING, Associate Editor, Stanford University, and GORDON MACKINNEY, Associate Editor, University of California. Annual Reviews, Inc., Stanford, California. 1955. xvi + 805 pp. 17 × 23 cm. Price, $7.00.

It has been customary to greet each volume of the Annual Review of Biochemistry with expressions of approval, and surely the 24th volume, which now makes its appearance, must be welcomed with no less. The phenomenal development of biochemistry is well portrayed in the successive issues of this series, and should furnish to some future historian of science a panoramic view of one of the great intellectual achievements of the twentieth century. The difficulty of the task which the contributing authors to this monumental series must face in describing on a relatively limited canvas the accomplishments of the preceding year can be best appreciated only by those who have essayed it. The gratitude of the scientific public is due them.

Yet it must be stated that this series, despite its many virtues, possesses some defects inherent perhaps in the original intent. It may be accepted that no scientific summary possesses coherence without perspective and development, and when coherence is lacking so too is grace of expression. The nearly unavoidable restriction to little

beyond the preceding year's accomplishments and literature citations results all too often in a report which is necessarily historically distorted, which for the most part is difficult for the non-specialist to comprehend except superficially, and which, for the specialist should be unnecessary. That the very able editors are aware of these problems is shown on p. vi of their preface to the present volume: "Some of us desire that the reviews shall be selective but critical, judicious appraisals of the present status of the subject; others, fortunately in the minority, request that they be comprehensive with every paper on the subject receiving citation." The most successful reviews have generally been compromises between these extremes, for an annual report does not lend itself readily to the free expression of personal appraisal, and a comprehensive coverage of the literature even of a single year is not practical. The fact that summaries of distinction, style and grasp have frequently made their appearance in various volumes of the Reviews, despite the limitations of format, is a tribute as much to the expository skill of the authors as to their scientific judgment. Some notable examples are to be found in the present volume. It would be well to overwork them.

The contents of the present volume are as follows: Biological Oxidations by D. E. Green and H. Beinert; Non-oxidative, Nonproteolytic Enzymes by B. Axelrod; Proteolytic Enzymes by G. W. Schwert; Chemistry of the Carbohydrates by J. K. N. Jones; Chemistry of the Phosphatides by E. Baer; Metabolism of the Complex Lipides by D. B. Zilversmit; Chemistry of Proteins, Peptides, and Amino Acids by A. G. Ogston; Carbohydrate Metabolism by B. L. Horecker and A. H. Mehler, Metabolism of Amino Acids and Proteins by G. Ehrensvärd; Nucleic Acids by D. M. Brown and A. R. Todd; Water-Soluble Vitamins, Part I by G. M. Briggs and F. S. Daft; Water-Soluble Vitamins, Part II by R. Fried and H. Lardy; Water-Soluble Vitamins, Part III by B. C. Johnson; Fat-Soluble Vitamins by P. D. Boyer, Carotenoids by T. W. Goodwin; Nutrition by J. F. Brock, Biochemistry of the Steroid Hormones by S. Roberts and C. M. Szego; Biochemistry of Antibiotics by S. B. Binkley; Clinical Applications of Biochemistry by O. Bodansky; Lipide Metabolism by F. Lynen, and The Biochemistry of Cancer by A. Haddow.

LABORATORY OF BIOCHEMISTRY
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Silicic Science. A Review of the Colloid Scientific Properties and Phenomena Exhibited by Matter Composed Essentially of the Element Silicon. By ERNST A. HAUSER, Ph.D., Sc.D., Professor of Colloid Science, Massachusetts Institute of Technology. D. Van Nostrand Company, Inc., 250 Fourth Avenue, New York 3, N.Y. 1955. xii + 188 pp. 16 × 23.5 cm. Price, $5.00.

In the preface of this book the author states, "This monograph . . . approaches the chemistry of silicon from a new angle based primarily on the colloid chemical properties of silicon compounds." Thus the major portion of this work is devoted to colloidal phenomena of silicon compounds. As such, many brief discussions of colloid chemistry are found throughout the text. Unfortunately, both the colloid chemistry and the silicon chemistry suffer from the necessarily sketchy coverage attributed to them in a book of this size. Therefore, this volume will be of greatest value on the graduate level or advanced undergraduate level for the student interested in attaining a superficial knowledge of the field of silicon chemistry. The expert will be disappointed by the lack of detail. Furthermore, at the end of each chapter there appears a list of general references rather than an item-by-item and page-by-page reference system. This is cumbersome for the reader who is interested in a specific item.

The subject matter is greatly diversified including among others, chapters on the structures of silicates, silicic acid, ion-exchange reactions of silicates, periodic precipitation, reactions of bentonites, soil stabilization and silicones. The final chapter is devoted to applied silicic science and should be of interest to even those chemists who are but casually concerned with this subject. Throughout, the reader is plagued by a large number of confusing minor errors. The inclusion of a greater amount of data from the original literature would have greatly helped the clarity in some places.

Finally, it should be emphasized again that all of these factors tend to reduce the value of the book to the specialist in the field. Those who will benefit most from study of this work are the general readers or students interested in a survey of a large number of topics in the area of silicon chemistry.

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Anti-Composition Tables for Carbon Compounds (CH, CHO, CHS and CHOS). Compiled by H. H. HATT, T. PEARCEY and A. Z. SZUMER for the Commonwealth Scientific and Industrial Research Organization, Australia. Cambridge University Press (American Branch), 32 East 57th St., New York 22, N.Y. 1955. 191 pp. 19 × 24.5 cm. Price, $4.00.

The philosophy underlying the writing of this book appears to lie in a desire to spare laboratory workers the necessity of computing percentage compositions from empirical formulae or vice versa. Thus on page 13 will be found four columns of figures, each column consisting of multiples of the atomic weight, respectively, of carbon hydrogen, oxygen and sulfur. Table I begins on page 17. In three pages of quadruple columns there will be found, reading from left to right in each column, the percentage of carbon, percentage of hydrogen, number of carbons per molecule and number of hydrogens per molecule. Table II, beginning on page 23 and extending through 191, lists three columns to the page. The same system is followed as in Table I save that carbon, hydrogen and oxygen are involved. If the percentage composition of a compound containing sulfur is desired, sulfur is considered the equivalent of two oxygens. Listings in both tables are found in order of ascending percentages of carbon and in cases where this is constant, in ascending percentages of hydrogen. This is the sort of book which one might keep for some time without the need for its use but which would suddenly find quick and critical value at some opportune moment.

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BOOKS RECEIVED

January 10, 1956–February 10, 1956

SIDNEY P. COLOWICK AND NATHAN O. KAPLAN (edited by). "Methods in Enzymology." Volume II. Academic Press, Inc., Publishers, 125 East 23rd Street, New York 10, N. Y. 1955. 987 pp. $23.80.

JACK HINE. "Physical Organic Chemistry." McGraw-Hill Book Company, Inc., 330 West 42nd Street, New York 36, N. Y. 1956. 497 pp. $9.00.

ELVIN A. KABAT. "Blood Group Substances. Their Chemistry and Immunochemistry." Academic Press, Inc., Publishers, 125 East 23rd Street, New York 10, N. Y. 1956. 330 pp. $8.00.

A. J. C. WILSON, General Editor, N. C. BAENZIGER, J. M. BIJVOET, AND J. MONTEATH ROBERTSON, Section Editors. "Structure Reports for 1942–1944." Volume 9. N. V. A. Oosthoek's Uitgevers MIJ, Domstraat 1-3, Utrecht, Holland. 1955. 448 pp. Dfl. 65.-.

HUGH C. WOLFE (edited by). "Temperature. Its Measurement and Control in Science and Industry." Volume II. Reinhold Publishing Corporation, 430 Park Avenue, New York 22, N. Y. 1955. 467 pp. $12.00.

MELVILLE L. WOLFROM, Editor, AND R. STUART TIPSON, Assistant Editor. "Advances in Carbohydrate Chemistry." Volume 10. Academic Press, Inc., Publishers, 125 East 23rd Street, New York 10, N. Y. 1955. 437 pp. $10.50.