
 BOOK REVIEWS

Physical Chemistry of High Polymers. By MAURICE L. HUGGINS, Research Associate, Kodak Research Laboratories, Rochester, N. Y. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1958. xiii + 175 pp. 15.5 × 23.5 cm. Price, \$6.50.

Dr. Huggins has presented a compact introduction to a number of topics relating to Polymer Chemistry, based upon a series of lectures he gave as a Visiting Professor in Japan during 1955 and 1956. A (condensed) listing of chapters follows: Nomenclature; Synthesis; Composition and Structure; Chain Configurations; Thermodynamics of Polymer Solutions (3 chapters); Viscosity of Dilute Solutions; Plastic Flow; Long-Range Elasticity; Addition Polymers; Condensation Polymers; Cellulose and Starch; Polypeptides; Collagen; Corpuscular Proteins.

The emphasis given to various topics is based largely upon the author's own research contributions. These contributions have been numerous and significant, and have ranged across many areas of polymer chemistry. Even so, a certain unevenness of depth results. Some topics (notably, thermodynamics of polymer solutions) are developed in considerable detail and on an advanced level. Other topics (in particular: addition polymerization and copolymerization; and long-range elasticity) are presented cursorily or on an elementary level.

The treatment of both types of topic tends to be clear and cogent, and the book should be of interest to all polymer chemists.

POLYMER RESEARCH LABORATORY
THE DOW CHEMICAL COMPANY TURNER ALFREY, JR.
MIDLAND, MICHIGAN

The Lipids. Their Chemistry and Biochemistry. Volume III: Biochemistry. Biosynthesis, Oxidation, Metabolism and Nutritional Value. By HARRY J. DEUEL, Jr., Dean, Graduate School, and Professor of Biochemistry, University of Southern California, Los Angeles. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1957. xxxvi + 1065 pp. 16 × 23.5 cm. Price, \$25.00.

This third volume of the series contains a total of 1065 pages with very full indexes (author index 53 pages, subject index 62 pages and 12 pages of Plant and Animal Sources of Lipids).

Contents: Chapter I, General Consideration of Lipid Digestion, Absorption Transport and Storage.

Chapter II, Biosynthesis of Triglycerides, Phospholipids and Fatty Acids, building stones, sites of synthesis, role of Enzymes and CoEnzyme A, Hormones and other factors.

Chapter III, Oxidation and metabolism of Triglycerides and Fatty Acids, Hydrogenation, Enzyme systems involved, Pathways, Ketouria, Ketosis in animals, comparative Ketolytic effect of sugars. The metabolism of the Polyunsaturated Acids. Factors affecting oxidation, Parenterally administered Fats, Oxidation and metabolism of Glycerol.

Chapter IV, The conversion of fat to carbohydrate. Odd and even numbered Fatty Acids. Evidence from Isotopes. Insulin, Acetic acid and its derivatives.

Chapter V, Oxidation and Metabolism of the Phospholipids, Degradation, Effect of Deficiency.

Chapter VI, Acetic, Formic and Propionic Acids in the intermediary metabolism of Fats. Glycogen, Cholesterol, Protoporphyrin, Uric Acid, Amino Acid syntheses.

Chapter VII, Metabolism of Branched Chain, Hydroxy and Ketoacids; Di- and Tri-carboxylic Acids, Fatty Acid Amides, Aldehydes and Hydrocarbons, Waxes, Squalene, Aromatic Hydrocarbons, Naphthalene and Anthracene.

Chapter VIII, Metabolism of Cholesterol and related Sterols in Animals, Absorption, Transport and Changes in the G. I. Tract, Cholesterol in Blood, Nature, factors influencing the blood content, Biosynthesis, effect of Fat, Cholesterol and other Sterol feeding, Excretion in Intestine and Urine.

Chapter IX, Metabolism and nutritional value of Carotinoids and Vitamin A. Digestion, Absorption, esterifica-

tion, storage in Vertebrates and invertebrates. Distribution in tissues, Hypervitaminosis: This chapter is nearly 100 pages long indicating the thorough treatment of the topic.

Chapter X, Metabolism and nutritional value of Vitamins D, similar treatment to the Carotinoids—about 60 pages.

Chapters XI and XII, Similar treatment of Vitamins E and K.

Chapter XIII, The essential Fatty Acids, Chemical relations importance, preparations, analysis and bioassay. Requirements, Interconversions. Functions and Distribution.

Chapter XIV, The nutritional value of Fats, Essentiality, effect on various functions, effect on stress, on Galactose and Calcium absorption, on vitamin requirements, on Bacteria and lower organisms. Factors affecting the nutritional value of Fats. Animal vs. Vegetable Fats. Nutritional indices, pregnancy, lactation multigeneration. Effects of heating and rancidity. Modified fats and oils, mono- and di-glycerides, Acetoglycerides, optimum levels in man and experimental animals.

The three volumes constitute a monumental piece of work containing as far as can be determined the sum of present knowledge in this field. The work has especial value because it was done by a man actively engaged in work in the field and not by an arm-chair student.

In spite of great and continuing advances in the field in recent years, these books will remain the best source of knowledge of the Fats and related substances for many years to come. The third volume is perhaps the best of the three and while the price is high (\$25.00) the value is there. There is of course considerable repetition in the three volumes, but that is necessary for a good understanding.

MEDICAL SCHOOL
UNIVERSITY OF ROCHESTER W. R. BLOOR
ROCHESTER 20, NEW YORK

Handbuch der Mikrochemischen Methoden. Volume II. FRIEDERICH HECHT and MICHAEL K. ZACHERL, Editors. Verwendung der Radioaktivität in der Mikrochemie. Radiochemische Methoden der Mikrochemie. By E. BRODA and T. SCHÖNFELD. Messung Radioaktiver Strahlen in der Mikrochemie. By T. BERNERT, B. KARLIK and K. LINTNER. Photographische Methoden in der Radiochemie. By H. LAUDA. Springer-Verlag, Molkerbastei 5, Wien 1, Austria. 1955. 423 pp. 17.5 × 25 cm. Price, \$19.30; Subscribers to Handbuch, \$15.45.

Volume II of the "Mikrochemischen Methoden" series is essentially a handbook of applied radiochemistry, with particular emphasis on analytical methods. Such material is not ordinarily included in treatises on microchemistry, thus preserving what seems to the reviewer to be a proper distinction between the methods of trace analysis (which, in spite of their great sensitivity, generally are carried out by ordinary macroscale manipulations) on the one hand, and true micromethods on the other.

The somewhat different point of view adopted in the present "Handbuch" is expressed in an introductory statement: "Infolge der grossen Empfindlichkeit, mit der radioaktive Strahlungen nachgewiesen werden können, ist auch die Empfindlichkeit der radiochemischen Analyse ausserordentlich gross. Die radiochemische Analyse bewährt sich daher vor allem im Rahmen der Mikrochemie."

The question as to whether the second volume of this series ought really to be included in a compilation of microchemical methods is perhaps irrelevant. Most workers in the field of applied radiochemistry will welcome its existence, whatever the reason for its preparation. As a practical guide to the application of the techniques of radiochemistry to chemical research, this is an excellent book. The authors are acknowledged experts in their respective fields, and they treat their subject matter with exceptional thoroughness. The volume obviously is written primarily for chemists, since such aspects of radiochemistry as nuclear structure, decay systematics, nuclear reaction mechanisms, etc., are treated very briefly or not at all.