

appearance of this monograph with volume 1 of Edsall and Wyman's "Biophysical Chemistry" immediately raises the question of the extent to which Professor Edsall's lectures were a preview of the more extended treatise. Actually there is surprisingly little duplication and to this reviewer the topics selected for discussion in the shorter work are the exciting ones in biophysical chemistry.

Opening with a provocative account of the unique properties and role of water as the solvent in biological systems, the acid-base equilibria of amino acids and proteins are next treated, with the recent, definitive work of the author on cysteine serving as a specific example. Those proteins whose primary structure is known, e.g., insulin and ribonuclease, then serve as models for consideration of the secondary and tertiary structure of macromolecules in general, the critical review of the  $\alpha$  helix configuration being particularly timely. The formidable problems remaining, especially the configurational details of protein molecules in solution, are not minimized, however. Although the importance of the binding of small particles, other than the proton, by the protein is now clearly recognized, chapter IV, the interpretation of these studies in terms of our rapidly expanding knowledge of the primary structures of proteins, has not yet been fully exploited. In view of the work of the Harvard group on serum albumin and mercaptalbumin, the next two chapters, devoted to the physical chemistry of these proteins in the order mentioned, must be considered authoritative. Is the physical chemist responsible for the uncertainty in the molecular weight of serum albumin or are our fractionating procedures still inadequate for this material? The volume closes with a critical review of denaturation, the complexity of the problem being emphasized by contrasting the behavior of serum albumin and ovalbumin.

This monograph has found a permanent niche on your reviewer's desk and I can certainly recommend it to all biophysical chemists. This includes most biochemists and the many physical chemists with an interest in macromolecules, especially those who will also appreciate the extra dividend of simultaneously reviewing their French.

THE ROCKEFELLER INSTITUTE FOR  
MEDICAL RESEARCH L. G. LONGSWORTH  
66TH STREET AND YORK AVENUE  
NEW YORK 21, NEW YORK

**Vitamins and Hormones. Advances in Research and Applications.** Volume XV. Edited by ROBERT S. HARRIS, Professor of Biochemistry of Nutrition, Massachusetts Institute of Technology, Cambridge, Massachusetts, G. F. MARRIAN, Professor of Medical Chemistry, University of Edinburgh, Edinburgh, Scotland, and KENNETH V. THIMANN, Professor of Biology, Harvard University, Cambridge, Massachusetts. Academic Press, Inc., 115 Fifth Avenue, New York 3, N. Y. 1957. xi + 355 pp. 16 × 23.5 cm. Price, \$9.50.

The present volume of this series contains eight chapters: Chemistry of Vitamin B<sub>12</sub> by Johnson and Todd, Total Syntheses of Carotenoids by Isler and Zeller, Carnitine by Fraenkel and Friedman, The Biological Synthesis of Cholesterol by Block, Adrenaline and Noradrenaline by Gaddum and Holzbauer, The Metabolic Effects of Growth Hormone and Their Physiological Significance by de Bodo and Altszuler, Steroids in Human Blood by Borth, and Comparison of the Influence of Hormones, Vitamins and Other Dietary Factors upon the Formation of Bone, Dentine and Enamel by Irving.

The chapter on B<sub>12</sub> by Johnson and Todd covers an area which with a few exceptions is now completely explored. It thus serves nicely to bring up to date the definitive review on B<sub>12</sub> by Folkers and Wolf (Vitamins and Hormones, Vol. 12). Particular emphasis is laid on the major role which X-ray crystallography played in elucidating the details of molecular structure. Enough data on the biosynthesis of B<sub>12</sub> analogs was available at the time of writing to provide in addition a good introduction to this field.

Other chapters which summarize relatively mature areas of research are those on synthesis of carotenoids and on biosynthesis of cholesterol, both of them first-rate jobs by pioneers in their respective fields. The latter chapter is carried up to the recent developments on the mechanism of conversion of mevalonic acid into squalene. The authors of

the section on growth hormone have plunged into a turbulent biological controversy and have seemingly been successful in presenting the opposing views as to whether this hormone is anabolic or anticatabolic. The literature has been well summarized and the various issues nicely separated. It's a pity that the key to the mystery has not yet come to hand.

The adrenaline chapter is a particularly timely one. The frantic activity touched off in the field of mental disease by the tranquilizers has led to hypotheses involving this hormone in a variety of postulated roles. The biogenesis, metabolic fate, physiological actions and interrelationships of adrenaline and noradrenaline are depicted and provide a lucid background for the still unclear mechanisms of action of reserpine, LSD, adrenochrome and the adrenolytic drugs.

The confusion surrounding carnitine,  $\beta$ -hydroxy- $\gamma$ -butyryl-betaine, is somewhat dispelled, or at least better organized in Fraenkel and Friedman's chapter. The difficulties which the authors and their colleagues have faced in trying to study the distribution and function of carnitine is exemplified by the breakdown of the assay method. The latter was based on the growth response of the larvae of the insect *Tenebrio molitor*. It was not discovered until 1957—some 10 years after its introduction—that this growth response was dependent on variables quite apart from the concentration of carnitine (zinc and potassium). Consequently the present chapter serves to provide a thorough compilation of the literature and background but development of perspective is still to come.

RESEARCH AND DEVELOPMENT DIVISION  
MERCK & Co., Inc. LEWIS H. SARETT  
RAHWAY, N. J.

**Structure Reports for 1951. Volume 15.** General Editor, A. J. C. WILSON. Section Editors, N. C. BAENZIGER (Metals), J. WYART (Inorganic Compounds) and J. MONTBATH ROBERTSON (Organic Compounds). N. V. A. Oosthoek's Uitgevers Mij., Domstraat 1-3, Utrecht, Holland. 1957. viii + 588 pp. 16.5 × 25 cm. Price, \$29.00.

The momentous task of bringing Structure Reports up to date and filling the gap left by the war years was planned by the International Union of Crystallography in 1948. In seven years of publication, the editors and committees have been able to analyze and abstract twelve years of literature. Since the very nature of these volumes necessitates two to three years of preparation, these vigorous abstractors are only a few years short of their goal. The series of Structure Reports together with its predecessor, Strukturberichte, now summarizes practically all the structural literature which has been published prior to 1952. It is anticipated that future editions will follow Volume 15 in chronological order so that the continuity which this series now possesses will persist.

Although the volume of structural data continues to increase with each succeeding year, the editors and committee for Volume 15 have not sacrificed any of the quality which has been established in previous years. The summaries are concerned only with work of structural interest and have been extracted from the reported papers in such a manner that it is seldom necessary to refer to the original articles. The arrangement within individual reports is usually name, formula, papers reported, unit cell, space group, atomic positions and parameters, interatomic and intermolecular distances, material, discussion, details of analysis and references. Editorial comments are enclosed in square brackets and are thus readily distinguished. Both prior and subsequent literature references are cited; the subsequent references are quite complete through 1955.

This book is divided into three main parts: Metals (124 pp.), Inorganic Compounds (244 pp.) and Organic Compounds (175 pp.). In the Metals section the arrangement is alphabetical while the Organic and Inorganic Compounds are arranged according to increasing complexity of composition with related structure and substances kept together as much as possible. With this convenient arrangement, a person having reference to a certain compound or structure will automatically find himself reviewing several related compounds.

There are four indexes headed by the subject index which lists the compounds alphabetically by the names as they