

both the mathematics and the experimental findings. But its size and cost will severely curtail its circulation among the very group that should have ready access to it—namely, present-day students who might thus be attracted to the field and provide the research for its continued development. With this comprehensive treatise available for consultation what is now needed is a volume modest in size and price as a text or a usable reference book for courses in chemistry, physics, biochemistry, bacteriology, and other biological specialties. It is suggested that chapter 1 (Introduction), chapter 2 (Thermodynamics) plus not more than 100 pages of varied biological applications abstracted from the last 640 pages of the present volume would make such a book. True, this condensation would lack the detail and completeness of the present work, but one does not need to count all the swallows to be sure of summer.

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Advances in Enzymology and Related Subjects of Biochemistry, Volume XV, Edited by F. F. NORD, Fordham University, New York, N. Y. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1954. x + 547 pp. 16 × 23.5. Price, \$11.00.

This book is an excellent addition to this distinguished series of reviews. In addition to articles on various individual enzyme systems, this volume contains two general reviews on the mechanism of enzymatic reactions. The first of these "The Mechanism of Oxidoreduction" by S. J. Leach is concerned with the manner in which electrons, ions and radicals participate in the reaction between substrate, enzyme and coenzyme. Among the topics discussed in this article are heterogeneous catalysis, the role of the protein moiety as an electron or photon semiconductor, and studies with isotopes, enzymes and enzyme models. The second review, "Mechanism of Action of Hydrolytic Enzymes" by H. Lindley deals in a critical fashion with present theories of enzyme action, the evidence for them, and the limitations of available experimental methods. A third article by Rene Wurmser is entitled "Thermodynamics of Immunological Reactions." Three articles dealing with carbohydrate metabolism also are presented. These include "Alternate Pathways of Glucose and Fructose Metabolism" by E. Racker, "Enzymatic Mechanisms in the Citric Acid Cycle" by S. Ochoa, and "Enzymatic Synthesis of Polysaccharides" by M. Stacey. The second of this group of reviews includes a discussion of fumarase, the condensing enzyme for the formation of citrate, and the oxidation of α -ketoglutarate. Closely allied to these articles on carbohydrates is a review "Chemistry and Metabolism and Scope of Action of Pyridine Nucleotide Coenzymes" by Singer and Kearney. Other chapters in this book are "Urea Synthesis and Metabolism of Arginine and Citrulline" by S. Ratner, "Thiaminase" by A. Fujita, "Rennin and the Clotting of Milk" by N. J. Berridge, and "Structure of the Tobacco Mosaic Virus and Its Mutants" by G. Schramm. The book contains a complete author and subject index of the present volume and a cumulative index of authors of reviews and titles of reviews. The format and printing of this book are excellent, and it contains only a few typographical errors,

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January 10, 1955–February 10, 1955

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