

NEW BOOKS

Advances in Enzymology, Vol. 15

Edited by F. F. NORD. x + 547 pages. Interscience Publishers, Inc., New York, N. Y. \$11. Reviewed by LESLIE HELLERMAN, The Johns Hopkins University, Baltimore.

Reasonable timeliness and general excellence and usefulness characterize the subject matter of this latest volume in the series, the extended title of which is, *Advances in Enzymology and Related Subjects of Biochemistry*. Eleven major subjects are treated; in most instances the respective authors have approached their material critically with the objective of outlining the more recent advances and stating the current trends of investigation. Naturally, some of the treatments are more thorough than others.

Outstanding and especially authoritative is the 87 page review by Ochoa of *Enzymatic Mechanisms in the Citric Acid Cycle*. The cycle is considered from the point of view of its role as "a major common pathway for the biological oxidation of most of the fragments arising during the catabolism of carbohydrates, fats, and proteins." Ochoa stresses the evidence underlying those rather astonishing advances of the past several years that have given substance and greater exactitude to our conception of the functioning of the tricarboxylic acid cycle. The subject is treated broadly rather than narrowly. Included are critical summaries of the processes involved in the conversion of pyruvate, fatty acid, etc., to citrate, of the discovery and role of acetyl coenzyme A, lipoic acid, and the condensing enzyme, of the oxidation of α -ketoglutarate, of fumarase, and of other pertinent subjects.

A second notable review is Ratner's careful summary of *Urea Synthesis and Metabolism of Arginine and Citrulline*. Numerous facets of this field of intermediary nitrogen metabolism are considered. The ornithine cycle is discussed in detail, and particular attention is given to the mechanism of arginine synthesis from citrulline, and to the conversion of ornithine to citrulline. Comparative biochemical aspects are not neglected.

Alternate Pathways of Glucose and Fructose Metabolism are discussed in detail by Racker. This author stresses several pitfalls in the matter of interpretation, as well as the essentially qualitative character of some of the approaches. In one or two places the treatment is a bit confused, for example in the section in which the author points to the continuing state of confusion in under-

standing of the Pasteur Effect. In a 60-page review, Singer and Kearney have brought up to date the *Chemistry, Metabolism, and Scope of Action of the Pyridine Nucleotide Coenzymes*. The treatment supplements two recent reviews in a closely related field cited by the authors. There is a careful review of *Thiaminase* by Fujita, a short summary of more recent developments in the *Enzymic Synthesis of Polysaccharides* by Stacey, and a discussion of *Rennin and the Clotting of Milk* by Berridge. In the latter field "...no new and more generally acceptable theory has been proposed. The nature of the first or enzymic reaction is still unknown. . ." *Thermodynamique des Reactions Immunologiques* is treated by Wurmser; the present position of *Die Struktur des Tabakmosaikvirus und seiner Mutanten* is presented by Schramm.

A reading of Lindley's essay on *The Mechanism of Action of Hydrolytic Enzymes* only serves to emphasize *inter alia* how little this field has advanced, at least from a theoretical point of view. The author is not to be censured if the treatment appears a little diffuse. The 47-page discussion by Leach on *The Mechanism of Enzymic Oxidoreduction* places considerable emphasis upon the possible role of free radicals and of chain mechanisms in biological oxidations. In this connection it may be suggested that one would welcome the availability of better criteria for the participation of chains in certain of these processes under actual experimental conditions. That intermediates of semiquinone character play their part in certain enzyme-catalyzed oxidations is not doubted.

The reviewer hopes that the use of such forms as "micromechanism" and "energy-rich chemical linkages" will not be perpetuated. He makes a plea for restriction of the term, mercaptide, to salts resulting from the combination of metal ions, or certain organic derivatives of metals, with the anions of mercaptans.

The book is equipped with adequate author and subject indexes, as well as with a short cumulative index giving the authors and subjects of the chapters in Vols. 1 through 15.

Vegetable Tanning Materials

F. N. HOWES. xi + 325 pages. Chronica Botanica Co., Waltham, Mass. 1953. \$5.50. Reviewed by FRED O'FLAHERTY, Tanners' Council, University of Cincinnati.

It is well known that practically all plant life contains some amount of tannin, the source of tannic acid.

The use of vegetable tanning materials in the manufacture of leather is a time honored history. Empirically discovered in prehistoric time, its art and science have advanced with the centuries and are of record in such books as this one by Dr. Howes of the Royal Botanic Gardens, Kew, England.

This book provides an informative commentary on plants rich in tannins. It contains much basic chemical and botanical information and, while intended for technologists in leather and tanning chemistry, it should be of general interest to agricultural chemists.

In the United States more than 80% of the vegetable tanning material is imported and the U. S. Department of Agriculture is now concerned with the exploitation of domestic crops of such materials as sumac and canaigre root.

Howes's book includes about 40 different species of plant life from which tannins are derived with classification according to whether tannin is obtained from wood, bark, leaves, nuts, or roots of the plants, and gives the details of culturing, reaping, and preparing the tanning extracts.

Each chapter is well illustrated. The book constitutes an interesting compendium of over-all information on tanning materials.

Proceedings Third Annual Ohio-Indiana Agricultural Aviation Conference

HOWARD B. TAYLOR, Agricultural Aviation Coordinator, Ohio Aviation Board, 501 Wyandott Building, Columbus, Ohio. \$2.00.

This is a report of a conference of state, university and government representatives with aerial applicators who meet annually to discuss recent developments in agricultural aviation.

It is intended as a reference or study book for the agricultural aviator who is interested in current technical developments. The proceedings are divided into four sections: entomology, general, agronomy, and engineering.

The general section concerns problems such as public relations and selling to the farmer. There is an extensive semi-technical discussion of the aerial application of herbicides and fertilizers in the agronomy section. A new experimental agricultural aircraft is discussed in the engineering section.

Gives a good background of the problems and interests of agricultural aircraft operators, and the technical problems in which they are interested.