

applications. Especially useful is the chapter devoted to the structure of ion exchangers and their different trade names. It should eliminate considerable confusion for prospective ion exchange users and enable them to readily select the type of resin for their particular needs.

It must be pointed out, however, that the very strength of the book will prove to be a weakness for those who expect to obtain a deeper understanding of the subject matter. The author's preoccupation with the deceptively simple concept of hydration at times results in a somewhat misleading explanation of the theoretical aspects of ion exchange kinetic and thermodynamic behavior. It would almost appear that the concept of hydration offers a panacea for understanding the fundamental nature of these systems. Moreover, an excellent presentation of the subject of ion exclusion is slightly marred by an over-emphasis on the lack of immediate uses for this technique. Along a similar vein, the author, in exercising his prerogative of giving wide coverage to the various industrial corporations operating in this field, at times has slighted some major contributors, as for example in the field of ion exchange membranes.

Save for minor typographical errors the book is well written. For those interested in a rapid, competent, overall perspective of the subject of ion exchange, this book should make an excellent addition to the literature in this field.

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**Vitamins and Hormones. Advances in Research and Applications. Volume XIV.** 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 Plant Physiology, Harvard University, Cambridge, Massachusetts. Academic Press, Inc., Publishers, 111 Fifth Avenue, New York 3, N. Y. 1956 xi + 486 pp. 16 × 23 cm. Price, \$10.00.

The first thought of a reviewer faced with this volume is "Does the latest addition to such a well-established family need more than a casual birth announcement?" Then one remembers one's own gratitude to previous reviewers who, even though they also must have felt inadequate to appraise critically the wide range of topics covered, at least, by mentioning the subjects discussed, enabled the reader to decide whether the volume required immediate attention or whether it was to be savoured at leisure.

In the current volume the number of articles on hormones outnumber those on vitamins six to two, but on a page basis this shrinks to two to one. The lead article, "In-

testinal Synthesis of Vitamins in Non-ruminants" by Olaf Mickelson, covers almost 100 pages and represents the most complete and most thoroughly documented review available on the subject. The next 40 pages on, "Some Aspects of Vitamin A Metabolism," by J. S. Lowe and R. A. Morton of the University of Liverpool, is limited to a discussion of the conversion of carotene to vitamin A and the systemic mode of action of vitamin A. The juxtaposition of many contradictory findings in these two reviews should serve as a stimulus to further research.

The "Regulation of Carbohydrate Metabolism in Isolated Tissues" by A. E. Renold, J. Ashmore and A. B. Hastings (pp. 139-185) surveys the current literature on the subject with particular emphasis on the authors' own work. The paucity of generally accepted conclusions regarding hormonal control of metabolic processes is emphasized but on the brighter side the availability of methods for attacking the problems is pointed out. The statement that glucose-6-phosphatase occurs in the intestine (p. 153) and the implication that proline is an essential amino acid (p. 171) are errors.

"Experimental Hyperglycemic States Not Primarily Due to a Lack of Insulin" by K. H. Shull and J. Mayer (pp. 187-227), is a review, with excellent historical perspective, of the direct or indirect effects of various endocrine secretions on carbohydrate metabolism. This review is complementary to that of Renold, *et al.*, and should perhaps have preceded it.

"Biochemical Studies on Insect Hormones" by Peter Karlson (Max-Planck-Institut für Biochemie, Tübingen) (pp. 228-267) outlines the rapid biochemical advances made during the past few years in this youthful and difficult branch of endocrinology. The translation by H. E. Green of Harvard reads extremely well.

"Glucuronide Metabolism, with special reference to the Steroid Hormones" is critically reviewed by C. A. Levvy of the Rowett Institute, Bucksburn, Scotland (pp. 268-305), the clear separation of the anabolic and catabolic aspects being emphasized.

The volume concludes with two reviews more technical in nature. "Bioassay of Pituitary and Placental Gonadotropins in Relation to Clinical Problems in Man" is dealt with by J. A. Loraine of the University of Edinburgh (pp. 306-359), and "Microbiological Transformations of Steroids and Their Applications to the Synthesis of Hormones" by S. H. Eppstein, P. D. Meister, H. C. Murray and D. H. Peterson (pp. 360-432). Both of these reviews contain a wealth of detail and a substantial number of references.

All in all, the editors, authors and publishers of this useful and highly readable volume deserve the hearty thanks of the wide range of scientists to whom this series is a valuable source of information and pleasure.

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