procedures for the preparation of the alcohols and some of their derivatives. The interrelation of carbohydrate and fat metabolism is reviewed by Deuel and Morehouse, who not only present evidence for the conversion of carbohydrate to fat and the alleged reverse transformation but also include a rather complete discussion of ketolysis versus antiketogenesis. In the review of mucopolysaccharides and mucoproteins, by Stacy, an excellent classification of the various complexes is presented. Evans and Hibbert, in their review of bacterial polysaccharides, emphasize the complexity of the problems, although indicating that definite progress is being made in this difficult field. The chemistry of the pectic materials is reviewed by Hirst and Jones, while McDonald discusses polyfructosans and difructose anhydrides. Many properties of these sugars and their derivatives are listed. The final review, contributed by Haskins, concerns cellulose ethers of industrial interest.

The book is especially valuable because the authors are actively working in the fields concerned. Each reviewer gives an historical background in the subject discussed. Such information is, of course, available in the literature, but a concise summary is always to be desired. The volume is well edited and contains a wealth of material essential to anyone interested in the field of carbohydrate chemistry.

JOSEPH S. BUTTS
Department of Chemistry, Oregon State College

Advances in enzymology and related subjects of biochemistry. (Vol. VI.) F. F. Nord. (Ed.) New York: Interscience Publishers, 1946. Pp. x + 563. (Illustrated.) $6.50.

Like its predecessors, this volume contains critical documented summaries of the advances in the borderland between physical and biological chemistry, physiology and microbiology.

In "The Bacterial Amino Acid Decarboxylases," E. F. Gale discusses the conditions necessary for their formation, the cell-free preparation of them, their properties, and their resolution into apo- and coenzymes. Pyridoxal phosphate appears to act as coenzyme for the four known decarboxylases; in acid solution it may have a protective function. M. G. Sevag reviews "Enzyme Problems in Relation to Chemotherapy, 'Adaptation,' Mutations, Resistance, and Immunity." "Adaptive" enzymes do not exist; unfavorable metabolic environment merely reduces the activity of enzymes already present. The biochemical changes in increased resistance to unfavorable conditions appear genetically to be regressive processes; the development of new strains implies acquisition, by a recessive cell, of genetic factors from cells of a higher order. D. W. Wooley, writing on "Biological Antagonisms Between Structurally Related Compounds," states that these can in most cases be explained by the displacement hypothesis.

"Adenosine Triphosphate Properties of Myosin" is the contribution of V. A. Engelhardt. These are such that all of the ATP in muscle could be split by myosin in one second. Conditions responsible for the inaccessibility of ATP are considered, and a tentative scheme for the sequence of events is proposed. In "States of Altered Metabolism in Diseases of Muscle," by C. L. Hoagland, are included atrophy, hypertrophy, and diseases of voluntary muscle in man. "Acetyl Phosphate," discussed by F. Lipmann, plays a role in the metabolism of bacteria and of animal tissues; the chemical and energetic relations are surveyed. In "Microbial Assimilations" C. E. Clifton includes those of carbon, carbon dioxide, and nitrogen, as well as the influence of poisons and of genetic factors. W. G. Frankenburg writes on "Chemical Changes in the Harvested Tobacco Leaf." In the curing process these changes affect the static, nitrogen, and dynamic groups in the leaf and are the result of the action of the leaf enzymes. "The Actions of the Amylases," by R. H. Hopkins, and "The Amylases of Wheat and Their Significance in Milling and Baking Technology," by W. F. Geddes, survey the properties of the amylases, their occurrence and assay, and their significance in breadmaking. K. C. D. Hickman and P. L. Harris, in "Topocopherol Interrelationships," suggest a general shortage in the American diet, as well as many synergistic relations which warrant greater consideration, but it is difficult to disentangle fact from theory and vitamin from covitamin.

An author index (22 pp.) and a subject index (13 pp.) add to the usefulness of the book.

H. A. MATTILL
Department of Biochemistry, State University of Iowa

Vitamins and hormones: advances in research and applications. (Vol. IV.) Robert S. Harris and Kenneth V. Thimann. (Eds.) New York: Academic Press, 1946. Pp. xvii + 406. (Illustrated.) $6.80.

This volume will undoubtedly enjoy the same wide acceptance and use as have the preceding volumes. It is not a review in the usual sense, since only a limited number of subjects are treated. However, each subject is covered comprehensively, aiming to give both detail and a broad understanding of the subject. Cross indexing and extensive bibliographies increase its value as a reference book.

Many of the subjects treated are quite timely because of widespread interest in their practical applications. The section on "The Newer Hematopoietic Factors of the Vitamin B Complex" is especially timely because of the recent demonstration that pteroylglutamic acid (folic acid, *L. casei* factor, etc.) has antianemic activity in man. It is unfortunate that this review was written before many of the clinical results became available. However, the authors were able to append a few paragraphs summarizing these recent developments.

The section on "Thyroactive Iodinated Proteins" is also quite timely, since the use of these substances to increase yields of milk and eggs is receiving considerable attention in agricultural circles. Details as to methods of preparation, properties, and methods of assay are given.

To those who have been confused by the many apparently conflicting results the section on "Nutrition and Resistance to Infection" should be of help. The author has reviewed the available evidence in a critical fashion and has indicated certain basic considerations important to a general understanding of the problem.

The volume includes a unique article on "Manifestations of Nutritional Deficiency in Infants." The author has apparently had unusual opportunities to study this subject and has collected information which should be useful to both nutritionists and pediatricians.

Two chapters deal with vitamin-hormone interrelationships. "The Effect of B Vitamins on the Endocrinologic Aspects of Reproduction" deals with experimental aspects of this complex and relatively undeveloped subject. The second of these chapters, "Nutritional Therapy of Endocrine Disturbances," attempts to apply certain laboratory observations to man. While there seems to be little doubt that there is a definite relationship between nutritional status and hormonal balance, it is difficult to evaluate the clinical claims. Some workers have been unable to confirm the widespread usefulness of this technic, as indicated in the review.

The chapter on "The Thyroid and Diabetes" presents a review of the available experimental data and discusses the practical aspects of the interactions of these glands.

Another section deals with "The Protein Anabolic Effects of Steroid Hormones." It seems well established that these substances do exert an effect on nitrogen retention and protein synthesis. Whether these interesting observations will have practical usefulness, except in certain endocrine states, seems to merit further investigation.

The final chapter describes "Methods of Bioassay of Animal Hormones" and deals especially with the anterior pituitary and adrenal cortical substances. For those attempting such determinations this chapter should prove most useful.

In general, the presentations are well chosen and carefully written, and most are critically evaluated. The defects are minor and more than compensated by the wealth of information presented.

JAMES M. HUNDLEY

Division of Physiology,
National Institute of Health, Bethesda, Maryland

Medical biochemistry. (2nd ed.) Mark R. Everett. New York-London: Paul B. Hoeber, 1946. Pp. xii + 767. $7.00.

While the author's main objective in writing the first edition was to provide a readable text for medical students, the second edition "was undertaken to provide accurate modern information for students and others who regard the book as a convenient reference volume." This change in objective was effected without substantial change in the arrangement, scope, or nature of the contents.

The subject matter is arranged in an interesting, although somewhat unusual, manner. The first two chapters are devoted to acid-base relations, colloids, enzymes, and energy metabolism. Following the subject of digestion, the chemistry, metabolism, and pathology of the lipides, carbohydrates, proteins, inorganic substances, vitamins, and hormones are treated in order. The author has covered the material in these chapters in an adequate manner without making the volume encyclopedic. He has incorporated in the new edition most of the recent developments in biochemistry, such as the antibiotics, Rh factor, dicumarol, phosphorylation, etc., and has expanded such topics as anoxia, plasma proteins, vitamins, muscle diseases, hypertensive factors, and ketogenesis.

The usual historical approach characteristic of most writers in this field has intentionally been eliminated, and the author has "avoided unnecessary speculations and argumentative considerations." However, he has placed at the end of each chapter a well-arranged bibliography of selected modern reviews. Although the book contains many tables and some diagrams, it is lacking in illustrations and color plates. Generally, each topic is preceded by an interesting literary quotation. A comprehensive index and a separate index to the tables and diagrams are included.

Students and workers interested in the various aspects of biochemistry will find this book a helpful addition to their library.

EMIL G. SCHMIDT

School of Medicine,
University of Maryland, Baltimore

Penicillin in syphilis. Joseph Earle Moore. Springfield, Ill.: Charles C. Thomas, 1947. Pp. x + 319. (Illustrated.) $5.00.

This supplement to *The modern treatment of syphilis* which has appeared in monographic form deals with the use of penicillin, either alone or combined with other therapeutic agents, in the treatment of the various manifestations of syphilis. To those who possess or will possess the parent volume this small book will prove a welcome and valuable addition. Except for an interesting discussion of reinfection and superinfection, there is no new knowledge in this monograph concerning other forms of treatment or the fundamental biology of syphilis.

The first eight chapters are devoted to a discussion of the pharmacology, toxicity, and mechanism of the action of penicillin and to other basic considerations. The majority of these chapters, while containing much that is important and fundamental, have little worth in the practical management of the patient. To the specialist, and to the experimentalist, they are of great and long-lasting value.

The remaining chapters deal with the use of penicillin in the management of syphilis in the human being, and one small chapter is devoted to treatment with streptomycin. The material is taken largely from the reports of the many civilian clinics and laboratories and installations of the Army, Navy, and Public Health Service cooperating in the organized nationwide study of penicillin in the treatment of syphilis.

As Moore admits, much of the material presented may be outdated by the time of publication, particularly as this material applies to the treatment of the patient who has syphilis. The basic considerations remain the same, but dosage schedules are being revised constantly. It seems unfortunate, then, that only three pages are devoted to the present-day treatment of early syphilis while many more pages are used to discuss obsolete dosage schedules which, while of experimental and historical interest, are of little value in the practical management of the patient.

The knowledge to date indicates that penicillin is of value in the treatment of certain of the late forms of syphilis. Beyond that, little may be said. For this reason, the chapters on latent and cardiovascular syphilis are justifiably short. Those chapters on penicillin in neurosyphilis, prenatal syphilis, and syphilis in pregnancy are incomplete but contain many worth-while practical aspects of treatment and observation. The true status of treatment of syphilis with penicillin and concrete deductions from its use cannot be made for several or more years, as Moore has recognized in the introduction.

The bibliography is complete up to October 1946. Many important articles since that date have appeared in the more prominent medical journals, and to these the readers of this volume should have easy access.