

Textbook of Biochemistry. By EDWARD STAUNTON WEST, WILBERT R. TODD, HOWARD R. MASON, and JOHN T. VAN BRUGGEN, University of Oregon. 4th ed. The Macmillan Company, New York, N. Y. 1966. xiv + 1595 pp. 24 × 18 cm.

The sheer physical size and weight of this textbook for medical students, or students of biochemistry, emphasizes the volume of information such students are supposed to acquire. Most of them will not be able to cope with this explosively expanding field in one academic year, but they will retain their text book as a reference volume. If they wish to read the present text most profitably, they will have to be well-grounded in physical chemistry. Such topics as bioenergetics, based on the experimental basis of energy concepts as applied to biology, and the chapters on protein structure, synthesis, and function can no longer be treated in a qualitative way. Likewise, a very strong and modern background in organic chemistry will be needed to appreciate the understanding of the structures, functions, and reactions of the innumerable hormones, vitamins, fatty acids, steroids, etc. which lie in the mainstream of biochemical interest.

Even though the first-year medical student is much better prepared than his older cousin was 10 years ago, he will not find it easy to understand fully this text book. Graduate students in biochemistry who are more dedicated to one subject and whose preparation includes more chemistry courses, will find this book more to their liking. Each chapter contains extensive general and specific reading references, and this feature again will be most useful to the serious reader who wants to follow-up in more detail on a particular topic. Since the time has now come to summarize and comment critically on many facets of intermediary metabolism, even a chemist familiar with these fields will enjoy a comprehensive and understandable review of these areas. The molecular biologist and medicinal chemist will get from this text many up-to-date facts and interpretations that will help him to formulate thoughts along the weakening interdisciplinary boundaries spanned by biochemistry.

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Mikrobiologiczeskie Transformacii Steroidov (Microbiological Transformations of Steroids). By A. A. AKHREM and Y. A. TITOV. Nauka Publishing House, Moscow. 1965. 505 pp. 17 × 26 cm. 3 rubels, 60 kopecks (\$4.00).

The discovery by D. H. Peterson and his colleagues in the Upjohn Company of the conversion of progesterone to 11 α -hydroxyprogesterone by *Rhizopus nigricans* initiated a feverish exploration of microbial transformations of steroids. The explosive period continued until about the early 1960's, during which time a host of novel microbiological transformations were recorded. Today the application of microbiological reactions in

laboratory research and industrial production is almost routine. The present pause is ideally suited for a summary of accomplishments of recent years, and, therefore, Drs. Akhrem and Titov's book is a timely and very useful review of the field and fulfills a definite need.

In essence the book can be divided into two parts. The first section encompasses the Introduction and Chapters 1-6 (pp 9-209) and the second, Chapter 7 (pp 210-502). A brief history of the field, types of steroidal structures, nomenclature, and the numbering system are given in the Introduction. A rather superficial discussion of methodology of microbiological operations is presented in Chapter 1. The important reactions, hydroxylation (Chapter 2), hydroxyl-ketone interconversions (Chapter 3), double-bond formation (Chapter 4), C-C bond breakage (Chapter 5), and hydrolysis and esterification (Chapter 6), are adequately discussed, and the literature is well covered. The mechanisms of reaction; e.g., hydroxylation, dehydrogenation, epoxidation, etc., are also clearly presented.

In the second part of the book (Chapter 7), the authors provide, in tabular form, an exhaustive literature survey of microbial reactions. The first table (pp 212-391) contains 2384 references to microbial reactions listing substrates, the transformation products, and the microorganisms. An alphabetical listing of products and substrates from which they were derived is given in Table 2 (pp 392-427). Similarly, a list of products according to their molecular composition and their names is provided in Table 3 (pp 428-461). Tables listing the microorganisms used for a given transformation (pp 462-476), types of reactions, the carbon atom on which they occur, and the stereochemistry of the introduced function (pp 477-482) are also given. Unfortunately, in this section the authors rely rather heavily on references to the patent literature.

Unfortunately, the book contains the usual complement of mistakes. A spot check of several references revealed two errors. Reference 66 on p 99 is incorrectly given as S. H. Eppstein while the author of the review is Professor A. Wettstein. Entry 1190, p 297, gives, for the transformation of progesterone to 12 β ,15 α -dihydroxyprogesterone, three references, among them ref 506 to a paper by A. Schibert, *et al.*, *Ber.*, **90**, 2576 (1957). This paper describes the conversion of progesterone to 12 β ,15 β -dihydroxyprogesterone. A very regrettable drawback of the book is the lack of author and subject indexes.

This is an adequate, concise, and readable book which will be of great value to the beginner as well as to the sophisticated investigator. Although the quality of paper, setting of type, and drawings are not of the standard usually found in the West, this book is a bargain by any standards. The tabular section of the book could be a convenient source of references even to those who do not read Russian, provided they learn to recognize the spelling of the basic structures (e.g., androstaene, pregnane, etc.).

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