

Enzyme Chemistry

In this small book, **An Introduction to the Study of Enzymes** (Wiley, New York, 1965. 345 pp., \$9.95), H. Gutfreund, the author, has managed to cover most of the important aspects of modern enzyme chemistry. It is made clear from the outset that this volume is not a comprehensive treatise. Nevertheless, the book succeeds admirably in dealing with a variety of subjects ranging from kinetics to recent proposals on the relationship of mechanisms of enzyme action to metabolic control in the cell.

In the first three chapters the author discusses the kinetic behavior of enzyme-substrate reactions. Many of these relationships are derived mathematically. However, the mode of presentation is such that it should not be difficult for the beginner to follow the reasoning. More advanced students should also benefit from reading these chapters because the discussions refer to pertinent reviews or articles in the literature which cover the material in greater breadth. Many readers will be pleased by the author's well-balanced approach to this subject. While the importance of kinetics in the study of enzyme-catalyzed reactions is stressed rightly, some of the limitations of this approach are also presented, especially as applied to present knowledge of the protein catalysts and experimental techniques for studying the details of reactions.

A separate chapter is devoted to special techniques for the study of enzyme reactions. This chapter is concerned particularly with methods used to measure rapid reaction rates, techniques which are becoming of importance increasingly in the elucidation of the detailed mechanisms of enzyme-catalyzed reactions.

Other chapters deal with the chemical and physical properties of enzymes as proteins and the possible relationship to their function as catalysts. Two chapters are devoted to the demonstration of enzyme mechanisms by well chosen examples of specific enzyme-catalyzed reactions: for example, hydrolytic, acyl, phosphoryl, hydrogen, amino, and carboxyl group transfer reactions. Current theories of the mechanism of enzyme action as well as the possible relationship of the properties of individual enzymes and multienzyme systems to metabolic control are discussed in the final chapter.

Gutfreund's own research has in-

involved many of the areas discussed in this book. It is not surprising, therefore, that he has given authoritative coverage to many facets of what is current in enzyme chemistry. In addition, however, this is a very well-written book that a wide range of students interested in this field will enjoy reading.

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Century Psychology Series

Sleep, Dreams, and Arousal (Appleton-Century-Crofts, New York, 1965. 431 pp., \$7), by Edward J. Murray, diagnoses of the state of sleep research correctly: ". . . the area has remained a disorganized collection of isolated facts . . . due, in part, to the fact that sleep phenomena have not been conceptualized in any systematic fashion." Whether Murray's treatment, the conceptualization of sleep as a motive, is successful is questionable.

Certainly the author is courageous. He has taken the slippery concept of motivation as his scheme and has attempted to organize the explosively emerging and admissably incomplete data from sleep research within that scheme. Again and again the data and the scheme do not coordinate. At this point, one needs a firm concept in order to clarify data or firm data to clarify or restructure the concept. Because we find the author struggling with the existent motivational concept and because the gaps and contradictions in the sleep data are manifold, the author and the reader are subjected to the agony of either, or both, shoring up the concept or straining the data.

In spite of, or perhaps because of, these typical problems of attempting to "bridge" two areas, this is a provocative book for the sleep researcher. The author's coverage of the sleep literature is contemporaneous, extensive, and has a conceptual emphasis.

The contemporaneity is demonstrated by inclusions of 1965 references in this 1965 publication. More importantly, the author seems to have moved with the rapidly changing data in most of his discussions. Extensiveness of coverage is a problem in this area which receives the attention of such a wide range of disciplines. The author presents an adequate coverage of the "classical" areas of the neurophysiology

and electroencephalography of sleep and dreams and gives an extensive coverage of the area of sleep deprivation. His coverage of such "psychological" aspects of sleep and sleep deprivation as learning and performance, personality and psychopathology, and, in particular, the socialization of sleep is especially noteworthy. In each of these instances the treatment suffers more from the limitations of the data than from the author's analyses. The conceptual wedding between sleep and motivation, albeit often more forced than relevant, performs the distinct service of pointing up the conceptual weakness from which this scattered field suffers.

There are unfortunate technical lapses. I noted that a citation to one of my studies in the text does not appear in the references, whereas another study cited in the reference (and cited as in press although articles that were published later are dated) does not appear in the text. I have not cataloged other such problems, but this personal example is not unique.

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New Books

General

All About Ants. Peggy P. Larson and Mervin W. Larson. World, Cleveland, Ohio, 1965. 226 pp. Illus. \$5.95.

The Advanced Theory of Language as Choice and Chance. Gustav Herdan. Springer-Verlag, New York, 1966. 475 pp. Illus. \$14.

Ancient Europe: From the Beginnings of Agriculture to Classical Antiquity. Stuart Piggott. Aldine, Chicago, 1966. 367 pp. Illus. \$7.50.

Antarctic Bibliography. vol. 1. George A. Doumani, Ed. Library of Congress, Washington, D.C., 1965 (order from Superintendent of Documents, Washington, D.C.). 514 pp. \$4.25. Citations and abstracts covering about 2000 books and articles published between 1962 and 1964.

Australian Mineral Industry: The Mineral Deposits. I. R. McLeod, Ed. Bureau of Mineral Resources, Canberra, Australia, 1965. 698 pp. Illus. Map. A 55-chapter outline of Australia's mineral resources.

British Microelectronics Data, 1965-66. G. W. A. Dummer and J. Mackenzie Robertson, Eds. Pergamon, New York, 1965. 317 pp. Illus. \$14.50.

Bureaucracy vs. Creativity. Frederick C. Dyer and John M. Dyer. Univ. of Miami Press, Coral Gables, Fla., 1965. 175 pp. Illus. \$5.75.

Changing Organizations: Essays on the Development and Evolution of Human

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