

to the simpler fermentation products. The author stresses the importance of those reactions capable of yielding free energy for bacterial growth. Assimilation of CO₂ and its reduction to CH₄ as proposed by Van Niel is discussed at some length in Chapter 1.

Each subject is introduced by an historical summary going back to the earliest recorded observations. Although the author disclaims any attempt at a complete bibliography he cites 162 references judiciously chosen so that the research worker wishing to pursue further study of the fields discussed could use the review as a starting point.

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Radioaktive Isotope ihre Herstellung und Anwendung.

By DR. KURT SCHMEISER, Knapsack-Griesheim A. G., Werk Knapsack Bei Köln, Früher Institut für Physik am Max-Planck-Institut für Med. Forschung, Heidelberg. Springer-Verlag, Reichpietschauer 20, Berlin W 35, Germany. 1957. xi + 246 pp. 17 × 25.5 cm. Price, DM 48.60.

The title of this book scarcely prepares the reader for the thorough treatise on radioactivity which the volume contains. Practically every topic conceivably pertinent to a discussion of radioactive processes from the experimental point of view is included. Beginning with an outline of the general features of nuclear structure, the author proceeds to give concise and easily comprehensible accounts of natural radioactivity, of artificially-induced nuclear transformations and the nuclear reactions by which radioactive isotopes are made. The principles governing the detection and measurement of radioactive radiations are developed with clarity and in detail. The application of these principles to actual detectors of the radiations is discussed with equal attention to the individual characteristics of each experimental device used in the measurement of radioactivity. No important method of measurement is overlooked.

It seems superfluous to give here a recapitulation of the contents of this book. The prospective reader can be assured that he will find in the pages of this volume the answer to practically any question which arises in the field of experimental radioactivity. A student could scarcely hope to find a better text from which to learn the elements of this important subject. A technician will find it a reliable guide in planning his work.

There is every evidence that the text has been prepared with great care. The information given is timely and accurate. Numerous clear and well-chosen illustrations and several extensive tables of data relating to nuclear processes enhance the value of the book.

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Advances in Enzymology and Related Subjects of Biochemistry. Volume XVIII. Edited by F. F. NORD, Fordham University, New York, N. Y. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1957. v + 435 pp. 16 × 23.5 cm. Price, \$9.00.

This volume of the *Advances in Enzymology* appears to be of considerable interest to a number of areas of biochemistry and related fields. The authors selected to review these fields are particularly competent specialists in their areas. The chapter by Hartree on cytochrome in higher plants is an excellent review. An attempt is made not only to present information regarding plant cytochromes, but a comparison of these cytochromes to bacterial and animal cytochromes is discussed.

Singer, Kearney and Massey's article on succinic dehydrogenase reviews the authors' recent work and also attempts to reconcile information of past with present investigations. The discussion of the mechanism of succinic dehydrogenase action is of particular interest; an attempt is made by the authors to clarify the problem whether fumaric dehydrogenase and succinic dehydrogenase are one or two enzymes.

The section on the mechanism of toxicity of *Dichapetalum cymosum* by Sir Rudolph A. Peters deals with the action and properties of fluorinated compounds. The evidence

that the toxic action of fluoroacetate is due to the plant synthesis of fluorocitrate is reviewed in detail and it is well documented. This review is an excellent attempt to integrate the information from Peters' own laboratory as well as that from other laboratories. Butler and Davison have reviewed some of the newer aspects on deoxyribonucleoproteins. The authors take particular cognizance of the possible role of the nucleoproteins as genetic factors.

In a timely review Kornberg has attempted to summarize the significance of pyrophosphorylases and phosphorylases in synthetic reactions. Workers in this area of enzymology, which is particularly active at this time, will gain much from this review. Kornberg has made a valiant attempt to integrate and classify the various types of pyrophosphorylases and phosphorylases.

Wiame has reviewed the role of the tricarboxylic acid cycle in synthetic reactions. This review covers a good deal of information and should be useful to investigators. However, the review is somewhat complex because of the inclusion of some information which appears not to be essential. The review, however, does give an excellent summary of the synthetic reactions leading out of the citric acid cycle in microorganisms.

The review by James is quite a complete one on the respiration of higher plants. Here again the information quoted is of use and will be of value to workers in plant metabolism.

The active investigations of the last few years on the chemistry and function of lipoic acid are adequately reviewed by Reed. He has given a particularly good summary of the chemical properties of lipoic acid.

The complex problems involved in lignification are reviewed in the chapter by Schubert and Nord. A good deal of material has been summarized and this should be of value to workers in this particular area.

In general this volume is well written and well documented and should become a valuable contribution to biochemistry.

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NATHAN O. KAPLAN

Annual Review of Physical Chemistry. Volume 8. H. EYRING, Editor, University of Utah, C. J. CHRISTENSEN, Associate Editor, University of Utah, and H. JOHNSTON, Associate Editor, University of California. Annual Reviews, Inc., Grant Avenue, Palo Alto, California. 1957. vii + 527 pp. 16 × 23 cm. Price, \$7.00 (U.S.A.), \$7.50 (elsewhere).

This volume is an excellent addition to an extremely useful, almost indispensable, series. The authors, as usual, are experts in their respective fields and represent a reasonably international selection. After the publication of seven previous volumes in the series there is little point in listing the more or less standard topics covered. Chapters included in the present volume on somewhat less conventional subjects are the following: High Polymers in Solution, Kinetics of Polymerization, Electrode Processes, Organic Reaction Mechanisms, Vibration-Rotation Spectroscopy, Combustion and Flames, The Physical Chemistry of Proteins, and Bond Energies.

Physical chemists owe a very considerable debt of gratitude to the editors and authors of this series. With the continued proliferation of the field of physical chemistry, these reviews become more valuable with each passing year.

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Kinetics and Thermodynamics in Biochemistry. By I. GEOFFREY BRAY, D.Sc. (Birm.), and KENNETH WHITE, B.Sc. (Lond.), Ph.D. (Birm.), F.R.I.C., Lecturers in Biochemistry, Department of Physiology, University of Birmingham. Academic Press Inc., 111 Fifth Avenue, New York 3, N. Y. 1957. xii + 343 pp. 16 × 24 cm. Price, \$7.50.

This rather small volume attempts to cover a large subject. According to the authors, the book is aimed at the honours student of Biochemistry, biochemists unfamiliar