BIOLOGICAL OXIDATION

Biological Oxidation. By CARL OPPENHEIMER and KURT G. STERN, with the collaboration of W. ROMAN. 276 pp. Bibliography of 1,383 references. The Hague: Dr. W. JUNK. New York: Nordemann Publishing Co., Inc.

THIS book is an entirely revised edition of one particular section of the senior author's (O.) comprehensive book, "The Ferments and Their Effects," which has been for several decades the guiding comprehensive work on enzymes. At a time when the knowledge about enzymes seemed to have just reached a level such as to justify the writing of a special section on enzymes in the frame of a text-book of biochemistry, Oppenheimer published the first edition of the book and brought it up to date in five successive editions. In this book the author not only organized the ever-increasing material but also largely contributed to the establishment of fundamental concepts and nomenclature of which a great deal is now in common use. A supplement to the fifth edition of this book, published in 1937, is the basis of the present book. It has been revised and supplemented by Kurt G. Stern, who not only has contributed a creditable amount of valuable experimental work in this field but also has shown on several occasions his ability in writing well-organized reviews. He is especially responsible for the chapters on redox potentials in heterogeneous systems; affinity and rate of reactions; the semi-quinones as intermediate steps of oxidation; photochemistry of the respiratory enzymes, yellow enzymes, carboxylase, protein bearers of enzymes and other topics of the most recent origin.

The vast material deposited in the ever-increasing amount of literature of the last few years has been exhaustively utilized in this book and organized in a systematic way. The authors are very well conscious of the fact that the present state of the theory and the system of the book derived from it, are just strong enough for the practical purpose of holding the material together, giving every experimental observation its proper place within the book and alleviating the enumeration and discussion of the vast material; yet that this system is not rigid, but flexible according to further discoveries.

The general part (pp. 1–123) is essentially concerned with the theory of oxidation-reduction. Here, the contrast between Warburg's theory of activation of oxygen and Wieland's theory of activation of hydrogen, and the reconciliation of the two by the unitarian theory, plays an important role. The special part (pp. 123–275) is essentially descriptive and contains such chapters as "the hemin systems," the "vitazymes," a name by which the authors comprise such enzymes as, for instance, alloxanthin enzymes and ascorbic acid; the "Nucleotide coenzymes and enzymes," the "quinoid mesocatalysts," such as Pyocyanine, Phthiocol.

The last chapter, on "Cell Respiration," is comparatively short (28 pp). It is obviously not considered as the topic proper of the book. Cell respiration, indeed, is the integration of all such individual enzymatic reactions as are dealt with in the preceding sections of the book. The problem of respiration, being a coordinate act of the organism, is a part rather of physiology; the main part of the book, however, consists, as it were, of a dissection of that coherent action of the living cell into the elementary, individual partial chemical reactions each of which requires a special study even without regard as to how it is interwoven with others for the purpose of respiration as a whole.

It may be mentioned that some of the few mathematical formulae occurring in the book, namely, in the chapter on two-step oxidation, are misprinted (p. 103).

The book will be a real help for those working experimentally in the field of cellular oxidation and reduction, and an instructive and comprehensive book for physiologists and biologists in general.

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REPORTS

RADIOACTIVE STANDARDS[1]

A SERIES of radioactive standards are being prepared under the direction of the Committee on Standards of Radioactivity of the National Research Council. These standards will be deposited at the National Bureau of Standards in Washington, D. C., to be issued as working standards to investigators who may desire them.

The standards under preparation at present are:

(1) *Radium Standards:*
  (a) 100 cc solutions sealed in 200 cc Pyrex flasks containing 10^{-9} and 10^{-11} grams of radium to be used as emanation standards either directly or by subdilution.
  (b) 5 cc solutions sealed in Pyrex ampoules containing, 0.1, 0.2, 0.5, 1.0, 2.0, 5.0, 10, 20, 50 and 100 micrograms of radium to be used as gamma ray standards. If desired, these may be obtained in sets of 13 with two each of the 0.2, 2 and 20 microgram standards.

(2) *Thorium Standards:*
  Sealed ampoules containing sublimed $ThCl_4$.

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