BOOK NOTICES AND REVIEWS.

Lehrbuch Der Enzyme. Prof. Carl Oppenheimer and Dr. Richard Kuhn. Publisher, George Thieme, Leipzig, 1927. 660 pages with eighteen illustrations.

This work on a very new important subject is a good example of German thoroughness in literature and science. The volume of some six hundred and sixty pages is, as the author Prof. Carl Oppenheimer states in the preface, intended as a textbook for doctors and students and is really an abridged form of the larger work on ferments published by the same author in several volumes. Because the work is intended more as a textbook the treatment of the subject has been condensed and literary citations have been given only where they were absolutely necessary. For further information the author refers the reader to his encyclopedic work. The great strides in the scientific development of the study of ferments and during the past decade render a work such as this very desirable especially so as the present one is very up-to-date and contains the latest information on the subject. While the greater part of the book has been written by Oppenheimer he has had the collaboration in the physical-chemical portion of it of a well-known specialist Dr. Richard Kuhn of the Zürich Polytechnicum. The work is divided into a General part and a Special part. In the General Section the general chemistry of enzymes is discussed, and their nature and classificatuon, specificity are described. Then a study of various factors which influence ferment action is taken up. The behavior of ferments as antigens receives attention, and activators and paralizators of ferments are discussed in full. The fourth chapter of this general section deals with the physical chemistry and kinetics of enzymes and ferments. Under this heading the physical chemistry and nature of the ferments is considered, the dynamics underlying their actions are taken up in detail and various theories concerning ferment action are given. The fifth chapter of the general section deals with the biology of the ferments and their occurence in nature, fermentation process in the body, and the fate of enzymes in living organism. The importance and significance in living processes take up a separate chapter of some thirty pages.

In the special section of the book a more detailed discussion of different ferments is taken up. A grand division is made into Hydrolases and Desmolases. The latter term refers to those ferments and enzymes which play an important rôle, not simply in the breaking down process, but in producing more intricate chemical reactions through oxidation and reduction, etc., as for instance in various metabolic processes. Under the first heading of Hydrolases are considered the Esterases (Zoölipases, Phytolipases, Tannases, Phosphatases, Chlorophyllases and Sulfatases). Then the Carbohydrases and Polyases including a study of sugars and Carbohydrates. Then follows a chapter on Nucleases and another on Amidases, and several chapters on the Proteases. Under the grand heading of Desmolases are considered Zymases and oxidation and reduction systems, Katalases and more complicated biological phenomena dealing with the action of insulin, etc. The work cannot be spoken of as an ordinary textbook, inasmuch as it is a far too complicated and abstruse for ordinary students and even physicians or chemists. It is, however, an invaluable book of reference to anyone whose work touches on the action of ferments or enzymes.

D. I. M.

Practical Physiological Chemistry. Philip B. Hawk and Olfa Bergeim. Publisher, P. Blakiston's Son & Co. 931 pages.

This ninth edition of the well-known work is one of the most readable books on Physiological Chemistry in the English language. The combination of the text together with practical exercises in Physiological Chemistry render it extremely useful for students and all those interested in biochemistry. This new edition contains seven new chapters dealing with some of the newer phases of Physiological Chemistry. One of these is a general discussion of the physical chemistry of true and Colloidal Solutions. Another is on Absorption, a third on Putrefraction and Detoxication, a fourth is on the Chemistry of the Blood and Tissue Analysis. A fifth is on Respiratory Metabolism and Neutrality Regulation, and two other chapters deal with Endocrine Organs and Energy Metabolism respectively. The whole book is very much up-to-date and deals with, not only, the regular routine procedures of medical physiological laboratories but also with biochemistry in general. Thus for instance there is a special discussion of Photosynthesis. Vitamins and Vitamin Assays have re-

ceived a special consideration. One of the chapters deals with Ultraviolet Radiation which is coming more and more into prominence in various departments of biology. With the modern trend towards physical chemistry a great deal of attention is paid to an exposition of physical chemical procedures and theories. Throughout the book there are numerous references to most recent articles of importance in biochemical literature and a special emphasis is given to review articles which are of great value to the teacher, physician and investigator. The authors have received coöperation as well as commendation and moral encouragement from some of the leading biochemists in the country. The whole volume is very elegantly gotten up. The use of different type for the text and laboratory directions is very appropriate and the whole volume is profusely illustrated with useful drawings and charts in addition to a number of full-page color plates. Altogether we consider this textbook an extremely useful one to keep on the library shelf of any medical or biological laboratory. D. I. M.

Volumetric Analysis for Students of Pharmaceutical and General Chemistry. Fourth Edition by Charles H. Hampshire. P. Blakiston's Son & Co; Philadelphia. Price $1.75.

This little book of 125 pages, written for students, is one of the best of its class.

It is refreshing to note the absence of the conventional introductory chapters on Calibration, Weighing, Apparatus, Indicators, Ion Concentration, etc., which surely discourage the beginner and make the task of the instructor doubly onerous. Imagine the impressions made on a beginner when confronted with an incomprehensible mass of technical details such as is customary in many of our books on Volumetric Analysis.

Mr. Hampshire plunges directly into the essentials, that is the practical work, in a simple, direct and comprehensible style, that cannot fail to awaken the interest and understanding of the dullest student.

Every operation is accompanied by its necessary calculations made especially easy, while the use of Empirical Solutions, incomprehensible or rather confusing to many, is adroitly introduced among the first examples.

It has always seemed to me that when introducing something that deviates from the straight and narrow path of the beginner's line of work, it is best to work it in incidentally until comprehended, then dilate. In other words, do not herald such as new matter under special chapters until later.

All essential points necessary in securing accuracy while handling calibrated vessels are introduced by degrees in the course of the student's work. He is made to note the value of accurate calibration, the proper methods in pipetting and precautions as to temperature.

Five indicators are introduced and applications thoroughly and clearly explained after having previously trained the worker on methyl orange.

Various chapters on Acidimetry, Alkalimetry, Oxidation and Reduction Reactions and Precipitation Reactions are followed by a section on Miscellaneous Reactions. Under this head, we find determinations of mixtures such as sulfuric and oxalic acids with hydrochloric and phosphoric acids, ferrous and ferric iron, boric acid and borax, etc.

Calculations exemplify every titration given including all B. P. chemicals. This affords every variety of titrations known under volumetric analysis.

Mr. Hampshire has entirely eliminated the worn out incorrect term "estimation;" he "determines" his unknowns. The index is rather laconic.

A splendid little book for every pharmaceutical chemist as well as student.

The press work is characteristic of Blakiston.

VIRGIL COBLENTZ.

Hydrogen Ion Concentration. Its Significance in the Biological Sciences and the Methods for Its Determination—By Leonor Michaelis, M. D. Professor in the University of Berlin, Resident Lecturer in Research Medicine in the Johns Hopkins University. Volume I, Principles of the Theory, represents the authorized translation from the second revised and enlarged German edition by William A. Perlzweig, Ph.D. of Johns Hopkins University and Hospital. Cloth bound, 6 x 9, publishers, The Williams & Wilkins Company, Baltimore, Md. Price $5.00.

This book represents a concise and yet comprehensive outline of the theoretical physicochemical principles of hydrogen-ion concentration. It is to be followed up by two further volumes in which will be presented the methodology and the colloid-chemical physiological and medical applications. From this it will be noted that this edition is presented especially for the consideration of biological readers. The present volume, however, deal-