

value to research workers in the fields of organic chemistry and chemotherapy. As a reference book on organic arsenicals used in therapy, it should be given a place in every pharmacist's library.

A. G. DUMEZ.

The Determination of Hydrogen Ions. By W. Mansfield Clark. Second Edition, 1923, 480 pp. Williams and Wilkins Co., Baltimore, Md. \$5.00.

To biochemists generally great credit belongs for having in their own particular field so extensively and profitably employed the quantitative consequences of the theory of Arrhenius as applied to acid-base equilibria. Stimulated by the researches of Sorensen and others, investigators in every branch of science have sought to determine the effect of hydrogen-ion concentration on all types of reactions, chemical or otherwise. The principles involved are the results of physical chemical research. The methods, much of the apparatus, and many of the indicators used are the product of the biochemist's labors.

Everyone who is interested in actually carrying out quantitative measurements of hydrogen-ion concentration can profit from Dr. Clark's book. It is obvious that such measurements have almost become a fad in some quarters and there are those who discredit many of the results obtained, on the ground that the necessary degree of familiarity with the physical chemical principles involved is not possessed by their sponsors. Careful consideration of the subject matter of this book will produce this necessary degree of familiarity, as well as a more wholesome regard for the difficulties to be overcome and the errors to be avoided.

The present edition is a complete revision of the first, some parts having been completely rewritten, and much new material has been added. The first chapter of the older work has been divided into two chapters and expanded in the interest of clarity. A description of the Gillespie colorimeter for use with two-color indicators is included in Chapter IV. One of the most valuable features of the present edition is the attempt which has been made to list in Chapter V, dealing with the choice of indicators, each of the dyes commonly used for this purpose, under their common names, together with the corresponding chemical name and the p_H range. The chapters dealing with the actual methods for measuring hydrogen-ion concentration, both colorimetrically

and electrometrically, have been enlarged. The use of the audion bulb in following the E. M. F. of gas chains is referred to in Chapter XIV. Chapter XVI on the relation of the hydrogen electrode potential to reduction potential has been revised and increased in size in view of the recent developments in this subject.

In Chapter XX, a brief review of supplementary methods for determining acid-base relationships, is described the work of Billman and Lund on the quinhydrone electrode. This particular section should be of great interest to pharmaceutical chemists, since the quinhydrone electrode permits the determination of the hydrogen-ion concentration and the electro-titration of easily reducible substances, *i. e.*, alkaloids. The increased use of both electro-metric and colorimetric methods in many different types of problems is adduced by the expansion of the section on applications of the methods from 29 to 48 pages. Finally the bibliography has been increased from 1234 to approximately 2200 references.

It is quite natural that whenever the book escapes beyond the bounds of elementary physical chemical theory and method, it emphasizes the biochemical field. This in no way detracts from its value to those whose interests may not lie in this circumscribed division, nor does it narrow Dr. Clark's treatment of the entire subject.

The author has not altered his theoretical discussions to completely conform to the concept of "activity" but has included this idea in such a way that the reader may translate the older views into the new, in so far as this can be done, at his own discretion.

Finally, the appearance of a scientific work written in readable English is always a matter for commendation. Dr. Clark is one of those who recognize language as a means for the transference of thought and not as a camouflage for ideas.

WILLIAM J. MCGILL.

Industrial Health, Edited by Geo. M. Kober and Emory R. Hayhurst with thirty-three contributors. Published by P. Blakiston's Son and Company, Philadelphia. 1924. Price \$15.00.

Even a casual inspection of the present volume will be a revelation to those who have not kept up with the recent advances in industrial hygiene and medicine. Here is a stately volume of about twelve hundred and fifty