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 (6) Parks, L. M., *Ibid.*, 10 (1939), 17.
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Book Reviews

Organic Reagents in Inorganic Analysis, by IBERT MELLAN, Ph.G., M.Sc., F.A.I.C. xxiii + 682 pages, 15 x 23 cm., index and appendix included. Structural formulas, graphs and tables. The Blakiston Company, Philadelphia, 1941. Price, \$9.00.

Superior sensitivity and specificity of organic reagents over those of inorganic reagents used in various phases of qualitative and quantitative analysis have brought rapidly increasing interest on the part of the analyst. As a prelude to the main text of this book the author discusses, in twenty or more pages, fundamental theories and principles of organic reagents as they apply to the testing of inorganic radicles and compounds. Such topics as acidic hydrogen, coordination bond, chelated compounds, oxime and hydroxyl groups, etc., are considered in this short discussion.

Following the theoretical treatment is a group of approximately two hundred organic reagents, alphabetically listed, for testing inorganic chemicals. A short description of some physical and chemical properties is given under each reagent along with a bibliography, which, in some instances, contains as many as forty to fifty references.

In the final section of the book there are, alphabetically arranged, cations, anions and some inorganic compounds, all in alphabetical order, to which the organic reagents, previously presented, have application. Procedure for testing are given together with a bibliography at the end of each procedure.

In general the book is well organized, bibliographies are quite complete and up-to-date and the print is easy to read. However, the author has left much of the detail out of test procedures. The bibliographies are expected to take care of this deficiency. As for instance, in the test for small quantities of lead by the dithizone method the fact that special precaution as to purification of reagents, particularly dithizone, and cleansing apparatus before it is used in the test with a hot aqueous nitric acid solution has been entirely ignored. Although the author has stressed the sensitivity of some of these reagents in the first part of the text he has lost sight of it in a lack of detailed specifications where necessary. Some of these reagents can be used not only in spot tests and colorimetric qualitative analysis but have been adapted to very accurate

quantitative work, again citing the dithizone as an example where quantities of lead have been accurately determined between four or five gamma.

This book serves only as a guide to the literature on the subject of organic reagents. Judging from the extent of the bibliographies this is what the author intended for it to be. In such a wide field he had no room for extra details in so small a space.—E. C. B.

The Glass Electrode. Methods, Applications, and Theory, by MALCOLM DOLE. First Edition, xv + 332 pages, illustrations. John Wiley and Sons, Inc. 440 Fourth Avenue, New York, New York, 1941. Price, \$4.50.

This is the first book of its kind. With the introduction and perfection of thermionic tubes, the glass electrode has become a very useful tool in industrial work and in the determination of pH of those materials whose pH cannot be determined by hydrogen electrodes.

The book is both timely and authoritative. The author, from his own experience, has written a fine treatise with an extended bibliography of the construction, theory, advantages, limitations and application of the glass electrode which should be a valuable reference book for years. The chapters on the pH of living tissues and natural products are interesting and informative. Several chapters are devoted to the pH of unbuffered solutions, micro methods and automatic pH control which the author expertly employs to illustrate the wide application of the glass electrode.

Professor Dole devotes several chapters to the standardization of the pH scale by various methods, which though not a complete and ultimate answer, is nevertheless a valuable contribution to the efforts to arrive at a uniform practice in pH methods and applications. He suggests several materials, especially potassium acid phthalate which is supplied by the pH Standards Section of the National Bureau of Standards, for use in the calibration of glass electrodes. He also recommends for the same purpose borax, potassium tetraoxalate, and sodium and potassium phosphates, which are also being established as pH standards at the National Bureau of Standards, by potentiometric, colorimetric and conductometric methods. Professor Dole is to be congratulated on the completeness and unusual clarity of this book.—W. J. Hamor

pH and Electrotitrations, by I. M. KOLTHOFF and H. A. LAITINEN. Second Edition, ix + 190 pages, illustrations. John Wiley and Sons, Inc., 440 Fourth Avenue, New York, 1941. Price, \$3.00.

This is the second edition of a well-known text intended for college seniors and graduate students in chemistry. It is noteworthy in that it brings together in one book four related subjects of importance in pure and applied chemistry. The first three parts deal with the applications of colorimetric, potentiometric and conductometric methods to a