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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

variety of analytical procedures and pH determinations. The fourth part, not included in the first edition, gives clear introductions to voltammetry and amperometric titrations. These chapters, though brief, give the necessary background for understanding diffusion currents and the application of the polarograph to chemical analysis of inorganic and organic materials. All four parts are concisely presented with emphasis on experimental technique rather than theory. Sufficient theory is given, however, for a practical introduction to the various methods.

References to the literature are brief but adequate for beginners. Important revisions include new standard equations for the calculations of pH from hydrogen electrode measurements, a more detailed discussion of liquid junction potentials, newer values of ionization constants and a more extended use of thermodynamics in the theoretical derivations. The authors are to be commended on the clear and straightforward manner in which they present pertinent material.—W. J. Hamor

The Chemical Action of Ultraviolet Rays. By CARLETON ELLIS and ALFRED A. WELLS. Revised and enlarged edition by FRANCIS F. HEYROTH. 961 pages. 1941. New York: Reinhold Publishing Corp. \$12.

The book contains 44 chapters divided into four parts as follows: Part I, The Sources of Ultraviolet Radiations; Part II, Photochemical Processes; Part III, Applications of Photochemistry to Industrial Products; Part IV, Applications of Ultraviolet Rays in Biology. The book represents an immense amount of labor in collecting literature. The author index contains over 6000 names and there are 38 printed pages of subject index. Certain explanatory chapters regarding the modern viewpoint have been added for readers who may not have had the advantage of recent advanced courses in physical chemistry. The volume represents a valuable work of reference for those interested in photochemistry.—A. G. D.

Report of Committee on Drug Addiction of the National Research Council, 1929-1941, and collected reprints, 1930-1941. xxx + 1580 pages, National Research Council, Washington, D. C. 1941.

Approximately thirty pages of this volume are devoted to the report of the Committee on Drug Addiction, in which the various activities of the Committee and its accomplishments are outlined. The remainder of the book is composed of reprints of papers in which there are reported chemical studies, pharmacological studies and clinical studies. There is a total of 153 reprints. This volume contains a mass of detailed information on practically all phases of drug addiction, and should serve as a valuable reference work for those seeking authentic information in this field.—A. G. D.

A Manual of the Literature of Chemistry, by GRACE RIGBY CAMERON. 77 pages. (c1940.) Baton Rouge, La.: Louisiana State University. 75 cents.

This guide to the literature of chemistry lists and discusses many of the more important reference works. The latter are classified in a somewhat arbitrary fashion and there is some repetition. The section on government publications is too incomplete and sketchy to be of much value. Critical discussion and completeness of information, so necessary for the beginner, are frequently lacking. The book also shows a lack of attention to detail in spelling. It is believed, however, that it is worthy of a place in the chemist's library.—A. G. D.

Emulsions and Foams, by SOPHIA BERKMAN and GUSTAV EGLOFF. 591 pages. Reinhold Publishing Corp., 330 West 42nd Street, New York, N. Y., 1941. Price, \$8.50.

This book is concerned primarily with the theory and applications of emulsions and, as such, it appears to be the most complete and comprehensive work of its kind published to date. The first chapter deals with the theory of emulsions and foams; the second, with emulsification; the third, with demulsification; the fourth, with practical knowledge of emulsions; and the fifth, with laboratory methods used in the examination of emulsions. The first hundred pages of the first chapter are devoted to a discussion of the views of many authors who have published on the theoretical aspects of emulsions and emulsification. An extensive bibliography is given. The volume contains much information on the practical applications of emulsions and should, therefore, be of value, particularly to technologists.—A. G. D.

Lange's Handbook of Chemistry, compiled and edited by NORBERT ADOLPH LANGE, Ph.D. Fourth Edition, 1935 pages. Handbook Publishers, Inc., Sandusky. Feb., \$6.00.

This is the fourth edition of a reference volume for all who require ready access to the chemical and physical data used in laboratory work and in manufacturing. Much of the material in the previous editions has been completely rewritten and extended. The new tables and extension of old tables have added 85 pages to the book. The new tables are as follows: Synthetic Rubbers; Correction of the Boiling Point for Pressure; Calculation of the Boiling Point of Organic Compounds; Qualitative Spectrographic Analysis; Sensitive Lines of the Elements; Hammond's Cuprous Oxide and Copper Equivalents of Sugars; Conversion of Specific Gravity to Density; Azeotropic Mixtures; Tank and Pipe Capacities; Logarithms of Factorial n. Factorials; Binominal Coefficients. The previous editions have proved to be of value to workers in pharmaceutical laboratories and it is believed that the fourth edition with its changes in subject matter and new data will prove to be equally valuable.—A. G. D.