

that crystallized in prisms. It appears to be identical with the anthocyanin, oenin, which occurs in the dark blue European grape, *Vitis vinifera*.

3. The anthocyanidin chloride, $C_{17}H_{16}O_7Cl + 1.5H_2O$, prepared by hydrolyzing the glucoside, crystallizes in prisms and is apparently identical with oenidin.

4. It is interesting to notice that in crosses between American and European grapes the pigment peculiar to *Vitis vinifera* is inherited by the hybrid.

5. When the acetyl derivative of the anthocyanidin was oxidized with neutral permanganate, acetylsyringic acid was formed and by saponification of the latter syringic acid was obtained. This determines the constitution of oenidin chloride.

GENEVA, NEW YORK

NEW BOOKS

Inorganic Quantitative Analysis. By HAROLD A. FALES, Ph.D., Associate Professor of Chemistry at Columbia University. The Century Company, New York, 1925. xii + 493 pp. 49 figs. 20.5×13.5 cm. Price, \$3.50.

This is an outstanding example of a modern type of textbook which aims at presenting the subject of quantitative analysis from a physicochemical standpoint.

According to the preface it was "the aim of the author in preparing this work to apply the principles of Physical Chemistry to the theory of Quantitative Analysis. . . ." "Perhaps the dominant feature of the text is the manner in which it presents the theory." "The customary division of the subject into gravimetric and volumetric methods. . . has been abandoned, and in its place the development of the subject is based on the fundamental principles which are involved; these are presented in the following order: (1) precision, (2) weighing, (3) measurement of volumes, (4) neutralization, (5) solubility product, (6) oxidation-reduction and (7) evolution and measurement of gases."

With the exception of No. 7, the discussion of the theory of the above topics is comprehensive and thorough, the best treatment of the subjects from this standpoint that the reviewer has seen. The physicochemical explanations are presented in a quantitative way with the conventional mathematical equations and illustrated with graphs and tables.

No 7 is not handled on a par with the other topics. Instead of being a comprehensive discussion of the evolution and measurement of gases, such as the author might well have written, it contains merely the methods for determining carbon dioxide in soluble carbonates and for total carbon in steel.

At the end of each chapter is a list of problems with answers.

In a work so frankly physicochemical in character, one would expect to

find exercises in the determination of hydrogen-ion concentration and in electrometric titration; these are, however, absent. There are also no sections on colorimetric and turbidimetric analysis.

Special points which the reviewer noted and liked are the thorough general discussions that precede each exercise, the estimates of the probable accuracy attainable with each method, and the numerous literature references which make the book an easy guide to the original sources of information.

Finally, the reviewer would like to raise a pedagogical question; is it proper to put into the hands of beginners in quantitative analysis (for this work is evidently designed for beginners) a textbook, the pages of which fairly bristle with physicochemical equations? Ordinarily, quantitative analysis begins with the sophomore year when the students have had only freshman chemistry. To ask these students to master so much physical chemistry while trying to acquire the difficult art of quantitative analysis seems to be asking more than they can do. The reviewer inclines to presenting these fundamental principles in a qualitative way to his beginners in quantitative analysis in order to lay a sure foundation for the study of the quantitative relations in the later years. To those, however, who wish to use the beginning course in quantitative as a vehicle for physical chemistry and especially to those who want a book suitable for advanced classes in the theory of quantitative analysis, the reviewer most heartily recommends this one by Professor Fales.

C. W. FOULK

Exercises in General Chemistry and Qualitative Analysis. By HORACE G. DEMING, Professor of Chemistry, University of Nebraska, and SAUL B. ARENSON, Assistant Professor of Chemical Engineering, University of Cincinnati. Second edition, revised. John Wiley and Sons, Inc., 440 Fourth Avenue, New York, 1926. xii + 282 pp. 28 figs. 22 × 14 cm. Price \$1.80.

The review of the first edition of this laboratory manual, which appeared in our issue of February, 1925, was highly favorable, and this second edition of the manual retains all the features which were then commended. The text which the manual is designed to accompany, "General Chemistry," by Horace G. Deming, was considerably altered in its second edition by placing the discussion of general laws, of formulas, and of equations before the descriptive chemistry of oxygen instead of much later in the book, as in the first edition. It has thus become necessary in the manual to provide new experiments to occupy the student's time at the beginning of the course, and to emphasize principles, such as valence, and oxidizing and reducing agents.

Some of the more difficult exercises of the first edition have been simplified or omitted, yet a number of quantitative experiments have been retained, even though the authors state that in their opinion "quantitative

work in an elementary course often consumes time that were better spent in the accumulation of useful and necessary qualitative information."

KENNETH L. MARK

Electro-organic Chemistry. By C. J. BROCKMAN, Associate Professor of Chemistry, University of Georgia. John Wiley and Sons, Inc., 440 Fourth Avenue, New York, 1926. xi + 381 pp. 15 figs. 23.5 × 15.5 cm. Price \$5.00.

This book deals with the multitude of organic reactions which may be accomplished by electrolysis. A very brief introductory chapter discusses methods and apparatus and is followed by Part I which treats of reactions at the anode; Part II of equal length is devoted to reactions at the cathode. The author has confined his attention to electrolytic reactions and discusses neither reversible cells nor the use of electrochemical methods in studying oxidation and reduction reactions.

The literature of electro-organic chemistry is widely scattered, much of importance being in the form of patents and theses. The author has made an exhaustive study of this material and has brought together in this volume an almost bewildering mass of information. References to the original work are given throughout and an excellent index and logical arrangement make the volume invaluable as a reference book in this field.

Besides being indispensable to the specialist, the book will be of service to many who are interested in some special electrochemical reaction or in the more recent developments. For example, those who are interested in the oxidation of organic compounds in general will find much of value in the summary of the recent work of Müller and of Fichter. Organic chemists who are confronted with some synthetical problem will do well to refer to this volume to see if some electrochemical reaction will be of service. Furthermore, the publication of this book is certain to act as a stimulus to organic and physical chemists to carry on more work in this interesting and important field.

JAMES B. CONANT

Organic Syntheses, an Annual Publication of Satisfactory Methods for the Preparation of Organic Chemicals. Editorial Board, HENRY GILMAN, Editor-in-Chief; ROGER ADAMS, H. T. CLARKE, J. B. CONANT, C. S. MARVEL, FRANK C. WHITMORE. Vol. VI. John Wiley and Sons, Inc., New York; Chapman and Hall, Limited, London; 1926. vii + 120 pp. 5 figs. Price \$1.50 net.

The sixth volume of "Organic Syntheses" contains directions for the following thirty preparations: acrolein, benzil, 3-bromo-4-aminotoluene, 2-bromo-ethanol, *m*-bromotoluene, *p*-chlorophenyl isothiocyanate, 3-cyclohexyl-2-bromopropene-1, cyclohexylcarbinol, 3-chlorohexylpropene-1, diacetoneamine hydrogen oxalate, α,α -diphenylethylene, ethyl acetoacetate, ethyl acetopyruvate, 2-furancarboxylic acid and 2-furylcarbinol, α -glyceryl-phenyl ether, *n*-heptyl alcohol, *n*-hexyl alcohol, mandelic acid, α -methyl-*d*-glucoside, myristic acid, *d*- and *l*-octanol-2, phenylisothiocya-

nate, 4-phenylsemicarbazide, quinizarin, *dl*-tartaric acid, thiophosgene, thymoquinone, trimethylgallic acid, trimyristin.

As all but three of these directions were submitted by contributors, the list is more varied than that in any of the earlier volumes. The general plan remains the same as that of previous volumes but, as stated in the editorial preface: "Several new features are inaugurated in the present volume. To the cumulative subject index to the six volumes which have already appeared, a similar author index is now added. In order to bring literature references to methods of preparative value up to date, there has been included an appendix which contains later references to directions published previously in this series. The appendix also contains corrections to some of the earlier preparations."

E. P. KOHLER

Ambronn-Festschrift der Kolloidchemischen Beihefte. (Ambronn Jubilee Volume of the Kolloidchemischen Beihefte.) Edited by A. FREY AND W. OSTWALD. Theodor Steinkopff, Dresden-Blasewitz, Residenzstrasse 32, 1926. iv + 376 pp. Illustrated by a portrait of H. Ambronn, and numerous figures. 16 × 23.5 cm. Price, unbound, 18 M.

This volume has been prepared and issued in honor of the 70th birthday of Hermann Ambronn (August 11, 1926). It contains articles by his friends, colleagues and students, for the most part dealing with the micellar structure of colloids, the subject to which Ambronn has made such notable contributions.

There is a short, introductory biography of Ambronn, followed by a longer account of the early history of the Nägeli micellar theory of colloids, of Ambronn's championship of it throughout its thirty years of eclipse and his final demonstration of its validity just in time to have the newer methods of x-ray analysis conclusively confirm his arguments.

The articles are twenty-seven in number. They deal in general with the microscopic structure of various colloidal materials as revealed by optical, polariscopic and x-ray investigations. Particular mention might be made of articles on the structure of rubber, proteins, cellulose fibers and of the photographic plate.

ARTHUR B. LAMB