New Books

MECHANISM OF ORGANIC CHEMICAL REACTIONS, by E. de Barry Barnett (Interscience Publishers, New York, 1956, 6 x 9 in., 289 pp., $4.75). Dr. Barrett's little volume begins with an introduction in which such concepts as mesomerism, electronic effects, conjugation, hyperconjugation, kinetics, etc., are defined and discussed simply but adequately. The author then shows how these concepts are used to explain the mechanism of most of the important organic chemical reactions. This discussion is divided into seven chapters covering substitution at a saturated carbon atom, nuclear substitution, lateral-nuclear migration, addition to double bonds, elimination and cyclization, molecular rearrangements, and miscellaneous reactions not involving rearrangements. The final chapter deals with the mechanism of several specific methods of oxidation, reduction, and halogenation.

The information presented has been carefully selected to demonstrate clearly the theoretical principles involved. Generous use is made of structural formulas, particularly for intermediate states of the molecules involved. Because the author did not intend his book to be a handbook for advanced research workers, the text is not burdened with many references. However a bibliography of more advanced treatises on organic reaction mechanisms is provided. Another useful feature is a summary of the meaning of reaction codings such as E1, SN1, etc. Printing and binding are excellent.

The reviewer can conscientiously recommend the book to all organic chemists as a sound, easily understood exposition of organic reaction mechanisms. A desk copy of the book has proved to be very useful for quick reference when questions of mechanism come up in reading the current journals and in conferences and discussions.

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AUTOMATIC PROCESS CONTROL FOR CHEMICAL ENGINEERS, by Norman H. Ceaglske (John Wiley and Sons Inc., New York, 1956, 228 pp., $6.75). The title of the book is misleading. From the title the reviewer first received the impression that it is a reference book for the practicing chemical engineer. However, as the author points out in the preface, this book was prepared as a text for undergraduate chemical engineers.

The first two chapters are well written and are of interest to engineers involved in design and operation of a process. Unfortunately the scope is all too brief.

The last five chapters deal almost entirely with the mathematics of control systems and, in the reviewer's opinion, are academic from the point of view of the practicing engineer.

We do not recommend this book for the practicing chemical engineer, but it appears suitable as a textbook for use in certain college engineering courses.

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QUALITATIVE SCHNELLANALYSE, by G. Charlot (in German, 2nd ed., 1956, 92 pp., 5.25 x 7.5 in., heavy paper covers, Walter de Gruyter and Co., Berlin, 7.80 DM). An excellent table of contents comprises slightly more than two pages. At the end of the volume are alphabetical indices of 38 cations and 24 anions, with references to pages on which their qualitative analyses are described. Quality of paper and printing is excellent.

As its title would suggest, this publication is not so much a comprehensive system of qualitative analysis, with complete listing of the properties of the elements and radicals discussed, as a "bag of tricks" for the rapid identification of the various ions. The reactions employed are modern in every respect. Each method includes a statement of the principle or reaction involved, the reagents used, clear directions for performing the test, the sensitivity to be expected, possible interferences and valuable notes for one inexperienced with the method. All of this information is compressed into a marvel of brevity. In a rather cursory examination no typographical errors were detected.

This little booklet, and it is not much more than that, is certain to be most useful to every chemist engaged in the qualitative identification of inorganic compounds. Its methods will permit a multitude of short-cuts from the tedious and laborious systems of qualitative separation so familiar in standard works on the subject. Even one lacking facility in technical German will have little difficulty in following the simple directions for the operations necessary to identify, or eliminate from consideration, the ions listed.

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PLASTICS PROGRESS, 1955. Papers and discussions at the British Plastics Convention, edited by Phillip Morgan (Philosophical Library, New York, N. Y., 432 pp., 1956, $17.50). This book is a collection of the review papers presented at the 1955 British Plastics Convention together with the questions and answers which followed. The first three papers are grouped under the heading Polymer Structure and Properties and deal with fundamental polymer theory. The other papers are on technological problems and are compiled under the headings: Expanded Plastics, Thermoplastics, Extrusion, Work Study and Productivity, Injection Moulding, Patents, Foundry Resins, and Glass Reinforced Plastics. The contributors are men well known in their respective fields, their style of writing is simple and lucid, and the coverage of the subjects is good. The inclusion of the discussion section follows the lead set by the volumes of the Faraday Society Discussions and enhances the value of the papers.

The book will be of value principally to the plastics technologist who desires authoritative reviews of the specialized subjects covered. It will be of secondary interest to the fatty acid chemist who is trying to synthesize chemicals of interest to the plastics manufacturer inasmuch as he will become acquainted with some of the problems of the plastics technologist.

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1955 BOOK OF A.S.T.M. STANDARDS INCLUDING TENTATIVES, Part 7, Textiles, Soap, Water, Paper, Adhesives, Shipping Containers, Atmospheric Analysis (American Society for Testing Materials, 1916 Race street, Philadelphia, Pa., 1,688 pp., 1956, $11). This book is one of the seven books that comprise the 1955 Book of A.S.T.M. Standards. The complete Book of A.S.T.M. Standards containing all the current standards is published only once every three years. In each of the intervening years supplements are published containing any new or revised standards adopted during the past year. Each book contains its own table of contents and index. The complete index and list of standards covering all seven parts are published separately. This index is issued annually and lists where all the standards and tentatives in their latest form can be found.

Part 7 of the Book of A.S.T.M. Standards contains the standards applying to the subdivisions listed in the title. Under Soaps and Other Detergents are included all the A.S.T.M. specifications for the various soaps and inorganic alkaline builders and the methods of analysis. Also included are methods of analysis for Sulfonated Oils, methods of analysis and various tests for metal cleaning compositions, several other miscellaneous tests, and a list of definitions of terms relating to these products.

In regard to the other subdivisions, the section on Textile Materials is quite extensive. It includes definitions of textile terms, the identification and analysis of various fibers, and specifications and performance tests for many types of fibers, yarns, and fabrics. Under Paper and Paper Products are included methods of analysis and performance tests for different types of paper and paperboard. Under Shipping Containers and Adhesives are included various performance tests for these products. Under Industrial Water are included various analytical and bacteriological tests for raw water, boiler water, and waste water. The section on Atmospheric Analysis is comparatively new and contains four tentative standards relating to this subject. There is also a subdivision on General Methods of Test which contains several miscellaneous standards including "Standard Specifications for Sieves" and "Determination of pH of Aqueous Solutions with the Glass Electrode."

A vast number of specifications and methods of test are included in the Book of A.S.T.M. Standards. Anyone purchasing, selling, or testing materials would be interested in these standards. Part 7 would be of particular interest to those people in the fields covered.

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