BOOK REVIEWS

Maleic Anhydride Derivatives—Reactions of the Double Bond. By LAWRENCE H. FLETT and WILLIAM HOWLETT GARDNER, New Products Division, National Aniline Division, Allied Chemical and Dye Corporation. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1952. x + 269 pp. 16 × 23.5 cm. Price, $6.50.

This is a book summarizing more than one hundred reactions of maleic anhydride and related compounds such as maleic and fumaric acids, esters and amides. Most of the reactions described are "Reactions of the Double Bond" as stated in the sub-title, but this principle is not adhered to inflexibly. Some of the reactions involve the anhydride or ester groups as well as the double bond, and a serious effort has been made to cite examples of the different possible reactions stemming from a given reagent as reaction conditions are varied. The available literature has not always made it possible to carry out this differentiation in a conclusive fashion. The book is written pretty much along the lines of Hickinbottom's "Reactions of Organic Compounds," but with emphasis on industrial applications.

The format is unusual in that exactly two facing pages are devoted to each type of reaction. The name of the principal reactant, the equation of a typical example of the reaction, a paragraph describing briefly the experimental procedure used for this example, and a bibliography including patents appear on the right hand page. A discussion about the reaction, a list of physical properties of the product and suggested commercial uses of the product appear on the facing left hand page.

A number of the reactions are organized into rather strained groupings. For example, the alkoxide-catalyzed additions of alcohols and of malonic ester and other active methylenic compounds are classed under the general heading of addition of metallic compounds along with Grignard reagents. Azides and diazomethane are represented here in the old style cyclic form which has been known to be incorrect for many years.

The reactions discussed include examples of most of the standard reactions expected for a double bond conjugated with a carboxyl function, examples of several typical types of Diels–Alder reaction, and a considerable number of unusual reactions. A perusal of this book is sure to stimulate ideas for research problems involving maleic anhydride and its near relatives.

A brief note on typography is perhaps in order. The use of square box "lassos" is more confusing than it is helpful, and has occasionally led to quite misleading equations. In several instances water is pictured as one of the reactants involved directly in the Grignard reaction, for example. The general formulas appearing at the tops of the pages do not seem very useful since it takes more time to decipher many of these than it does to glance at the equation of the reaction which appears directly below.

DEPT. OF CHEMISTRY
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Polarography. Second Edition. Volume II—Inorganic Polarography, Organic Polarography, Biological Applications, Amperometric Titrations. By I. M. KOLTHOFF, Professor and Head of Division of Analytical Chemistry, University of Minnesota, Minneapolis, Minnesota, and JAMES J. LINGANE, Professor of Chemistry, Harvard University, Cambridge, Massachusetts. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1952. xvii + pp. 423–953. 16.5 × 23.5 cm. Price, $11.00.

The extensive growth of polarographic literature in the past decade is illustrated by the appearance of this revised and augmented edition in two volumes. Volume II is concerned with applications and contains the subjects covered by 228 pages in the first edition. While all parts have been substantially increased, a fourfold enlargement of organic polarography and a twofold enlargement of inorganic polarography to 223 and 197 pages, respectively, will be noted. The volume is well illustrated, contains many tables of polarographic constants, and numerous references to the literature. The subject and author indexes to both volumes are also included.

This revised edition is recommended as a valuable source of general, up-to-date information on polarography and its application to all branches of chemistry.

NATIONAL BUREAU OF STANDARDS
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Nuclear Data. National Bureau of Standards Circular 499, with Supplements 1–3. Compiled by the NBS Nuclear Data Group. Circular 499 (xiv + 309 pp.) September 1, 1950; Supplement 1 (iv + 56 pp.) April 25, 1951; Supplement 2 (ii + 63 pp.) November 26, 1951; Supplement 3 (ii + 66 pp.) June 9, 1952. 23 × 29 cm. For sale by the Superintendent of Documents. Price, $4.25 (complete).

This Circular and its three supplements are a compilation of certain characteristics of nuclei published through June 30, 1951. The collection has been carried out by the NBS Nuclear Data Group, chiefly Katherine Way. The Circular does not contain some data which appear in a small number of very recent reviews, such as the energetics of reactions of light nuclei, nor does it include old values except where such references are helpful in locating early collections of nuclear information.

For nuclei which are β and γ stable, the following are tabulated: relative abundance, spin, magnetic moment, electric quadrupole moment, energy levels, neutron and charged particle cross sections, and methods of production which yield energy level or binding energy information. Neutron cross sections are given for some natural elements. For nuclei which are β or γ active the following are collected: half-life, relative abundance if a natural radionuclide, incidence of K capture, percentages of positron and negatron groups, γ-rays, X-rays, producing reaction, genetic relationships. Most important data related to natural radioelements are tabulated, but the literature survey was not complete in that area. Fission and spallation cross sections and yields are omitted. Accurate masses are likewise not included.

This work is intended to be "primarily a tool for active workers in the field of nuclear physics rather than a list of 'best values.' " The intention of the compilers has been realized. This collection of information will be of considerable utility to nuclear physicists and chemists, and to others whose principal interest is in nuclear properties and phenomena; its essential completeness makes it difficult for the casual user to employ.

The interest of most chemists in nuclear data is confined to accurate masses, isotopic abundances, and radiation and decay characteristics. Furthermore, the chemist is usually interested in the most probable or "best" value of a given magnitude and a statement of the likely error in it. General collections of such data are available in handy form in tables of isotopes, such as that authored by Seaborg and Perlman (a new edition of which will appear early in 1953), but no brief, critical survey of this same information is yet available.

The Circular is one of a series of compendia prepared by the National Bureau of Standards, concerned with the data of important and broad areas of physics and chemistry. The Bureau is performing a valuable service in supporting the preparation and distribution of these volumes, of which the one reviewed here is a fine example. Additions to the present collection are appearing monthly in Nuclear Science Abstracts; quarterly and annual summaries are planned.

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