NEW BOOKS

ALLGEMEINE UND ANGEWANDTE KOLLOIDKUNDE, by Erich Manegold (Strassenbau, Chemie und Technik Verlagsgesellschaft m.b.H., Heidelberg; 2 volumes, 1956 and 1958, 1698 pp. in consecutive pagination. D.M. 260).

This book is meant mainly for the engineer who, in his curriculum, had little, if any, practical and theoretical training in colloid chemistry. It is based on long experience in academic teaching and represents an expansion of an earlier text on the fundamentals of colloid chemistry (1949) by the same author.

An introduction (181 pages) stakes out dimensions, definitions and basic concepts. Part 1 (64 pages) discusses the units, i.e., matter, shapes and surfaces, leading to Part 2 which treats the systems built by the units (670 pages in volume 1, 180 pages in volume 2). This major section of the book has 4 chapters: corpuscle systems (spheres, polyeders, or other shapes); linear systems (polymer molecules, chains, fibres); planar systems (films, lamellae, layers) and capillary systems. Each of these chapters offers first a scholarly discussion of fundamentals. For example, under "linear systems" nearly 100 pages are devoted to the chemistry of polymers, or under "capillary systems," 80 pages elaborate on theory of adsorption phenomena. Each of the four chapters discusses occurrence, properties and uses of the particular systems and treats specific topics. For example, soaps, bread and photographic emulsions are discussed under "linear systems"; paper, linoleum, graphite under "planar systems"; soil, chemosorption, and catalysts under "capillary systems."

Part 3 (530 pages) is devoted to the changes in the systems. Coagulation, gelation and swelling are discussed there together with practical topics like varnishes, glues or analytical procedures.

An enormous variety of topics on most everything between electron microscopy and work in the kitchen sink is offered under the principles of colloid science, written for the non-colloid scientist. Theories, craftsman's wisdom and the areas in between are presented rigorously and in a very stimulating way. The discussions are very understandable for non-experts in the particular fields and the book can nearly be considered an encyclopedia of topics which are related in some way to colloid phenomena. The text is demanding beyond the normal technical vocabulary.

The book is probably read by tehnical workers who sometimes would wish to go to the original literature sources of theory and practice. However, there are no references cited with the numerous authors which are given. Another point to make this lack regrettable is the fact that literature references often help to lift the language curtain for readers who read a text in a foreign language. In this latter situation, probably the greatest difficulty is finding the area in which the topic of interest is dealt with. An excellent subject index (67 pages in volume 2) and an author index (20 pages) are provided. In the subject index about 50 subentries are specified under "soaps," about 20 subentries are found under "Donnan—," and many other examples could be given for the quality of the index.

The publishing house contributed in every respect to the book. Binding, paper, print, figures and photographic reproductions in abundance are excellent.

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STANDARD METHODS OF CHEMICAL ANALYSIS, VOLUME I, The Elements, Sixth Edition, edited by N. Howell Furman (D. Van Nostrand Co., Inc., Princeton, N.J.; 1401 pp. plus XIX; 1962, $25). This book hardly needs an introduction. The first four editions, edited by Dr. Wilfred W. Scott, and the Fifth Edition, edited by Dr. N. Howell Furman, have been widely used by analytical chemists for many years as standard reference works. It seems certain that the Sixth Edition will be even more valuable to analytical chemists than previous editions inasmuch as it has been expanded to three volumes in order to afford proper coverage of the rapidly developing field of physical and instrumental methods.

Analytical determination of the elements is covered in Volume I. Generally, the elements are considered in alphabetical order except for logical groupings such as the alkaline earth metals, rare earth metals, platinum metals, niobium and tantalum, rhenium and technetium, selenium and tellurium, and zirconium and hafnium. The analytical chemistry of the transuranium elements is omitted due to the inaccessibility of classified information. In each chapter a uniform sequence has been used in treating the subject. Thus, physical properties, detection, estimation, preparation and solution of samples, separations, gravimetric, titrimetric, colorimetric-photometric, and other methods of determination are considered in order. Finally the determination of the element in other substances is considered. This format is essentially the same as that of previous volumes.

Special considerations have led to a more extensive treatment of certain elements. Increased commercial interest in aluminum, magnesium, titanium, and phosphorus prompted more extensive coverage of these elements. On the other hand, concern with public health hazards led to the inclusion of methods for the determination of strontium-90, of free silica in rocks, and of beryllium, sulfur compounds, and thallium in air.

Furman's "Standard Methods of Chemical Analysis" should be regarded as a "working" reference book. The proposed three-volume size will be convenient for practical use. In comparison the incomplete reference work by Wilson and Wilson (ed.) entitled "Comprehensive Analytical Chemistry" in five volumes and at least seven books (Vol. I is divided into three books) is more detailed, particularly in the general treatment of classical and instrumental methods. Similarly, Kolthoff, Elving, and Sandell's incomplete "Treatise on Analytical Chemistry" is organized in three parts (Theory and Practice, Analytical Chemistry of the Elements, and Analysis of the Elements) and presented in many volumes of which seven volumes (three in Part I and four in Part II) have been published. The sheer size and detail of the latter two reference works suggests their use as a library reference source rather than as a laboratory reference work. Hildebrand, Latimer, and Wendell's "Reference Book of Inorganic Chemistry" should also be mentioned in that it covers the chemistry of the elements as does Furman's Vol. I. However, Furman's treatment is more complete in considering analysis of compounds in addition to that of the element and in presenting a variety of applicable analytical methods for each element and its compounds.

There is no question that Vol. I adequately and accurately describes standard methods for the analysis of the elements. Further, it offers a variety of analytical methods for a given element so that the needs or whims of an analyst may be served. However, to avoid disappointment, an analyst should not expect to find the most recent analytical methods in Vol. I. References to 1961 and 1960 literature are infrequent although chapters vary considerable in this respect. For example, calcium analysis is discussed without reference to a new and improved Calmagite indicator for versenate titrations; fluoride analyses are considered without reference to a new, sensitive zirconium-SPADNS indicator or to the method of Belcher et al. which is unique in utilizing a reagent which gives a positive color development with fluoride in contrast to the bleaching principle of the majority of other indicators; and finally the use of the newer liquid scintillation counters is not considered in the assay of the radioactivity of strontium-90 or radium.

However, the over-all consideration of Vol. I leads to an enthusiastic recommendation of it to every chemist who is concerned with analytical work. For maximum benefit it should be available as a desk copy.

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(Continued on page 39)

New Books . . . .

(Continued from page 16)

DISTILLATION: PRINCIPLES AND DESIGN PROCEDURES, by Robert J. Hengstebeck (Reinhold Publishing Corporation, 365 pages, 1961, $11.50). This book is 6″ x 9″. It has many illustrative diagrams, tables of data, graphs, and mathematical equations. The table of contents is divided into sixteen chapters. These cover physical chemical theoretical discussions, description of the different types of distillations, mechanical construction of distillation columns, methods of calculating column sizes, and methods of estimating efficiencies. From a utilitarian point of view for ease of finding subject matter, it is unfortunate that three different chapters have the same running heads on the right hand pages. This is particularly so when the chapters are not adjacent.

The author starts from the beginning in his theoretical discussion of distillation and its application to design, construction, and operation of stills and fractionation equipment for industry. The book will be of value to students as well as the practicing engineer. Because of his experience with a large industrial organization that is based on separation operations, the author has been able to choose with authority those superior methods of design from among the many that have been proposed. Frequently throughout the book he will evaluate alternate procedures and indicate the strong points and the weak points of various methods and in which particular areas these characteristics are evidenced.

Although the author quite properly includes, for the sake of completeness, much elementary work that has often been described in distillation texts, he gives only references for the Ponchon and Savarit methods. Because these references are so obscure it seems that for the same reason a description of these methods might have been given.

The author has given many references to original publications on the subject matter. They have amounted to as many as seventy in some chapters. In addition bibliographies are given for selected topics.

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ORGANIC PEROXIDES, THEIR FORMATION AND REACTIONS, by E. G. E. Hawkins (D. Van Nostrand Co., Inc., Princeton, New Jersey, 434 pp., 1962; $12.50). Dr. Hawkins' book is one of the most welcome additions to the organic chemical literature of recent years. Although many review articles, books, and monographs describing certain aspects of peroxide chemistry have appeared, "Organic Peroxides" is the first really comprehensive text covering the subject of peroxide synthesis and reactions. In comparison, Rieche's monograph, "Alkylperoxides and Ozonides," published in 1931, is now outdated, while Hawkins' review article, "Organic Peroxides, Quart. Reviews, *4*, 251 (1950) and Rieche's summary, "Uber Peroxyde of Athers, der Carbonyl-Verbindungen und die Ozonide," Angew, Chem. *70*, 251 (1958) are incomplete. Walling's book, "Free Radicals in Solution," gives an admirable coverage of the free radical formation and decomposition of peroxides, but obviously does not discuss ionic reactions of these compounds. The very comprehensive reviews on ozonides by Bailey and by Long deal with a rather limited subject. The monograph by Tobolsky and Mesrobin on the "Chemistry, Decomposition, and Role of Organic Peroxides in Polymerization" gives an extensive but not a very comprehensive coverage of peroxides. Hawkins' book, however, treats the entire field of organic peroxide synthesis and reactions in a comprehensive and critical manner. He discusses mechanisms liberally.

The book is organized in chapters according to compound type (i.e. alicyclic, cyclic, aryl, and heterocyclic hydroperoxides and peroxides, peroxyacids, cyclic peroxides and α-oxy substituted peroxides. A very brief chapter is devoted to the analysis, removal, and applications of peroxides. Since one chapter is hardly enough to cover the

(Continued on page 40)

• *New Literature*

FOSTER D. SNELL, INC. offers a new monthly publication entitled FATTY ABSTRACTS. It will contain marketing data for surfactants, soaps, oils, fats, waxes, and related materials. (Client Relations Dept., 29 West 15th St., New York 11, N.Y.)

AIR REDUCTION CHEMICAL AND CARBIDE CO. has a 15-page technical bulletin S-5, describing Surfynol 400 nonionics, new surfactants that are presently available in developmental quantities. (New Products Dept., 150 East 42nd St., New York 17, N.Y.)

EMERY INDUSTRIES, INC. technical bulletin No. 230, introduces eight new fatty acids. (Dept. 5, Carew Tower, Cincinnati 2, O.)

KNAPP MILLS, INC. has published a new Chemical Process Industry section for its general catalog, describing the Insmetals. (23–15 Borden Ave., Long Island City, N.Y.)

SWITZER BROTHERS, INC. announced the updated 1962 edition of their technical bulletin No. 1115-B, on Day-Glo daylight fluorescent pigments for the color and coating industries. (4732 St. Clair Ave., Cleveland 3, O.)

BECKMAN SCIENTIFIC AND PROCESS INSTRUMENTS DIVISION have a descriptive bulletin, No. 7004, explaining features of the new Beckman A.C. DU Power Supply. (Information Dept., 2500 Harbor Blvd., Fullerton, Calif.)

BECKMAN INSTRUMENTS, INC., SPINCO DIVISION, have published a 16-page brochure describing their Model 120B Amino Acid Analyzer. (Palo Alto, Calif.)

FRITZSCHE BROTHERS, INC. have a July, 1962 issue of their wholesale price list, available upon request to those who purchase in wholesale quantities. (76 Ninth Ave., New York 11, N.Y.)

LA PINE SCIENTIFIC CO. has released a bulletin E-96 (4), announcing an improved model of the Leeds & Northrup 7401 Stabilized pH meter. (6001 S. Knox Ave., Chicago 29, Ill.)

BRINKMANN INSTRUMENTS, INC. has released a bulletin describing the uses of thin layer chromatography in essential oils, resins, balsams, waxes, fatty dyes, and tars. (115 Cutter Mill Rd., Great Neck, N. Y.)

New Books . . . .

(Continued from page 39)

formidable subject of peroxide applications, this topic might well have been left for another text. A final chapter reviews autoxidation reactions and is a welcome addition to the book.

It is difficult to see how a volume of this nature could be organized to avoid repetition and overlap of subject matter. Yet, the greatest criticism of Hawkins' book is needless repetition. A second problem is that of locating or piecing together information about a particular class of compounds which may be located in several different sections of the text. For example the subject of ozonides is discussed under at least four different headings, while the Crieger mechanism for ozonolysis of olefins is described in no less than three different places in the book (pp. 141, 252, 294).

The book contains about 1700 references and is therefore an excellent literature source for the organic chemist working in the field of organic peroxides. The text should be of particular value to this journal's average subscriber, who is so often concerned with the problems of peroxide formation and autoxidation. The cost ($12.50) is not prohibitive; consequently the book would be a good addition to the library of any organic chemist.

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