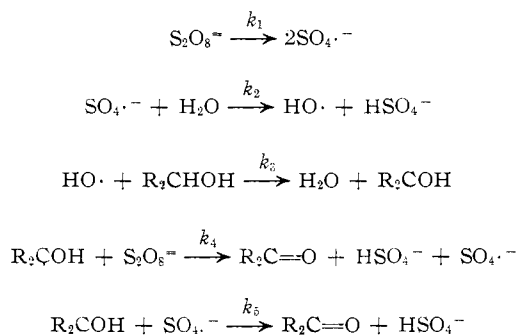


A kinetic scheme which will accommodate these facts is



which leads to the rate law

$$v = \sqrt{\frac{2k_1k_2k_4}{k_5}} [\text{S}_2\text{O}_8^{2-}]$$

This scheme also will accommodate the decrease in rate constant observed with rather low concentrations of alcohol or of persulfate,¹ for here other chain terminating steps become important, thus decreasing the chain length and correspondingly decreasing the rate constant.

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RECEIVED NOVEMBER 12, 1958

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BOOK REVIEWS

Synthetic Methods of Organic Chemistry. Volume 12. By W. THEILHEIMER. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1958. xvi + 546 pp. 16.5 × 23.5 cm. Price, \$22.25.

Dr. Theilheimer's efforts provide the preparative chemist with annual installments of what amounts to an Ariadne's thread out of the Labyrinth of current literature. The popularity of the well established series bears witness not only to its usefulness and excellence but also the increasing trend to entrust the problems created by the deluge of published scientific data to dedicated literature scientists.

The series has been fully discussed and described in previous reviews, including several by the present writer, (THIS JOURNAL, 1946, and following), and this reviewer considers his task completed by calling attention to the fact that the 1958 volume, No. 12, has appeared.

RESEARCH DEPARTMENT
CIBA PHARMACEUTICAL PRODUCTS, INC. HANS HEYMANN
SUMMIT, NEW JERSEY

Ion Exchange Resins. Second Edition. By ROBERT KUNIN, Rohm and Haas Company, Philadelphia, Pennsylvania. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1958. xiii + 466 pp. 15.5 × 23.5 cm. Price, \$11.00.

In a field that is growing as rapidly as that of ion-exchange it is necessary to make periodic revisions in order that new developments can be included. The second edition of "Ion Exchange Resins" is the most complete and authoritative compilation in its field. Many developments which were treated in a cursory fashion in the first edition have been expanded to form new chapters in the present work.

The first four chapters which discuss the theory and basic principles of cation and anion exchange, as well as chapter five which describes the synthesis and tabulates the properties of the many types of commercial ion-exchange materials, are of great value to chemists and chemical engineers in general. The next nine chapters which are devoted to various applications of ion-exchange should be of special interest to the reader who wishes to become thoroughly acquainted with ion-exchange technology. Chapters fifteen, sixteen and seventeen are written primarily for the chemical engineer and are essential to a comprehensive dissertation on ion-exchange resins.

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JACK E. POWELL

Comprehensive Inorganic Chemistry. Volume Seven. Edited by M. CANNON SNEED, Professor Emeritus of Chemistry, School of Chemistry, University of Minnesota, and ROBERT C. BRASTED, Professor of Chemistry, School of Chemistry, University of Minnesota. The Elements and Compounds of Group IVA. By HAROLD P. KLUG and ROBERT C. BRASTED. D. Van Nostrand Co., Inc., 126 Alexander Street, Princeton, N. J. 1958. ix + 302 pp. 16 × 23.5 cm. Price, \$7.50.

This volume is divided into two parts. Part I (233 pp.) is devoted to the non-transitional elements of Group IV and certain of their compounds. Part II (42 pp.) is concerned with borides, carbides, silicides and related compounds.

The title of this, the seventh volume in a series of eleven, is misleading in that the treatment is not comprehensive except in the special sense set forth by the authors; *i.e.*, "comprehensive in the extensiveness of the fields covered rather than in the fullness of their treatment." Accordingly, reader reaction to this and its companion volumes will be determined largely by whether the specific topic on which information is sought was one of those selected by the authors for inclusion either briefly or in detail.

The subject matter included in Volume Seven is indeed extensive. It ranges from more or less classical descriptive and historical information of the type found in many freshman chemistry textbooks to data relating to thermodynamic properties and structural information that would be useful primarily to the research worker. Of the more purely descriptive sections, those dealing with glasses and with the allotropic forms of carbon are noteworthy.

Even though the ground rules adopted by the authors provide complete latitude with respect to inclusion or omission of specific topics, the reader nevertheless expects some internally consistent plan or viewpoint. Such is difficult to detect in the present instance. For example, only the original method for the synthesis of carbon suboxide is mentioned; a much superior procedure [*cf.* Hurd and Pilgrim, THIS JOURNAL, 55, 757 (1933)] is not included and there is no reference to the one review paper on the chemistry of this oxide [*cf.* Ryerson and Kobe, *Chem. Revs.*, 7, 479 (1930)]. On the other hand, silicon monoxide is discussed in more detail and all of the pertinent literature is cited. Similarly, the section on the halides of carbon makes no mention of the bromide or iodide, yet all of the halides of germanium are included at least briefly. Numerous other examples could be cited.

Part II of this volume represents an overly ambitious undertaking. Brevity and a high degree of selectivity are

inescapable when one undertakes to cover "the metallic borides, carbides, silicides and related compounds" (including hydrides) within the scope of some forty pages. One of the most notable omissions is that of the many interesting structural problems presented by the hydrides of boron; presumably this topic will be covered in a later volume.

The authors are to be commended for their efforts to encourage the use of systematic nomenclature. Only a few exceptions were noted, one of the more distressing being the name "soda amide" for NaNH_2 .

Despite what this reviewer considers to be some rather severe limitations on the utility of this volume (and series), such compilations fill a very real need. Regardless of the completeness of coverage accomplished, anything that facilitates the increasingly difficult problem of a complete literature survey on any topic is indeed welcome. The present volume should prove to be a valuable adjunct to, but by no means a substitute for, the more truly comprehensive compilations that are available.

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GEORGE W. WATT

BOOKS RECEIVED

November 10, 1958–December 10, 1958

- WARREN B. BLUMENTHAL. "The Chemical Behavior of Zirconium." D. Van Nostrand Company, Inc., 120 Alexander Street, Princeton, New Jersey. 1958. 398 pp. \$11.00.
- R. H. DOREMUS, B. W. ROBERTS AND DAVID TURNBULL, Edited by. "Growth and Perfection of Crystals. Proceedings of an International Conference on Crystal Growth held at Cooperstown, New York, on August 27–29, 1958." Sponsored by Air Force Office of Scientific Research, Air Research and Development Command and the General Electric Research Laboratory. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1958. 609 pp. \$12.50.
- PAUL H. EMMETT, Edited by. "Catalysis." Volume VI. "Alkylation, Isomerization, Polymerization, Cracking and Hydroreforming." Reinhold Publishing Corporation, 430 Park Avenue, New York 22, N. Y. 1958. 706 pp. \$19.50.
- EDUARD HÁLA, JIŘÍ PICK, VOJTĚCH FRIED AND OTAKAR VILÍM. "Vapour-Liquid Equilibrium." Translated by G. STANDART. Pergamon Press, Inc., 122 East 57th Street, New York 22, N. Y. 1958. 402 pp. \$14.00.
- ROBERT S. HARRIS, G. F. MARRIAN AND KENNETH V. THIMANN, Edited by. "Vitamins and Hormones. Advances in Research and Applications." Volume XVI. Academic Press, Inc., 111 Fifth Avenue, New York 3, N. Y. 1958. 437 pp. \$11.60.
- T. P. HOAR, Editor. "Proceedings of the Eighth Meeting of the International Committee of Electrochemical Thermodynamics and Kinetics (C.I.T.C.E.). Madrid 1956." Butterworth and Co. (Canada) Ltd., 1367 Danforth Avenue, Toronto 6, Ontario, Canada. 1958. 497 pp. \$19.00.
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- M. E. ROSE. "Internal Conversion Coefficients." Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1958. 173 pp. \$6.25.
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- FRANK H. STODOLA. "Chemical Transformations by Microorganisms." E. R. Squibb Lectures on Chemistry of Microbial Products at the Institute of Microbiology, Rutgers University. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1958. 134 pp. \$4.25.
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- L. ZECHMEISTER, Edited by. "Fortschritte der Chemie Organischer Naturstoffe (Progress in the Chemistry of Organic Natural Products)." Volume XVI. Springer-Verlag, Mölkerbastei 5, Wien 1, Austria. 1958. 226 pp. \$9.50.