journals has increased and the job cannot be delegated or replaced by reliance on abstracts. Chemists should have this book in order to become thoroughly acquainted with sources of information and methods of searching.

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Isomerismo E Isomerizacion de los Compuestos Organicos. BY ERNST D. BERGMANN, Director del Instituto de Ciencias Weizmann. **Transposiciones Moleculares Y Combinaciones Organicas Con Isotopos.** BY ANIBAL R. MARQUEZ, Profesor titular de Química Orgánica, Universidad Nacional de la Plata—Universidad Tecnológica Nacional Facultad Regional de Buenos Aires, Colegio Militar de la Nación, Director de Indoquímica S.A., ex-Director de Galeno Química, Ind. Quím. Arg. Yatay, Fea. Nacional de Productos Químicos de la Nación, etc. Librería Hachette, Buenos Aires, Argentina, South America. 1956. xiii + 288 pp. 16 × 23.5 cm. Price in$u. arg. 110.—.

This book is a translation and enlarged edition of the original work "Isomerism and Isomerization of Organic Compounds" (Interscience Pub. Inc., New York, N. Y., 1948) and the reviewer may thus consider the contributions made first by Dr. E. D. Bergmann and then by Dr. A. R. Marquez.

The original work of Bergmann consists of six chapters in which the following topics are discussed: the phenomenon of resonance in organic molecules; *cis–trans* isomerism and *cis–trans* isomerization; isomerization of olefinic structures; mechanism of substitution reactions, racemization and Walden inversion; isomerization of paraffins and related phenomena; mechanisms of intramolecular rearrangements. The discussion of the above-mentioned topics is stimulating because it is based on numerous personal observations, and it includes many literature references and suggestions for future investigations. The chapter on resonance does not pretend to be a profound physico-chemical treatment but rather is descriptive in nature. It is unfortunate that the author retains several structural formulas with pentavalent nitrogen atoms on pp. 27–29, 47, 49 and 147. In the second chapter the discussions of allenic systems and of thermochromism are noteworthy. The heading of the third chapter is somewhat misleading since here the author cites a series of reactions of olefinic substances in the course of which the initial, classical double bonds become dislocated. Aside from 1,4-addition reactions to dienes and the Diels–Alder reaction, the author employs a number of examples which are seldom encountered in other texts. The chapter dealing with the mechanism of substitution reactions, racemization and Walden inversion is not as stimulating as the preceding chapters. This is probably so because it deals descriptively with a subject which has received so much emphasis in most of the modern textbooks of organic theory. Also, the arguments cited on p. 94 to explain the two different dehydration products of diphenic acid are not convincing. The fifth chapter deals mainly with reactions of alkanes and alkenes studied by Ipatieff and his successors, although a few reactions involving free radicals also are mentioned. The last chapter reviews a number of intramolecular rearrangements some of which, such as the Claisen rearrangement of allyl aryl ethers, the pinacol–pinacolone rearrangement, and the rearrangement of 1,2-aminoalcohols in the presence of nitrous acid, have been subject to careful studies since the publication of the original text.

Dr. Marquez has supplemented the descriptive text of Dr. Bergmann with lengthy footnotes in which he presents the physical aspects of atomic and molecular structure as well as summaries of more recent studies. Noteworthy among the latter are the comments concerning the chemistry of cyclooctatetraene, ferrocene, triphenylmethyl radicals, the activation energies of *trans–cis* isomerizations, the reaction of osmic acid with aromatic hydrocarbons, the reactions of peroxides, as well as the little known studies of Marquez and students concerned with the reactions of organic halides with sodium arsenite. Dr. Marquez also contributes to the original bibliography by citing numerous recent literature references. Finally, Dr. Marquez has added an ample, 100 pages long "Appendix" which consists of two chapters. In the first of these he discusses molecular rearrangements some of which are already dealt with by Dr. Bergmann in his last chapter. In the reviewers opinion the unity and compactness of the book would have been improved if the first chapter of the "Appendix" were integrated with the last chapter of Bergmann in the same manner in which Marquez amplified the first five chapters of the original work. The second chapter of the "Appendix" is entitled "Isotopes in Organic Reactions" and is an extremely useful and up to date review of the uses of isotopes in the study of organic compounds. Included in this review are numerous isotope effects studied in recent years, nuclear transformations caused by irradiation of organic compounds, and the use of isotopes in the elucidation of the mechanisms of organic reactions. This last chapter is without doubt the most significant contribution which Dr. Marquez makes to the book under discussion.

The book is well presented except for the unfortunate use of poor printing ink which causes several pages to be blurred.

The scarcity of modern chemistry texts in the Spanish language makes the appearance of this book especially noteworthy. It will have a stimulating effect on the much needed development of modern organic chemistry in Latin America. Also, it may help many American chemists to learn chemical Spanish, a language of increasing importance in view of the growing investments of U. S. chemical industry below the Rio Grande.

UNIVERSIDAD DE ORIENTE
SANTIAGO DE CUBA, CUBA H. HARRY SZMANT

The Defect Solid State. BY T. J. GRAY, D. P. DETWILER, D. E. RASE, W. G. LAWRENCE, R. R. WEST AND T. J. JENNINGS, State University of New York, College of Ceramics at Alfred University. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1957. vii + 511 pp. 16.5 × 23.5 cm. Price, $11.00.

This work attempts to explain phenomena associated with reactions in the solid state such as sintering, catalyses and corrosion processes in terms of the defect nature of solids. The presentation of the material associated with these topics is detailed enough to make the book worthwhile for those interested in this specialized field. The book cannot be read, however, as a general exposition on the defect nature of solids. The chapters on the general properties of solids, such as semi-conductivity, ionic conductivity and magnetic properties are too brief and the material in them has been presented in a more satisfactory manner elsewhere.

INSTITUTE OF OPTICS
UNIVERSITY OF ROCHESTER K. TEEGARDEN
ROCHESTER, NEW YORK

Vapour Phase Chromatography. Proceedings of the Symposium Sponsored by the Hydrocarbon Research Group of the Institute of Petroleum held at the Institution of Electrical Engineers, London, on 30th May–1st June, 1956. Edited by D. H. DESTY. Assisted by C. L. A. Harbourn. Academic Press, Inc., 111 Fifth Avenue, New York 3, N. Y. 1957. xv + 436 pp. 16 × 25.5 cm. Price, $12.00.

This volume is a collection of the 36 papers presented at the Symposium on Gas Chromatography held in London on May 30th and June 1st, 1956, together with the discussion by the participants at the symposium, and the recommendations on nomenclature proposed by a committee of scientists prominent in this field. More than half of the papers are from England, but contributions from workers of seven other nations testify to the universal and growing interest in gas chromatography.

A wide range of subjects is covered by the articles presented. Dr. Martin's introductory paper outlines the directions for future developments of the field. The succeeding four papers deal with the factors determining the separation of materials by gas chromatography. Eight papers are concerned primarily with the properties of various types of detectors, including Scott's flame detector, the Martin gas density balance, and the beta ray detector. Other topics considered in various contributions are apparatus for high temperature chromatography, large scale and continuous operation, and for the use of programmed column heating. The analysis of specific mixtures, descriptions of new colum

Man (Chapter VIII—Processing and Handling of Polyethylenes), and the Salesman (Chapter IX—Uses and Applications of Polyethylenes and Chapter X—Statistical Summary).

The authors have endeavored to cover their subject thoroughly. An especial effort to include the most recent information on newer methods of polymerization is most gratifying. As a source book it should stand in good stead with the researcher, student or executive. It is especially good in its description of analytical techniques, test methods, and measurements of physical properties. The bibliography is exhaustive. Typography is good and errors are not readily apparent.

For the rapidly growing polymer in the market, this is an excellent addition to its rapidly growing literature.

PLASTICS DIVISION RESEARCH DEPT.
CELANESE CORPORATION OF AMERICA O. V. LUKE, JR.
SUMMIT, NEW JERSEY

Nomenclature of Chemical Compounds. Edited by Coordination Committee of Documentation and Library Services, Committee on Nomenclature and Editorial Board of the Journal of Japanese Chemistry. Editors-in-Charge, Kenzo Hirayama, Dorothy U. Mizoguchi and Yuichi Yamamoto. Nankodo Publishing Co., Haruki-cho, Bunkyo-ku, Tokyo, Japan. 1957. x + 368 pp. 19 × 26 cm. Price, $4.00.

Japanese chemists commonly use the English alphabet and spellings in the reproduction of the names of chemical compounds. Many take an active interest in the careful use of good nomenclature. This has been particularly true since World War II. To this end the Japanese Standing Committee on Nomenclature a few years ago sought permission to translate into Japanese the various chemical nomenclature reports and pamphlets distributed by the Committee on Nomenclature, Spelling and Pronunciation of the American Chemical Society and to publish these in translated form. With a green light from America and with the cooperation of the Japanese Ministry of Education and the UNESCO Office in Tokyo these steps were taken, except that the names themselves were not changed. The Japanese version of these various pamphlets appeared in 1954 in the form of a 250-page paper-bound book which has had an obvious good effect on Japanese chemical literature.

Now a more ambitious book on chemical nomenclature, the one being reviewed, has appeared. This resembles the earlier book inasmuch as it consists in large part of translated nomenclature reports and summaries, but the new book contains also an extensive expository commentary on certain rules, with additional examples, and it covers the field more widely.

The book covers reports of Commissions of the International Union of Pure and Applied Chemistry (the commentary mentioned above is on these IUPAC rules), reports of the Nomenclature, Spelling and Pronunciation Committee of the American Chemical Society, certain nomenclature compilations by *Chemical Abstracts*, and one unofficial report (on the naming of stereoisomers). Most of the reproduced reports are in the field of organic chemistry, but inorganic chemistry and biological chemistry are not neglected. One section is devoted to Electromotive Forces and Electrode Potentials.

In some instances the reproduction of nomenclature rules is interspersed with signed discussion, as in the sections on High Polymers, Steroids, Terpene Hydrocarbons and Labeled Compounds.

There are contributed articles on tropoids and azulenoids (azulenes) and appendixes on (1) Miscellaneous Chemical Prefixes, (2) Symbols, Signs, and Abbreviations, (3) Pronunciation of Chemical Words, (4) Japanese Transliteration of Chemical Words, and (5) How to Use *Chemical Abstracts*.

There is an index in Japanese and one in English.

Standard nomenclature rules are meant to be followed. Japanese chemists are to be commended for trying to do this and those responsible for this book deserve acclaim for their effective help. For the most part the information of the book is not new, but this information is assembled in a form which is likely to do much for chemical publication in Japan.

CHEMICAL ABSTRACTS
OHIO STATE UNIVERSITY MARY A. MAGILL
COLUMBUS 10, OHIO E. J. CRANE

Gmelins Handbuch der Anorganischen Chemie. Calcium Teil A. Geschichtliches, Vorkommen, Element, Legierungen. System-Nummer 28. E. H. ERICH PIETSCH, Editor. Verlag Chemie, G.m.b.H., Weinheim/Bergstr., Germany. 1957. xii + pp. 69–488. 17.5 × 25.5 cm. Price, $55.68.

With the issue of this section of the 8th Edition of the Gmelin Handbuch, the volume designated as "Calcium. Part A" is completed. The sub-titles include: Historical —Occurrence—Element—Alloys. The same thorough and careful presentation of the subject matter that has brought the Gmelin Handbuch much deserved renown is visible once again in this section. A complete subject index is included, which replaces the partial indices accompanying previous sections.

The present volume begins, at page 69, with the occurrence of calcium in the cosmos and in meteorites. Following the extraterrestrial occurrence, the geochemistry of calcium is covered in the next 130 pages, in which its presence in the lithosphere, hydrosphere, atmosphere and biosphere is described.

Sources of deposits of fluorspar, gypsum and anhydrite, calcium phosphates and Iceland spar are recorded in the next 350 pages, with production statistics and general literature references appertaining to each of these minerals. The presentation in each case is according to continents and the countries composing them.

A list of the more important calcium minerals, with properties of chief interest is next presented, including sulfides, oxides and hydroxides, halides, nitrates, borates, carbonates, iodates, sulfates, phosphates and arsenates, vanadates and related compounds, antimonates, titanates, niobates, tantalates, molybdates, tungstates, silicates and salts of organic acids.

The formation and preparation of elementary calcium, together with its chief physical properties, its electrochemical and chemical behavior, the general reactions of calcium salts, the physiological effects, and the detection and determination of calcium make up the following approximately 100 pages; and the volume is completed with a discussion of the alloys of calcium with antimony, bismuth, lithium, sodium, potassium and beryllium.

The appearance of this volume marks one more milestone along the road to the much-to-be-desired goal of a completed eighth edition of Gmelin, long recognized as a discriminating and authoritative reference work in the field of inorganic chemistry. Dr. Pietsch, carrying on the task begun by R. J. Meyer, together with his sizable staff of scientific co-workers, are to be congratulated on bringing the ultimate conclusion of the task of revision of this great work one step closer to realization.

DEPARTMENT OF CHEMISTRY
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A Guide to the Literature of Chemistry. Second Ed. E. J. CRANE, Director and Editor, The Chemical Abstracts Service, AUSTIN M. PATTERSON, Formerly Professor of Chemistry, Antioch College, Ohio, and ELEANOR B. MARR, Assistant Professor of Chemistry, Hunter College, New York. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1957. xiv + 397 pp. 15.5 × 23.5 cm. Price, $9.50.

The revised second edition of this pioneer reference and text is welcomed by librarians and chemists. Because the past thirty years have seen so many new sources of literature, and loss of others, up-dating the reference section is important to keep this basic text alive and before the chemist. For the beginning chemist, in particular, whose development is so dependent on his learning to use the literature, this book is an important tool. It is refreshing that Miss Marr has been able to preserve this work of the pioneer literature chemists, Patterson and Crane. She has maintained their thoroughness and exactness in fact and enlivened the subject of searching chemical literature as an art which every chemist needs to learn. To this end she has pointed out many details, lack of which can be distressing to the uninitiated.

Research leaders and librarians should see that this book reaches their people. The importance of reading scientific