

Rodd. Compounds containing three- to five-membered heterocyclic rings and those with six-membered heterocyclic rings containing one nitrogen atom are surveyed. Contributors to this volume are T. S. Stevens, J. O. Landan, E. Hoggarth and N. Campbell. Their efforts deserve the strongest support from organic chemists everywhere.

DEPARTMENT OF CHEMISTRY
UNIVERSITY OF ROCHESTER
ROCHESTER, NEW YORK

MARSHALL GATES

Cahiers de Synthèse Organique. Méthodes et Tableaux D'Application. Vol. IV. LÉON VELLUZ, Editor. By JEAN MATHIEU et ANDRE ALLIAS, Ingénieurs-Docteurs. Masson et Cie., 120 Boulevard Saint-Germain, Paris VI^e, France. 1958. 272 pp. 15.5 × 22 cm. Broche: 5.000 frs.; Cartonnette: 5.500 frs.

This fourth volume continues the survey of organic reactions and has three main chapters. Chapter 9 deals with Acylation in the Aliphatic Series, by which title is meant the reactions which result in attachment of an acyl group to an aliphatic carbon atom (*not*, O- or N- acylation). Formation of imino compounds which are hydrolyzable to a keto group is also covered. Chapter 10 concerns acylation of aromatic compounds leading to alkyl aryl ketones or diaryl ketones. Chapter 11 describes bifunctional condensation reactions leading to 1,2-glycols, α -ketols and α -diketones.

The presentation is quite different from "Organic Syntheses" and "Organic Reactions." Each chapter has: (1) a table of the symbolic structures with citation to pages and divisions; (2) a short discussion of the reactions according to types of products; (3) a brief statement of mechanisms; (4) applications; (5) extensive discussion of each reaction with references; and (6) tables showing starting materials, products, reagents, yields and references. These tables are quite complete and are very useful.

At the end of this volume, there is a tabular summary of all the reactions presented in Volumes I through IV, giving the divisions, volume numbers with pages for discussion and pages for the tables. It is quite easy to locate products or reactions.

The material is thoroughly organized and well written. It is necessary for the reader to become familiar with a number of abbreviations in order to decipher experimental conditions given over the arrows in the reactions. This reference book can be recommended to all organic chemists. It is an especially fine book for graduate students to read for practice in learning chemical French as well as organic reactions.

DEPARTMENT OF CHEMISTRY
STATE UNIV. OF IOWA
IOWA CITY, IOWA

R. L. SHRINER

Principles of Geochemistry. Second Edition. By BRIAN MASON, Curator of Physical Geology and Mineralogy, The American Museum of Natural History, Professor of Mineralogy, Columbia University, New York. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1958. vii + 310 pp. 15.5 × 23.5 cm. Price \$8.50.

This book appears in a second edition after the relatively brief period of six years which speaks well for the original presentation. The second edition is called for largely because of the rapid advance in geochemistry. The author states in the preface: "Under these circumstances a revision of 'Principles of Geochemistry' has become highly desirable. Many of the data in the first edition have been superseded by more reliable figures, and there has been a concomitant development in the theoretical framework of the subject."

The organization of the book follows that of the first edition, but each of its eleven chapters shows careful revision, and the material is presented in critical fashion throughout the book. The style is clear and crisp, as if each word were carefully weighed before being put down.

The book begins with an introductory chapter concerned with definitions and scope of present day geochemistry as distinguished from that of F. W. Clarke ("The Data of Geochemistry," fifth edition, U. S. Geological Survey, Bull. 770, 1924). The next chapter deals with the earth as a

planet and its relation to the solar system as a whole and is followed by one discussing the internal structure of the earth and its composition. From the data in these two chapters an account is given of the relative abundance of the elements and isotopes both in the earth and in the universe.

After this background material comes a brief interlude concerned with the principles of thermodynamics and the physical chemistry of the solid state. The remainder of the book treats of materials and processes at and near the surface of the earth. Several chapters discuss the geochemistry of igneous, sedimentary and metamorphic rocks and the hydrosphere, the atmosphere and the biosphere. A final summary is given in terms of the geochemical cycle, tracing the migration of the elements under the influence of processes effective in the outer parts of the earth. The chapters on the igneous, sedimentary and metamorphic rocks should be of value to chemists seeking acquaintance with geochemistry and an introduction to the terminology and mode of thought in the geological sciences.

As a warning to a chemist accustomed to exact determinations in the laboratory, the wide generalizations of cosmochemistry or those dealing with the earth's interior may appear as giant steps into the unknown but, on the other hand, the same chemist may be mollified by the exact laboratory work requisite for arriving at these and other generalizations of geochemistry. It is an indication of the author's ability to organize and present such complex material in precise and understandable terms, that he can do this without filling the pages with a rash of mathematical formulas. The presentation is greatly facilitated by the numerous carefully designed diagrams and tables.

The author rides no hobby-horses, but presents geochemistry in a factual and highly readable manner. Only one misprint was noted, and the technical execution of the book is beyond reproach.

U. S. GEOLOGICAL SURVEY
GEOPHYSICS BRANCH
SILVER SPRING, MD.

FRANK C. KRACEK

Solid State Physics. Advances in Research and Applications. Nuclear Quadrupole Resonance Spectroscopy. Supplement 1. BY T. P. DAS, Saha Institute of Nuclear Physics, Calcutta, India, and E. L. HAHN, Department of Physics, University of California, Berkeley, California. Academic Press Inc., 111 Fifth Avenue, New York 3, N. Y. 1958. ix + 223 pp. 15.5 × 23.5 cm. Price \$7.00.

The nature of this book is best revealed by its pre-publication history. It was intended to be a chapter in one of the volumes of the regular Solid State Physics series. However, the literature on the subject is extensive and it was covered so thoroughly by the authors that the manuscript would have filled half of one of the regular volumes. Therefore, it was published as a Supplement and is, in fact, a very complete monograph on nuclear pure quadrupole resonance phenomena and their utility in the study of the solid state.

The first successful pure quadrupole resonance experiments were reported in 1950, and this area of radiofrequency spectroscopy is the youngest addition to the art. Also, it is the area least well known to chemists. Unfortunately, the casual chemist cannot remedy this deficiency by a quick and easy reading of the book. It is a high-level treatise rather than an introductory survey. Familiarity with quantum mechanics and the general principles of magnetic resonance is assumed. On the other hand, those actively engaged in research bearing upon quadrupole interactions will find the book an indispensable reference and bibliography.

The book is divided into three parts: Theory, Instrumentation, and Applications of Interest to the Solid State; but unlike Gaul, it is very well organized. The range and completeness of the coverage of these topics is suggested by the sub-headings of Part I: Frequencies and Intensities of Pure Quadrupole Spectra, Static Splitting and Broadening of Quadrupole Spectra, Effects of Internal Motions in Molecular Solids on Nuclear Quadrupole Resonance, and Theory of Transient Experiments on Pure Quadrupole Resonance. The quality and usefulness of the book is extended significantly by the inclusion of considerable original

research by the authors, particularly in the parts on theory and applications.

The discussion of experimental methods is brief, but adequate references are given to the literature except that no mention is made of the inherent cussedness of pure quadrupole resonance spectrometers. Part III on applications is of most interest to chemists. This part alone gives the reader a general view of the great variety of studies which can be made by means of pure quadrupole resonance experiments. However, the book does not include quadrupolar perturbations of nuclear magnetic resonance spectra, which are described in Vol. 5 of the series.

The general format of the book is identical with that of regular volumes in the series. The equations and print are easy to read and there is an abundance of good figures. The style of the writing is usually but not exceptionally clear and the text is relatively free of typographical or other errors. Virtually all of the published data on pure quadrupole spectra are summarized in the numerous and extensive tables. A notable omission is a list of compounds on which unsuccessful searches for pure quadrupole spectra have been made. However, this is a commentary more on the editorial policies of journals and scientists in general than on these authors specifically.

By and large, I believe that chemists should be making more of a contribution to the development of solid state "physics" than they are. Many of the problems are predominantly "chemical" in nature yet most of the advances in the field seem to come *via* physics. This, perhaps, is a natural consequence of the need for a strong theoretical background. In any event, this book, as well as the others in the series, shows that there is no lack of interesting and significant work to be done by chemists on solids. If you are interested in doing some of it, you will find the book useful, stimulating and suggestive.

NOYES CHEMICAL LABORATORY
UNIVERSITY OF ILLINOIS
URBANA, ILLINOIS

H. S. GUTOWSKY

BOOKS RECEIVED

October 10, 1958—November 10, 1958

ROBERT S. CASEY, JAMES W. PERRY, MADELINE M. BERRY, AND ALLEN KENT, Edited by. "Punched Cards. Their Applications to Science and Industry." Second Edition. Reinhold Publishing Corporation, 430 Park Avenue, New York 22, N. Y. 1958. 697 pp. \$15.00.

CONSULTANTS BUREAU, INC. "Soviet Research in Crystallography." Chemistry Collection No. 5. Volumes 1 and 2. Consultants Bureau, Inc., 227 West 17th Street, New York 11, N. Y. 1958. 618 pp. \$100.00 (Volume 1); \$30.00 (Volume 2); \$115.00 (Complete collection).

JOSEPH R. DILLINGER, Edited by. "Low Temperature Physics and Chemistry. Proceedings of the Fifth International Conference on Low Temperature Physics and Chemistry Held at the University of Wisconsin, Madison, Wisconsin, August 26-31, 1957." The University of Wisconsin Press, 811 State Street, Madison, Wisconsin. 1958. 676 pp. \$6.00.

ALAN F. GIBSON, General Editor, R. E. BURGESS, American Editor, AND P. AIGRAIN, European Editor. "Progress in Semiconductors." Volume 3. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1958. 210 pp. \$8.50.

THE INSTITUTION OF METALLURGISTS. "Effect of Surface on the Behaviour of Metals. Lectures Delivered at the Institution of Metallurgists Refresher Course, 1957." Philosophical Library, Inc., 15 East 50th Street, New York 16, N. Y. 1958. 100 pp. \$10.00.

INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY. "A Proposed International Chemical Notation." Tentative Version Subject to Revision. Prepared by the Commission on Codification, Ciphering, and Punched Card Techniques of the International Union of Pure and Applied Chemistry. Longmans, Green and Company, Inc., 55 Fifth Avenue, New York 3, N. Y. 1958. 165 pp. \$7.00.

KEITH J. LAIDLER. "The Chemical Kinetics of Enzyme Action." Oxford University Press, 417 Fifth Avenue, New York 16, N. Y. 1958. 419 pp. \$9.60.

JAMES J. LINGANE. "Electroanalytical Chemistry." Second Edition—Revised and Enlarged. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1958. 669 pp. \$14.50.

SIR HARRY MELVILLE. "Big Molecules." The Macmillan Company, 60 Fifth Avenue, New York 11, N. Y. 1958. 180 pp. \$3.95.

EUGEN MÜLLER, Edited by. With O. BAYER, H. MEERWEIN AND K. ZIEGLER. "Methoden der Organischen Chemie (Houben-Weyl)." Vierte, Völlig Neu Gestaltete Auflage. Band XI, Teil 2. "Stickstoffverbindungen II und III." Georg Thieme Verlag, Herdweg 63, Stuttgart, Germany. 1958. 840 pp. \$36.80 (Subscription price, \$33.20).

ALEXANDER SCHÖNBERG. "Präparative Organische Photochemie." Mit Einem Beitrag von GÜNTHER OTTO SCHENCK. "Allgemeine Gesichtspunkte für die Präparative Durchführung Photochemischer Reaktionen." Springer-Verlag, Heidelberger Platz 3, Berlin-Wilmersdorf, Germany. 1958. 274 pp. DM 58.—.

K. SCHWABE, Editor. "Zeitschrift für Physikalische Chemie." Sonderheft. "Internationales Polarographisches Kolloquium im Institut für Elektrochemie und Physikalische Chemie der Technischen Hochschule Dresden vom 3-7 Juni 1957." Akademische Verlagsgesellschaft Geest and Portig K.-G., Sternwartenstrasse 8, Leipzig C 1, Germany. July 1958. 302 pp. DM 32.—.

N. N. SEMENOV. "Some Problems of Chemical Kinetics and Reactivity." Volume 1. Translated by J. E. S. BRADLEY. Pergamon Press Inc., 122 East 57th Street, New York 22, N. Y. 1958. 305 pp. \$12.50.

H. SIMON AND R. SUHRMANN. "Der Lichtelektrische Effekt und seine Anwendungen." Springer-Verlag, Heidelberger Platz, 3, Berlin-Wilmersdorf, Germany. 1958. 747 pp. DM 97.50.

ADA SWINEFORD, Editor. THOMAS F. BATES, NORMAN PLUMMER, WILLIAM F. BRADLEY, MONROE H. WAXMAN, AND CHARLES E. WEAVER, Associate Editors. "Clays and Clay Minerals. Fifth National Conference on Clays and Clay Minerals. University of Illinois, October 8-10, 1956." Sponsored by Committee on Clay Minerals of the National Academy of Sciences-National Research Council, and University of Illinois. The National Academy of Sciences-National Research Council, 2101 Constitution Avenue, Washington, D. C. 1958. 360 pp. \$4.50.

JOHN R. VAN WAZER. "Phosphorus and its Compounds." Volume I: "Chemistry." Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1958. 954 pp. \$27.50.

CARL S. VESTLING, Editor-in-Chief. "Biochemical Preparations." Volume 6. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1958. 105 pp. \$5.25.

HEINRICH ZOLLINGER. "Chemie der Azofarbstoffe." Birkhäuser Verlag, Elisabethenstrasse 19, Basel 10, Switzerland. 1958. 308 pp. sFr. 36.25.