

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. Landau, 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<sup>e</sup>, 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,  $\alpha$ -ketols and  $\alpha$ -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