

Book Reviews

The Inorganic Chemistry of Nitrogen. By WILLIAM L. JOLLY. W. A. Benjamin, Inc., 2465 Broadway, New York 25, N. Y. 1964. xi + 124 pp. 16 × 23.5 cm. Price, \$5.75.

This book is a delightful little volume which serves admirably as a highly competent specialist's introduction into one of the most exciting research fields in inorganic chemistry. Combined with other small volumes in the series of which it is a part, or with similar volumes from other series, it could be satisfactorily used as textual material for a course in advanced inorganic chemistry. Contrary, however, to the editors' statement in the foreword, it will not serve as a reference treatise for even a narrow segment of inorganic chemistry, for it is much too brief, it omits too many significant facts, and it does not provide anywhere near a satisfactory list of references to the original literature.

The book is divided into eleven chapters entitled "Unique Features of Nitrogen," "Elementary Nitrogen," "Ammonia," "Nitrogen-Halogen Compounds," "The Hydronitrogens and Hydroxylamine," "Nitrogen Oxides and Oxy-Acids," "Sulfur-Nitrogen Compounds," "Phosphorus-Nitrogen Compounds," "Carbon-Nitrogen Compounds," "Boron-Nitrogen Compounds," and "Thermodynamics of Nitrogen Compounds."

Though the small size of the book makes the omission of many significant reactions and processes (including a number of the reviewer's "pet" topics) inevitable, the book is surprisingly complete in its conceptual content. The reviewer found few typographical or other errors. It was, of course, surprising to find in a book as sophisticated in its conceptual treatment as this that the author in the discussion on p. 28 relapses into the obsolete jargon of the "solvent system" concept of acids and bases in stating that "such acids (as CH_3COOH) are strong in ammonia." However, such relapses as this are rare, and the author is to be congratulated on the excellence of this small volume. The reviewer is happy to recommend this book to students, teachers, and professional chemists generally as a must for their library shelves.

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Geochemistry of Solids. An Introduction. By W. S. FYFE. McGraw-Hill Book Company, Inc., 330 West 42nd St., New York, N. Y. 1964. vii + 199 pp. 16 × 23.5 cm. Price, \$8.50.

In the Preface the author states, "This book is addressed to students of the earth sciences who are studying elementary mineralogy, petrology, and geochemistry, and to students of inorganic chemistry who have an interest in the solid state. . . This book, it is hoped, may be used to supplement some of the standard and larger works. . . It is not comprehensive and is not meant to be. It will be successful if it leads some to follow on with the more advanced texts listed in the final brief bibliography." A perusal of the book confirms its lack of comprehensiveness.

Approximately the first half of the book is concerned with atomic structure, forces between atoms, ionic and covalent bonds, bond lengths, and strengths of bonds. The latter half is devoted principally to crystal types, solid solutions, polymorphism, defects in crystals, and formation of crystals. This multitude of topics cannot be discussed adequately within the limits of a book of this size; consequently, there is a superficiality of treatment which limits the usefulness of the text. Even though the strictly chemical subjects are authoritatively discussed, a student in inorganic chemistry will find more satisfying treat-

ments elsewhere. There are well-drawn and instructive crystal diagrams, and for these the book can be recommended. It seems a little unfortunate that practically no use is made of the concept of octahedral and tetrahedral holes in a close-packed arrangement of atoms and the derivation of certain crystal structures based on this concept.

For earth science students who have had little exposure to chemistry, the book can undoubtedly serve a useful purpose. For students in a course in modern inorganic chemistry, its usefulness will be primarily as a supplemental reference or starting point for material dealing with crystal types and principles of structural chemistry.

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Synthesis of Organosilicon Monomers. By A. D. PETROV, V. F. MIRONOV, V. A. PONOMARENKO, and E. A. CHERNYSHEV. Consultants Bureau Enterprises, Inc., 227 W. 17th St., New York 11, N. Y. 1963. 492 pp. 26 × 26 cm. Price, \$22.50.

Is it possible to imagine a chapter contrasting the chemistries of any two elements (let alone carbon and silicon) published in the 1960's where the terms orbital and hybridization are never used? Yet this first sentence does not signal the start of a damning review. Nor even one which will damn with faint praise. Your reviewer wants only to set the stage. For this, the latest of the "silicon books," contrasts with Eaborn's "Organosilicon Compounds" (1960) and Ebsworth's "Volatile Silicon Compounds" (1963) by (i) not having been written by an Englishman (not unimportant, *vide infra*) and (ii) rigorously excluding all but the details of the synthesis and chemical transformations of organosilicon compounds (and not all types of these).

The title means what it says. All the classes of compounds discussed can serve as precursors for organosilicon polymers. However, readership will not be confined to those who derive their employment from the silicones industry, for Petrov, *et al.*, have produced a thorough presentation of synthetic methods for the preparation of silicon-carbon compounds, saturated and unsaturated, organohalosilanes, and an especially detailed examination of the silicon hydrides. Again, as the title says, all the systems are *organosilicon*.

The detail is impressive. The authors have concentrated their efforts to examine intensively the organosilicon hydrides and aromatic and unsaturated organosilicon compounds in three of the four parts of the book, with the introductory first part covering aliphatic and organohalosilanes. Individual compounds and experiments are discussed at length, preparations compared, properties listed, and criticisms offered (even when dealing with fellow Soviet authors!). This kind of treatment can be very rewarding to chemists active in the field, and the book's value is enhanced since we are not spared the Russian contributions where they exist, some of these hidden from us by the "limitations of language" mentioned by Professor Rochow in his Foreword. Some interesting work on the extension of Rochow's own direct synthesis method is to be found in the journal of the Azerbaijanian Academy of Science, a journal which apparently not even the Chemical Abstracts Service reads! Petrov's book discusses the work and offers a criticism (no yields are listed).

One is tempted to argue with some of the views expressed: the old chestnut of no silanes with more than six silicon atoms dates from Stock. It is interesting, as is pointed out, that