

Book reviews

Gmelin Handbook of Inorganic Chemistry, 8th Edition, *New Supplement Series*, Vol. 22, *Boron Compounds, Part 4, Compounds with a Trigonal Boron Atom and Covalent Boron—Nitrogen Bonds*, K. Becker, J.J. Lagowski and K. Niedenzu, volume authors; K.-C. Buschbeck and K. Niedenzu, volume editors; 1975, x + 360 pages, DM 586, \$ 252.00; Vol. 23, *Boron Compounds, Part 5, Boron—Pyrazole Derivatives and Spectroscopy of Trigonal Boron—Nitrogen Compounds*, H. Bock, R.H. Cragg, A. Meller, K. Niedenzu, H. Nöth, S. Trofimenko and N. Weinstock, volume authors; K. Niedenzu and K.-C. Buschbeck, volume editors; 1975, xvi + 277 pages, DM 451, \$185.00; Vol. 27, *Boron Compounds, Part 6, Carboranes 2. Electronic Properties of Closo-Carboranes; Hetero- and Metallocarboranes; Polymeric Carborane Compounds*, J.F. Ditter, J.R. Wasson and I. v. Wilucki, volume authors; K. Niedenzu and K.-C. Buschbeck, volume editors; 1975, xii + 150 pages, DM 339, \$139.00, Gmelin Institut für Anorganische Chemie und Grenzgebiete der Max-Planck-Gesellschaft zur Förderung der Wissenschaften, Springer-Verlag, Berlin/Heidelberg/New York.

The Gmelin Handbook series on boron compounds is making good progress, with three new additions. In Part 4 are covered aminoboranes of diverse types, imino-, imido-, hydrazino- and azidoboranes, di- and triborylamines, amino derivatives of diborane(4) and all sorts of cyclic boron—nitrogen compounds including borazines. Although these are special Gmelin volumes, the usual Gmelin rules are followed to a large extent. This causes some difficulties with respect to compound class coverage in some instances. Thus the chemist who goes to this volume to look for a complete description of all known borazines will be disappointed. For this class of compounds the Gmelin principle of "letzte Stelle", which is explained on the inside back cover of all Gmelin volumes, holds. By this principle, only those borazines containing hydrogen, oxygen, halogen or chalcogen must be included. Any borazines with organic substituents on boron or nitrogen (which must make up over 95% of all known borazines) thus are, in principle, excluded. Actually, one finds many of these listed and discussed here, but the coverage is not complete, especially in the case of the hexaorganoborazines. The borazine chapter, however, does present a very good overview of the chemistry of this class of compounds. One wishes that the scope of coverage had been explained to the reader in the preface. (It required a long letter from one of the volume editors to make it clear to your reviewer). Also, one wishes that the Gmelin rules, which have already been considerably relaxed in the organometallic volumes, could be relaxed even more in special volumes such as this one, so that complete coverage of a given compound class could be provided.

Part 5 continues the B—N compound class coverage with boron—pyrazole derivatives, including the transition metal coordination compounds of this interesting class of ligands. However, most of the book (238 out of 277 pages) is devoted to the spectroscopy of B—N compounds, including their mass spectra,

vibrational spectra, photoelectron spectra and ^{11}B and ^{14}N NMR spectra, with many tables of data and some figures.

The discussion of carboranes, begun in Part 3 of the boron series, is continued in Part 6. The topics covered include the electronic structure of *closo*-carboranes, both theoretical aspects and experimental data such as acid dissociation constants, electrochemical data and results from spectroscopy; carboranes containing heteroatoms as cage constituents, transition metal complexes of carborane anions; carborane polymers, including the very stable carborane-siloxane polymers. The carborane-transition metal complexes are treated in detail in Gmelin volumes devoted to the respective transition metals. In the present volume these complexes merely are tabulated and very little information (color and melting point) is given. NMR data of heterocarboranes are given in a separate chapter.

Both German and American authors have contributed to these three volumes and hence some chapters are in the German language, some in English. As usual, English translations of preface, table of contents, chapter and section headings are provided. Literature coverage is as up-to-date as possible, usually through the end of 1973, but some later references are given in some chapters.

One hopes that a subject and a formula index will become available immediately upon conclusion of this multivolume boron series. Only when a listed compound can be found easily and quickly will this series realize its full potential. In fact, a formula index for each separate volume of the boron series would have been well worth the effort required to put it together, as far as your reviewer is concerned.

Another six volumes can be expected in this series. The editors and authors have done a very fine job thus far in providing boron chemists with the literature support which is such an essential component of a research effort.

Department of Chemistry
Massachusetts Institute of Technology
Cambridge, Massachusetts 02139 (U.S.A.)

DIETMAR SEYFERTH

International Review of Science. Inorganic Chemistry Series Two, Vol. 4. Organometallic Derivatives of the Main Group Elements, B.J. Aylett, Volume Editor, Butterworth & Co., London/University Park Press, Baltimore, 1975, 417 pages, \$37.50.

The book is the fourth of ten volumes in the second series of authoritative reviews of inorganic chemistry covering the period, 1971/1972. The principle goal of this volume is to provide a comprehensive overview of the significant developments in the area of organometallic chemistry of the main group elements for that period. Volume four contains ten chapters covering the elements in groups IA-VA and IIB, excluding phosphorus. Certain chapters are reserved for review of the organometallic chemistry of individual elements (e.g. B, Si, Ge, Mg) owing