

nomenclature and atom numbering systems are too much of a good thing. They are necessary; there is no argument about that, but a shorter section would have sufficed. To the outsider, that aspect of carborane chemistry is already quite confusing, and most non-German readers will not relish having to wade through 137 pages in German in order to use the Gmelin carborane volumes effectively. It might be easier to make do with empirical formulas (although, unfortunately, this volume does not have its own index) and the many useful figures.

An English translation of the preface and English translations of the chapter and section headings and table of contents facilitate the use of this book by those who are not at home in the German language. However, the lack of an English translation of the sections dealing with nomenclature, in the opinion of your reviewer, is a major deficiency of this volume.

The Gmelin boron project, as described in the preface, promises many more good things, and we look forward to further volumes of this series.

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DIETMAR SEYFERTH

*The Interpretation of the Infrared Spectra of Organophosphorus Compounds;*  
by L.C. Thomas, Heyden and Son, London, 1974, ix + 276 pages, £ 7.50,  
\$20.50

"The primary object of this book is to show how, by application of the detailed group-frequency correlations which have been developed, it is possible to deduce much of the general molecular structure of an unknown organophosphorus compound on the basis of its infrared absorption spectrum alone." The author's statement adequately describes this book and he has to a striking degree achieved his objective. During the past decade, infrared techniques have been eclipsed by nuclear magnetic resonance spectroscopy for the elucidation of the structure of organophosphorus compounds. The availability of Dr. Thomas' book will help to restore a complementary balance between the two approaches and to correct the magnetic resonance bias of this reviewer and many other practitioners.

Dr. Thomas' approach is critical, comprehensive and thoroughly practical. Group frequency correlations and structural studies are emphasized; vibrational assignments and theoretical considerations receive minimal attention. Ambiguities and uncertainties in correlations and unresolved correlational problems are discussed critically; the necessary caveats are presented. Organization is by bond types (groups), but an adequate subject index allows easy access to specific classes of compounds. Numerous tables provide supporting data and compilations of characteristic group frequencies for all the known classes of organophosphorus compounds. Literature references are not exhaustive, but are selective, critically chosen, and current. A number of fully worked illustrations of spectrum analyses and structural determinations are presented. These

problems will be quite useful to the neophyte, but will be of limited utility to the experienced. One quarter of the book, an excessive allocation of space, is devoted to this purpose.

This book will be invaluable to the experimentalist and should supplant Bellamy, Corbridge, and Rao as a primary practical infrared reference for organophosphorus chemists.

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CLAIBOURNE E. GRIFFIN

*Advances in Inorganic Chemistry and Radiochemistry, Vol. 16*; edited by H. J. Emeléus and A. G. Sharpe, Academic Press, New York/London, 1974, vi + 375 pages, \$ 24.50.

The latest volume of this well-established series includes six reviews covering a broad range of inorganic chemistry and some areas of organometallic chemistry.

Of particular interest to organometallic chemists, and especially to those active in organoboron chemistry, will be the long (96 pages, 683 references) chapter on the reaction chemistry of diborane by L. H. Long. The emphasis in boron hydride chemistry these days is on the higher boron hydrides and the carboranes, but this review, which summarizes the rich and varied chemistry of the simplest boron hydride, is useful and welcome.

Bis(trifluoromethyl)amino derivatives of metals have a close connection to organometallic chemistry although metal-to-carbon bonds are not involved. H. G. Ang and Y. C. Syn survey the unusual chemistry of this class of compounds and of other wholly organic  $(CF_3)_2N$  compounds in the initial chapter (64 pages, 131 references) of this book.

The subject of photoelectron spectroscopy has been covered in books and in reviews in journals and hard-cover series. Nevertheless, the review in this book by R. L. DeKock and D. R. Lloyd provides a good overview of what vacuum ultraviolet photoelectron spectroscopy can do for the inorganic chemist. Only a few organometallic compounds are mentioned.

The remaining three reviews on fluorinated peroxides (R. A. DeMarco and J. M. Shreeve), fluorosulfuric acid, its salts and derivatives (A. W. Jache) and lower sulfur fluorides (F. Seel) are aimed at specialists outside the area of organometallic chemistry and require no further comment.

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