

# Book Reviews

**Gmelin Handbook of Inorganic Chemistry, 8th Edition. Rh. Rhodium.** Supplement Volume B3: Coordination Compounds with Ligands Containing S, Se, Te, P, As, Sb and Metals (in English). W. P. Griffith, volume editor and (in part) author. K. Swars, volume editor. Gmelin Institute for Inorganic Chemistry of the Max Planck Society for the Advancement of Science and Springer-Verlag, Berlin/Heidelberg/New York/Tokyo. 1984. 44 ill., XIX + 248 pages. DM 972.

The present volume is the last in a series of three on compounds of rhodium which do not contain metal-carbon bonds. The series is a welcome supplement to the main volume which had not been updated since its appearance in 1938.

Like its predecessor (Volume B2) this volume is written by W. P. Griffith, J. A. McCleverty, and S. D. Robinson, and again the style throughout is quite uniform. The standard Gmelin format is used, and while a reasonable attempt has been made to critically evaluate the data available, it is evident that some of the complexes included, particularly those reported by Russian and Indian workers, are formulated on the basis of very sketchy data. The literature closing date appears to be 1982 although some papers appearing early in 1983 have been included. Thus, considering the effort involved, the work is acceptably up-to-date. With the exception of Nyholm's early work from the 1940s on arsine complexes, the majority of the references are post-1960. As with Volume B2, this is the result of there having been relatively little work done in the area covered by this volume before then.

Somewhat over 50% of the volume is devoted to complexes of phosphorus-containing ligands with the next largest section covering those of sulfur donor ligands. Again, the organization within each section is to cover the complexes in order of increasing complexity of the pertinent ligand.

The first chapter initially covers complexes of monodentate, bidentate, and tetradentate sulfur donors including thiolates, thioethers, thioureas, dithiocarbamates, dithiocarboxylates, dithiophosphates and related species, dithiaalkanes, dithiolates, and tetrathiaalkanes. Following this are sections on sulfur-oxygen donor ligands such as monothiocarboxylates, sulfur-nitrogen donor ligands including thiosemicarbazides and thiosemicarbazones, thiazoles, and related heterocycles and mercaptoquinolines. Two short chapters on analogous selenium and tellurium donor ligands follow and are succeeded by the chapter on phosphine complexes. This latter chapter begins with complexes of phosphine itself followed by those of halophosphines, particularly fluoro-phosphines, phosphites, phosphonates, and phosphinites. Next are sections on tertiary phosphine complexes arranged in order from trialkylphosphines through mixed arylalkylphosphines to triarylphosphines. The chapter concludes with a coverage of complexes of poly(tertiary phosphines) and those of hybrid P-O, P-N, P-S and P-Se ligands. The chapters on complexes of arsenic and antimony donor ligands are similarly arranged. The volume

concludes with a brief chapter on complexes containing bonds between rhodium and rhodium, mercury, tin, or gold (excluding carbonyl clusters). Also included is a list of rhodium-containing heteropolytungstate species.

An advantage of having the same group of authors write both this and the preceding volume is that there is no significant overlap between the two (although as I have pointed out earlier, one could argue that the majority of the nitrosyl complexes could have been included in Volume B3 rather than in Volume B2) and the use of the two volumes is aided by satisfactory cross-referencing.

The authors are once more to be commended on the high quality of their work. The volume is well-written, virtually error-free, and a timely addition to the series.

Joel T. Magee, *Tulane University*

**New Pathways for Organic Synthesis—Practical Applications of Transition Metals.** By H. M. Colquhoun, J. Holton, D. J. Thompson, and M. V. Twigg. Plenum Press, New York/London. 1984. xiv + 454 pages. \$59.50.

During the last few years, several books have appeared on the applications of transition-metal complexes in organic synthesis. Examples include monographs by Davies ("Organotransition Metal Chemistry: Applications to Organic Synthesis") and Sheldon ("Chemicals from Synthesis Gas"). The present text covers many of the same topics as the others, including oxidation, reduction, carbon-carbon bond formation, isomerization, and carbonylation reactions. One noteworthy feature of the text by Colquhoun et al. is the inclusion of many procedures for effecting various transformations. Also of value is the final chapter on the preparation (recipes are given) and manipulation of a number of valuable transition-metal catalysts.

Although this book was published in 1984, it is not up-to-date in any sense. Literature citation is satisfactory up to 1980, poor in 1981 (12 references), and almost nonexistent (two references) in 1982. The depth of literature coverage by chapters is variable and may be a consequence of a multiauthored effort. For instance, on page 315, the reduction of nitroarenes by triiron dodecacarbonyl is described, and it is correctly noted that the "practical utility is greatly inhibited by the use of stoichiometric quantities of expensive  $\text{Fe}_3(\text{CO})_{12}$ ". However, in 1980, a  $\text{Ru}_3(\text{CO})_{12}$ -catalyzed method for achieving the same conversion was reported in *Tetrahedron Letters*!

The schemes are nicely presented, and the book is relatively free of typographical errors. In summary, this book can be recommended to organic chemists who wish to be made aware of developments in the area of metal complex induced reactions.

Howard Alper, *University of Ottawa*