removed from my main interests. It is the type of work you want to see in your library; you hope too that your library will be able to continue to take the new volumes as they appear. However, these books are expensive and even libraries—let alone individual purchaser—will find the price high.

This reviewer recommends this volume (and others in the Organophosphorus series) and hopes that it obtains the sales it deserves.

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Metals and Ligand Reactivity

E. C. Constable

2nd edn, VCH, Weinheim, 1996
308 pages DM 68.00 (paperback)
ISBN 3-527-29277-2

The back cover of this book proclaims: ‘This book is a highly readable introduction to the reactions of co-ordinated ligands, which have become a useful tool in organic synthesis. Bridging the gap between the traditional fields, this text presents the basic concepts of ligand reactivity as well as synthetic applications of these reactions.’

What are we to make of this?

The book is certainly readable and I enjoyed my first couple of hours with it. However, the choice of material will not generally be to the liking of readers of *Applied Organometallic Chemistry*, as the book is only concerned with Wernerian co-ordination compounds, and even within that category there is an emphasis on ligands with nitrogen donor atoms.

The book is divided into ten chapters. The first two introduce the concepts of co-ordination chemistry and describe the metal–ligand bond. Chapters 3 and 4 are concerned with nucleophilic attack on co-ordinated ligands, while Chapter 5 discusses electrophilic attack. Chapters 6 and 7 were for me the most interesting in the book and deal with the template effect, both for conventional macrocycles and encapsulating ligands. This leads on to supramolecular chemistry and there is much good modern material in these two chapters. Chapter 8 is concerned with reactions of co-ordinated aromatic and heterocyclic ligands, but -complexes are excluded. The subject of Chapter 9 is oxidation and reduction of co-ordinated ligands, and the final chapter is a very brief survey (11 pages) of co-ordination compounds in biology.

On page 1 of the book, Professor Constable gives his definition of a co-ordination compound. This is rather like an architect defining a building. His definition is a compound ‘formed by the interaction of a molecule containing an empty orbital with one that possesses a filled orbital’. Well, there aren’t many compounds not included by that! HCl for one. My own preferred definition is based on Moeller’s *Inorganic Chemistry* (Wiley, 1952) ... ‘formed by combinations of apparently saturated materials which are capable of independent existence’.

As I have said, I enjoyed reading this book, but I could not help wondering for what type of reader it is intended. The outlook seemed a little restricted at times, and the omission of organometallic compounds is hard to justify, given the title the author has chosen. Even within the context of co-ordination compounds one might have expected to find an explanation for the attempted synthesis of $[Fe(P(CH_3)_3)_5]$ giving a hydridoalkyl by oxidative addition, and I looked in vain for the chemistry of co-ordinated pyridoxal, which was one of the first examples of co-ordinated ligand reactivity to be studied. As for organic synthesis, I did not find much mention of that other than the template reactions producing ligands. The back cover also refers to numerous study problems, but I did not find any in my copy.

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Catalysis by Metal Complexes
Vol. 19: Oxygenases and Model Systems

Takuzo Funabiki (Ed.)

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393 pages. £129 hardback
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Most of the dioxygen molecules exploited by aerobic organisms are utilized for the production of energy, i.e. dioxygen is used as a terminal electron acceptor, being reduced to water, in order to drive oxidative phosphorylation. However, a small amount of dioxygen is used directly in the synthesis and degradation of many of the chemical constituents of the cell. The enzymes which catalyse these reactions are termed oxygenases. These enzymes (termed mono-oxygenases and dioxygenases) insert either one or two atoms of oxygen into a substrate, respectively. It is these enzymes and their model complexes which form the focus of this book.

With several contributors providing the eight chapters which make up this volume it is perhaps not surprising that there is a certain variation in quality. In general, though, the subject is covered in considerable depth and thoroughness and the editor deserves much credit for this. The book opens with a brief, but useful, introduction to the enzymes in question as well as to the mimetic chemistry involved in producing models of the relevant active sites. With the scene suitably set, the next chapter describes dioxygenases; this is, in my opinion, by far the best section of the book. The different enzymes which make up the dioxygenases are described in admirable depth with clear descriptions of catalytic mechanisms and active-site structures. For anyone interested in these enzymes this chapter will make a valuable reference source and the thoroughness of the coverage is backed up by nearly 400 references. The same author then makes a