

## Book Review

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*Complex Chemistry. Structure and Bonding 57*, Springer-Verlag, Berlin, Heidelberg, New York, Tokyo, 1984, vi + 199 pages, DM110, ISBN 3-540-13411-5.

Before launching into a detailed criticism of this pot-pourri, it is appropriate to describe the subject of each of the four reviews (since the title of *Complex Chemistry* gives nothing away). The first article (by R.D. Ernst) discusses the structure and bonding in metal-pentadienyl complexes, and cites 271 references. The article is well-written, and describes an area of organometallic chemistry which is often submerged by the related catalytically-active allyl and the more stable cyclopentadienyl complexes. The review's conclusion, that "the study of the pentadienyl system should also serve to bridge the gap between [allyl and cyclopentadienyl systems], thereby providing a more unified understanding of the various open or closed, 3- or 5-membered ligand systems", is convincingly argued, and the review should stimulate new and interesting research directions.

The second review (by B.J. Hathaway) provides a "new look" at the stereochemistry and electronic properties of complexes of the copper(II) ion, citing 98 references. The look is perhaps not so new any longer, having been discussed in a number of excellent articles by the same author in *Coordination Chemistry Reviews*, but this is a refreshing and stimulating discussion of the electronic criterion of stereochemistry, and will be welcomed by all workers in this fascinating area. Very few coordination chemists will be able to read this very personal view of copper(II) chemistry and not gain a new level of insight into the problems it presents.

The third article (by K.D. Warren) gives a long overdue discussion of calculations of the Jahn—Teller coupling constants for  $d^x$  systems in octahedral symmetry via the angular overlap model, and is a welcome addition to the literature. The technique described allows an easy comparison to be made of the Jahn—Teller activities of any given set of electronic states, and allows for the inclusion of the effects of spin—orbit coupling. The final review (by J. Emsley) describes the composition, structure and hydrogen bonding of the  $\beta$ -diketones, citing 156 references. The hydrogen bonding of the *cis*-enol tautomers of  $\beta$ -diketones is strong ( $> 50 \text{ kJ mol}^{-1}$ ), short (0.245—0.255 nm), non-centred and non-linear. This scholarly review deals with the controversies which surround  $\beta$ -diketones, and discusses the view that the enol tautomers are a double-minimum potential well with a low energy barrier.

One might reasonably expect that a review volume, purportedly organised around a theme, might be rather greater than the sum of its parts. This, sadly, is not the case. Although the connection between the articles dealing with copper(II) complexes and the article dealing with Jahn—Teller distortion is a natural one, any conceivable connection between this pair of articles and the reviews of pentadienyl complexes (classical organometallic chemistry) and  $\beta$ -diketones (classical organic chemistry) completely evades me. The title of "Complex Chemistry" for the volume is both misleading and unhelpful, and serves to thinly disguise the fact that this volume is merely a collection of un-

connected reviews. Although *Structure and Bonding* boasts a distinguished and well-respected editorial board (M.J. Clarke, J.B. Goodenough, J.A. Ibers, C.K. Jørgensen, D.M.P. Mingos, J.B. Neilands, D. Reinen, P.J. Sadler, R. Weiss and R.J.P. Williams), no specific editorial responsibility is claimed for this volume. Surely editorial responsibility extends to trying to ensure that the articles written by their contributors are placed in a suitable context, and to developing a strong theme to each volume. Although each of the reviews in this volume is excellent in its own right, I do not feel that I can recommend the book for purchase by any but the most broad-based library, and I have positively suggested that the library at my own University does not acquire it. Many of the early volumes in this series were constructed around strong themes, and are well recognised as standard reference works: this established the good reputation of these books, and many libraries issue standing orders for the series. With the current financial situation, I foresee libraries wishing to cancel these subscriptions and purchase individual volumes on their own merit. If the standard of editing does not improve, not many will be sold!

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