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### Book review

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*Catalysis in C<sub>1</sub> Chemistry*, edited by Wilhelm Keim (Series: Catalysis by Metal Complexes, Vol. 4), D. Reidel Publishing Company, Dordrecht, The Netherlands, 1983, xii + 312 pages, Dfl. 135.00, US\$58.50, ISBN 90-277-1527-0.

The subject matter of this book clearly overlaps that in other volumes of this series. However, the treatment is different and the overlap is not significant. This book is based on a three-day course on C<sub>1</sub> chemistry held at the University of Aachen. Like many books of this kind, it is of variable quality, but the best is very good. Chapter 1 is on homogeneous carbon monoxide hydrogenation (W. Keim), and after a discussion of general principles it goes into some detail on specific processes. The 105 references include some from 1982. Chapter 2 (Fischer—Tropsch synthesis, M. Röper) contains a detailed historical and technical survey of the Fischer—Tropsch synthesis and concludes with a mechanistic discussion. There are 174 references. Chapter 3 (Methanol, W. Keim) is an account of the use of methanol as a source of other chemicals. Chapter 4 (Homologation of Methanol, M. Röper and H. Loevenich) covers both industrial and chemical aspects, 90 references. Chapter 5 (Hydroformylation and Carbonylation Reactions, R. Ugo) is a comprehensive account of an enormous field, though short on references, which are mainly of a review-type.

Chapter 6 (Activation of Carbon Dioxide via Coordination, A. Behr) is a detailed if not completely comprehensive review of the reactions of CO<sub>2</sub> with transition metal complexes and has 312 references. Chapter 7 (Hydrocyanation, A.J. Hubert and E. Puentes) is of interest because it deals with a subject often neglected, but the treatment is not particularly up-to-date, to judge from the references. Chapter 8 (Methane, A.J. Hubert) deals with activation of alkanes by transition metal ions, but is not long, nor, particularly in the section on metallo-enzymes, complete.

Finally, Chapter 9 (Carbenes, A.J. Hubert) is a useful, selective summary of the participation of carbene complexes in organic reactions, without addressing in detail some of the most interesting problems, such as the generation of carbenes in olefin metathesis catalysts and their possible involvement in Ziegler—Natta catalysis.

This book certainly fulfils its aim of providing a systematic and comprehensive account of C<sub>1</sub> transition metal chemistry for research workers in universities and industry. It will also be useful for advanced undergraduate teaching.