

Book review

Organotransition Metal Chemistry: Applications to Organic Synthesis; by Stephen G. Davies. Pergamon Press Oxford etc., 1982, ISBN 08 026202 3hc, XV + 411 pages, £42.50 (\$85.00).

This book is a compilation, from literature up to mid-1980, of methods which are potentially useful for organic synthesis and which use organic complexes of transition metals. An introductory chapter explains briefly the nature of complexation, the different types of complexes and their nomenclature, and other general considerations. The rest of the book classifies methods according to reaction type: complexation and decomplexation, protection and stabilization, electrophilic complexes, nucleophilic complexes, coupling, isomerization, oxidation and reduction, carbonylation. A typical page is mostly structural formulae, but these are well drawn and the text though sparse is succinct and informative. Errors are agreeably few, the references are well chosen, and the index is adequate though oriented more towards ligands and reactions than complexes. Anyone browsing through the book in search of inspiration for a synthesis may well be rewarded. The book teaches new ways with alkenes and arenes, often complementary to older methods and often unparalleled in classical organic chemistry. Stereochemical aspects are not forgotten.

My main criticism is not specific but general. Organic synthesis is an art using real material. Its exponents want to know about their materials: what they cost; what sort of conditions and precautions and equipment and purification procedures they need; what scale is possible. There is very little indication of these in the book, but they are all important in influencing a chemist to choose one method rather than another.

I should also have liked to see some space given to rearrangements. On this earth, most of the synthetic organic chemistry with transition metal complexes is done on the cobalt complex of the B₁₂ coenzyme! Organometallic chemistry has here been slow in matching Nature with art; but there has been some progress.

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