

Synthesis of macrocycles — The design of selective complexing agents. Progress in macrocyclic chemistry, Volume 3, edited by R.M. Izatt and J.J. Christensen, John Wiley & Sons, New York, Chichester, Brisbane, Toronto, Singapore, 1987, xi + 447 pages, £57.50. ISBN 0-471-82589-1.

This volume is appropriately dedicated to Charles J. Pedersen, the father of macrocyclic polyether ligands, and it is indeed a book of which to be proud. It is a multi-author volume, containing seven chapters, all focused at ligand design and synthesis. The first review (D.H. Busch and C. Cairns; 51 pages; 130 refs.) is concerned with the design of ligands for inclusion complexes, and ranges from the template reactions used for macrocyclic synthesis to superstructured ligands for dioxygen binding. The second chapter (L.F. Lindoy; 40 pages; 68 refs.) considers strategies for metal ion recognition, and focuses on O_2N_2 macrocycles and M^{II} ($M = Ni, Co, Cu, Zn, Cd$ and Pb) systems. The third chapter (C.D. Gutsche; 73 pages; 157 refs.) describes the fascinating chemistry of the calixarenes (molecular "baskets"), and is followed by a discussion (P.G. Potvin and J.-M. Lehn; 73 pages; 200 refs.) of cation and anion receptors, catalysts and carriers. The fifth review (S. Lifson, C.E. Felder, A. Shanzer and J. Libman; 67 pages; 72 refs.) discusses biomimetic macrocyclic molecules, and is followed by a short and egocentric overview (W. Kiggen and F. Vögtle; 28 pages; 71 refs.) of phanes containing three or more bridges. The final and longest chapter (E. Weber; 83 pages; 173 refs.) describes crystalline neutral molecule inclusion compounds in macrocyclic hosts. The book concludes with an author index and a useful subject index.

The scope and parentage of the articles in this volume speak to its utility and quality. In dealing exclusively with synthesis, it deals with the centre of this burgeoning field (indeed, isn't synthesis at the heart of all the important areas of chemistry?). Moreover, the reviews also describe the design concepts and strategies, laying the groundwork for the next generation of ligands. Chemistry is about control, and these ligands offer the ultimate in designer overcoats. This book is beautifully produced, being type-set with extremely clear illustrations (which are so essential in this field). Every home should have one.

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Stereochemical and Stereophysical Behaviour of Macrocycles. Stereochemistry of Organometallic and Inorganic Compounds, Volume 2; edited by I. Bernal, Elsevier, Amsterdam, Oxford, New York, Tokyo, 1987, x + 246 pages, Dfl.195.00, US\$95.00. ISBN 0-444-42815-1.

This volume is a multi-author compilation, featuring three reviews concerned with various aspects of the stereochemistry of macrocyclic complexes. The first (J.C.A. Boeyens and S.M. Dobson; 102 pages; 208 refs.) is a thoughtful and carefully analysed discourse which considers the heart of the matter, the specific stereochemistry of metallic macrocyclic complexes, and is followed by an extremely useful overview (H.J. Buschmann; 83 pages; 149 refs.) of the thermodynamic and

stereochemical aspects of the macrocyclic and cryptate effects. These first two chapters are extremely well written, and will be valuable not only to workers in the field, but also to tyros and for the teaching of graduate courses. The final article (K.E. Matthes and D. Parker; 40 pages; 100 refs.) echoes the first in describing stereochemical aspects of macrocyclic complexes, but focuses only on transition metal complexes: it is little more than an uncritical crystallographic catalogue of the macrocyclic complexes of the second and third row transition metals, with significant overlap with the first (much more scholarly and critical) review, and rather poorly illustrated.

It is appropriate, at this point, to compare this volume with *Synthesis of macrocycles — The design of selective complexing agents. Progress in macrocyclic chemistry, Volume 3*, edited by R.M. Izatt and J.J. Christensen, John Wiley & Sons, New York, 1987, xi + 447 pages, £57.50; ISBN 0-471-82589-1, the subject of the preceding review. Although the cynosure of Bernal's volume is stereochemistry and of Izatt and Christensen's is synthesis, they both share macrocycles as their *raison d'être*. Izatt and Christensen's volume is type-set, contains seven meritorious chapters, has a very good author and subject index, and sells at £0.129 per page. Bernal's volume is camera-ready copy production, contains only two useful chapters, has no author index and no combined subject index (surely the editor could have taken the minimal effort to combine the indexes from each chapter into a more useful form?), and sells at £0.228 per page. Both volumes contain excellent features, and I am sure that all macrocyclic chemists will need access to them. However, if your library is short of funds (a not inconceivable position!), it is quite clear which volume should be purchased, and which should be borrowed by inter-library loan.

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Dictionary of Organometallic Compounds: Third Supplement; edited by J.E. Macintyre, Chapman and Hall, London etc., 1987, xiii + 604 pages, £155.00, ISBN 0-412-26340-8.

This third supplement to this a well-regarded dictionary primarily extends the literature coverage to mid-1986, but there are also numerous references to 1987 publications. Many compounds appear for the first time, but some entries are updates of those in previous volumes; a good feature is that each updated entry contains all the relevant information from the earlier version, so that it is not necessary to go back to the other volumes. There are clear indexes by name, formula, and Chemical Abstracts Registry Number, and these incorporate the entries from earlier volumes. There is also a very useful list of books and reviews, mainly from 1985–1987, dealing with general aspects of organometallic chemistry or with compounds of specific elements or groups of elements.

The Dictionary has already become established as a major primary reference work for organometallic chemists and for organic chemists contemplating use of organometallic reagents. It is beautifully produced, and reasonably priced. Chemical reference libraries that do not subscribe to it should seriously consider doing so now.