

in low temperature matrices (R.H. Hooker, K.A. Mahmoud, A.J. Rest and H.G. Alt, *J. Organomet. Chem.*, 419 (1991) 101 is covered twice, in schemes 6.31 and 7.8; not only is there no cross-referencing in the text but even the formula of the *same* intermediate is typeset differently in the two places,  $(\eta^5\text{-cp})\text{Cr}(\text{CO})_2\text{Me}$  and  $\eta^5\text{-cpCr}(\text{CO})_2\text{Me}$ . The key point about this reaction is that it appears to involve formation of a methyldiene hydride  $\text{Cr}(\text{=CH}_2)(\text{H})$ , one of the few examples of  $\alpha$ -migration. Given the teaching aims of the book, this seems an excellent opportunity at least to make a passing comment to link the photochemistry of carbonyls and alkyls, the topics of two chapters and also to give the reader some idea of the strength of the chemical evidence for the formation of this species.

It is the lack of critical discussion, which concerns me. By its very nature, much of the experimental evidence for photochemistry and photophysics comes from 'sporting techniques', such as matrix isolation or flash photolysis. Although such techniques can never have the same certainty as X-ray analysis of isolated products, the conclusions from some experiments are rather more tentative than others. Of course, an assiduous student ought to check all of the original references but, in a teaching text, I feel that the student might benefit from a guiding hand. Nevertheless, the author provides a good selection of references so the student is not left helpless. My greatest concern is the presence of a number of misprints in the formulae of compounds; for example  $(\eta^5\text{-cp})_2\text{W}(\text{CO})_3\text{H}$  instead of  $\eta^5\text{-cpW}(\text{CO})_3\text{H}$ , which could seriously throw many students.

Despite my reservations, enterprise should not be discouraged. Professor Roundhill should be complimented on covering this topic singlehanded. I hope that a second edition will soon be forthcoming, without the misprints, with a degree of cross-referencing and, perhaps even a tenth chapter devoted to a few detailed case studies to show students how photochemists really tackle scientific problems.

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*Gmelin Handbook of Inorganic and Organometallic Chemistry* (8th Edition)  
*Os-Osmium, Organo-osmium Compounds, Volume B3*,  
 Springer, Berlin, 1994, 282 + xi pages, DM 1790.  
 ISBN 3-540-93697-1

*Volume B5*, Springer, Berlin, 1994, 389 + xi pages, DM 2290. ISBN 3-540-93698-X

These two volumes are concerned with tri-nuclear organo-osmium compounds, which are being dealt with in a strictly logical sequence, though this is not always evident from the date of publication. Volumes B2 and B4, which also deal with such compounds, would appear to have dropped behind schedule. The B series as a whole describes di- to poly-nuclear organo-osmium compounds.

The first volume covers tri-nuclear compounds that contain no carbon-bonded ligands other than CO, and discusses the literature up to at least mid-1993. The second volume covers compounds with single carbon-atom donors other than, or in addition to, CO. It is a companion to Volume B6 (the index for which it also contains), published in 1993, and describes the literature up to the end of 1993.

The Gmelin organisation is to be congratulated on the accuracy, quality and rapidity of publication. To produce a conventional book such as these are, including data considerably less than a year old at the time of publication, is a measure of the superb standard of these and of the related publications. The cost may appear high, but at just over DM 6 per page cannot be considered to be excessive compared with the real cost of other methods of sampling the literature. The presentation follows the usual user-friendly Gmelin format, and, for myself at least, it is preferable to scanning reams of computer printout, and each volume is, of course much more comprehensive than a simple list of references. I very much hope that Gmelin will continue to be a growing resource, available to as many chemists as need to scan the literature.

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*Lithium Chemistry: A Theoretical and Experimental Overview*

A.-M. Sapse and P. v. R. Schleyer (eds.), Wiley, New York, 1995, xi + 595 pages, £71.  
 ISBN 0-471-54930-4

There has been an upsurge in interest in recent years in the structures and other physical properties of compounds of the alkali metals, especially lithium, much of it stimulated by the increasing availability and reliability of appropriate computational techniques. Professor Schleyer, along with his colleagues, has played a major

role in this activity, in respect of both computational and experimental aspects, and it is very appropriate that he should be a co-editor of this timely and excellent volume. Furthermore the authors of the various chapters are active contributors to the fields they survey, and the overall impression is one of enthusiasm, immediacy, and authority.

The chapters are as follows: 'Bonding, structures and energies in organolithium compounds', by A. Streitwieser, S. M. Bachrach, A. Dorigo, and P. v. R. Schleyer; 'Theoretical studies of aggregates of lithium compounds', by A.-M. Sapse, D. C. Jain, and K. Raghavachari; 'Comparison of lithium and hydrogen bonds', by S. Scheiner; 'Lithium atom matrix reactions with small molecules', by L. Manceron and L. Andrews; 'NMR of organometallic compounds: general aspects and application of two-dimensional heteronuclear Overhauser effect spectroscopy (HOESY)', by W. Bauer; 'Aspects of the thermochemistry of lithium compounds', by J. F. Liebman, J. A. M. Simoes and S. W. Slayden; 'From "carbanions" to carbenoids: the structure of lithiated amines and lithiated ethers', by G. Boche, J.C.W. Lohrenz, and A. Opel; 'Complexes of inorganic lithium salts', by R. Snaith and D. S. Wright; 'Structures of lithium salts of heteroatom compounds', by F. Pauer and P. P. Power; 'Synthetic ionophores for lithium ions', by R. A. Bartsch, V. Ramesh, R. O. Bach, T. Shono, and K. Kimura; 'Preparations and reactions of polyolithium organic compounds', by A. Maercker.

I found it a little surprising that the first chapter, dealing with calculations on structures and energies of various types of organolithium compounds, contains no mention of lithate ions of the known type  $R_2Li^-$  (especially since Professor Schleyer has himself carried out relevant calculations on the prototype  $Me_2Li^-$ ) but this is a very minor omission.

The book is well produced, with clear diagrams, and is a bargain at today's prices. It can be recommended without qualification.

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*Gmelin Handbook of Inorganic and Organometallic Chemistry*

8th Edn. Ga. Supplement Vol. D2. Coordination Compounds 2. Springer, Berlin, 1995, xiv + 264 pages, DM1650.

ISBN 3-540-93708-0

This volume contains further chapters in the treatment of coordination chemistry of gallium begun in

Supplement Vol. D1. They deal with complexes of Ga(III) involving ligands containing nitrogen alone, or nitrogen and oxygen together, as donor atoms, namely: complexes with N-heterocycles (including phthalocyanines (which take up 123 pages); complexes with amino alcohols; complexes with amino carboxylic acids; complexes with amides, peptides or urea; complexes with proteins; complexes with hydrazinecarboxylic acid or hydrazides; complexes with hydroxamic acids; complexes with oximes or nitroso compounds; complexes with amine oxides or aminooxy radicals; and complexes with nitro hydrocarbons.

The complexes with proteins are of particular interest because of the widespread use of isotopes of gallium as diagnostic agents in medicine and in the mechanism of uptake of gallium in tumours.

The volume does not deal with organogallium complexes, but many of the latter would, of course, form related complexes with the ligands described. The editors (M. Kotowski and M. Mirbach) and their co-authors have done the usual excellent job we associate with the Gmelin series, and the production overall is of the expected high standard. The cost is also high (ca. £730 and US\$1100 at the time of writing), and one can only envy institutions that take all the volumes in this fine series, both for having them available and for having the resources to afford them.

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*Organosilicon Chemistry II: from molecules to materials*

N. Auner and J. Weis (eds.), VCH Weinheim, 1996, 852 pages, DM 188.  
 ISBN 3-527-29254-3

This volume consists of articles, 94 in all, based on lectures and posters presented at the meeting 'II Münchner Silicontage' (Second Munich Silicon Days) held in Munich in 1994. They are divided into four sections: 'Tetravalent organosilicon compounds: chemistry and structure'; 'Organosubstituted silicon with unusual coordination numbers'; 'Organosilicon metal compounds: their use in organosilicon synthesis, coordination chemistry and catalysis'; 'Silicon polymers: formation and application'.

The individual contributions vary greatly in signifi-