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Book reviews

Houben Weyl - Methoden der Organischen Chemie, 4th edition, *Volume 13, Part 2a, Metallorganische Verbindungen: Be, Mg, Ca, Sr, Ba, Zn, Cd*; E. Müller, editor-in-chief, 1973, xxvii + 1042 pages, Georg Thieme Verlag, Stuttgart, DM 490.

The Houben-Weyl series, so well-known and so useful to organic chemists as an indispensible research aid, now is becoming a significant factor in the monograph-review literature of organometallic chemistry. A recent part of Houben-Weyl Vol. 13 covered the organic compounds of the Group IA and IB metals. The present review deals with the newest part of Vol. 13 which covers the Group IIA (Be, Me, Ca, Sr, Ba) and IIB (Zn, Cd, but not Hg) metals. As in all Houben-Weyl volumes, the emphasis is on the preparation of compounds and compound classes and on their known chemical transformations. Some attention is given to structure, but information concerning spectroscopic, thermodynamic and other properties is minimal. Tables of individual compounds and their properties are few in number, but this is not surprising since this book deals for the most part with organometallic reagents which are generated in solution and usually not isolated as pure compounds.

Each chapter opens with a brief, general introduction which is followed by detailed discussion of the preparation of all known types of organic derivatives of the metal in question. Practical hints concerning starting materials, solvents and reaction conditions abound and are backed up with many detailed recipes. Next comes a well-organized and well-nigh exhaustive coverage of the chemistry of the organometallic compounds of the particular metal, again with a wealth of experimental detail. Useful information is provided concerning scope and limitations, side reactions, mechanisms where known; countless examples are given in tables and text. The analysis of organometallic compounds of the metal under discussion usually concludes each chapter.

The longest chapter, understandably, is that on organomagnesium compounds (483 pages), by K. Nützel, who also wrote the other long chapters on organozinc (307 pages) and organocadmium (193 pages) compounds. The much shorter chapters on organoberyllium derivatives (47 pages) and the organic compounds of calcium, strontium and barium (25 pages) were provided by the late G. Bähr and H.O. Kalinowski. The coverage of the primary literature is astoundingly complete and the appropriate references to the review literature are most welcome. Considering the magnitude of this undertaking, these chapters are remarkably up-to-date, covering the literature through the end of 1972, except for the magnesium chapter, whose 1972 coverage is not complete.

In view of the well-proven, broad synthetic utility of organomagnesium reagents and the renaissance of organozinc chemistry during the past ten years or so, this book will give excellent service to the synthetic organic and organometallic chemist. Its availability on the library shelf will save him much time in

the library searching for references in the primary literature, and, perhaps, also much grief in the laboratory.

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Mechanism of Elimination Reactions; by W.H. Saunders Jr., and A.F. Cockerill, Wiley, New York, London, 1973, x + 641 pages. £11.15.

This book presents an account of organic elimination reactions as most narrowly conceived, i.e. reactions involving elimination of hydrogen along with some other group, usually from the β-carbon but sometimes from the α- or γ-carbon atom. (An exception is the brief survey of α-elimination of two halogen atoms from the same carbon atom to give carbenes, in reactions involving organometallic intermediates, which gives rise to the only mention of organometallic reagents in the index.) It seems a pity that the opportunity was not taken to incorporate eliminations involving organometallic groups [e.g. from $Si(CH_2)_nHal$ ($n = 2+3$) and $P—CH_2—CH_2—Hal$ systems] into the general context of organic eliminations.

The authors mainly summarize the published information rather than suggest new interpretations or relationships, and the accounts tend to be very generalized, so that specific information is difficult to find. For example, someone wishing to ascertain whether primary alcohols undergo acid-catalysed dehydration by an *E*1 or *E*2 mechanism will receive no clear guidance. There is a good subject index but no author index. The book is reproduced directly from typescript, a presentation which many find tedious to read, but which does keep down the cost.

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