To my mind all but the best undergraduates would find this book too difficult as an introduction, but, on the other hand, only the poorest would fail to derive much benefit from studying it after acquiring a working knowledge of physical organic chemistry from lectures and more conventional textbooks on the subject.

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"Houben—Weyl — Methoden der Organischen Chemie", 4th Edition, Vol. 13, Part 7, "Metallorganische Verbindungen: Pb, Ti, Zr, Hf, Nb, Ta, Cr, Mo, W"; E. Müller, editor-in-chief, G. Thieme Verlag, Stuttgart, 1975, xxxii + 570 pages, DM 330.

This book continues the Houden—Weyl coverage of organometallic compounds. Included are six chapters devoted to organic derivatives of lead, of titanium, zirconium and hafnium, of vanadium, niobium and tantalum, of chromium, of molybdenum and of tungsten. The lead chapter, written by E. Langer and based on an earlier draft by the late G. Bähr, is the longest one by far (260 pages). The other five chapters were written by A. Segnitz and range from 36 pages in length (organotungsten compounds) to 74 pages (Group IVA organic derivatives). The length of the lead chapter is not surprising: the first organolead compound was reported in 1853, organic derivatives of the transition metals, with a few exceptions, almost 100 years later. Furthermore, the large-scale commercial application of tetraethyllead as an antiknock agent provided the impetus for a great deal of research in the organolead area in the period 1925—1965.

The transition metal chapters would have been much longer if all types of organic derivatives of these metals had been included. However, the coverage is restricted to compounds containing at least one carbon—metal σ bond. σ-Alkyl, alkenyl, alkynyl, aryl and acyl derivatives are discussed. Compounds containing only π-bonded organic ligands are excluded and will be covered in a later Houben—Weyl volume.

As in all books of the Houben—Weyl series, the emphasis here is on preparative aspects and on reaction chemistry. Well-referenced sections show the reader how to prepare all classes of σ-bonded derivatives of the metal in question and provide detailed directions for many individual compounds. However, lists of individual compounds and their properties are not given; that type of coverage is left to the Gmelin series whose already issued volumes on organo-vanadium, -chromium, -zirconium and -hafnium compounds nicely complement the respective chapters in the present book.

Reactions involving the metal—carbon bonds of the classes of compounds covered in this book are discussed in detail: thermolysis, photolysis, protolysis, reduction, oxidation, halogenolysis, insertion reactions, reactions with metals, etc. The lead chapter has a concluding section dealing with analytical aspects; the transition metal chapters do not. Sorely missed is

some discussion of spectroscopic properties, which, after all, are of great importance to the preparative chemist.

The book concludes with an author and a compound index. It is written in German and provides no aids to the reader who knows German only poorly or not at all. Thus its general utility is somewhat limited. However, just the many equations and the references cited for them will serve to steer the user who does not read German to the appropriate primary literature, and that by itself can be of great help.

This is a very useful, well-organized and well-written book, in the usual Houben—Weyl tradition. Alas, its price makes it virtually inaccessible to the individual purchaser, but it should find its way to the reserve shelves of all chemistry libraries.

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