The Chemistry of the Metal—Carbon Bond, Volume 1, The Structure, Preparation, Thermochemistry and Characterization of Organometallic Compounds; edited by F.R. Hartley and S. Patai, John Wiley & Sons, Chichester, 1982, 1071 + xii pages, £125.

This volume is part of the well established series entitled the Chemistry of Functional Groups. It is the first of a series devoted to the metal—carbon bond, and it cannot therefore be usefully compared to the recent multi-volume series "Comprehensive Organometallic Chemistry" until its companion volumes appear. However it is clearly very different in its approach. Rather than treat the organometallic chemistry of each element individually, it deals with selected topics, such as structure, thermochemistry, and the synthesis of specific classes of compound. It does not claim to be comprehensive, which is not really achievable. It does, however, attempt to concentrate on the more recent literature and on those aspects not reviewed recently elsewhere.

The initial review concerning structure, not really aimed at the organometallic chemist, presents a survey of structural types, with little rationalization or discussion. Although worthy in itself, it is unclear what function it performs for the whole book. As teaching material it could be quite useful.

There is a highly authoritative review on the thermochemistry of organometallics, and then follows a series of chapters on the syntheses of carbene and carbyne complexes, and of transition metal complexes containing ligands from η^1 to η^8. These are very useful chapters, and although not comprehensive, repay considerable study. There follow two more highly specialised chapters on organolanthanides and organoactinides, and on the use of metal atoms in organometallic synthesis.

Nearly half of this volume is concerned with analysis and analytical techniques. It is often not clear why this merits discussion in a volume devoted to organometallic compounds. The literature coverage is not very recent in some cases, and much of the material appears to be straightforward reporting, with little critical evaluation. This is not a blanket criticism. The NMR chapter has literature coverage to 1981, and is informative and wide-ranging. The chapter concerned with mass spectrometry deals principally with electron impact studies, which is a little sad since other ionisation techniques will change the area considerably. However, literature coverage does not extend beyond 1979.

In summary, a book of variable quality, of undoubted use, and of considerable ambition, perhaps too much. It complements other publications in this area, rather than competing. It will be of value for libraries, particularly those which have already invested in earlier volumes in the series. Individuals will probably only use it for occasional reference, and will need to supplement its information with more detailed and more recent data.

A.B.C. Unit of Nitrogen Fixation,
University of Sussex,
Brighton BN1 9QJ (Great Britain)

G.J. LEIGH