

BOOK REVIEWS

Transition Metal Chemistry: a series of advances. Vol. 6; edited by R. L. Carlin. Marcel Dekker, New York, 1970, 12 + 238 pages, \$ 19.75.

This volume contains only two reviews, "The theory of bridge bonding and the structure of binuclear co-ordination compounds" by Bogusława Jezowska-Trzebiatowska and Walter Wojciechowski (58 pp., 203 refs.), and "Amine complexes of chromium(III)" by Clifford S. Garner and D. A. House (212 pp., 423 refs.). It also has an author index of 27 pages and a subject index of 3 pages.

The first is somewhat difficult to read and assess owing to a peculiar use of English which has escaped Editorial revision. At its best, it tends to be somewhat obscure; at its worst, there is a paragraph on p. 4 which reads: "This compound, as was shown by Jezowska-Trzebiatowska and Wajda as well as by other investigators (1, 2)." It gives a short account of bonding in polynuclear complexes of main Group and transition elements, magnetic properties, metal-metal interactions, stereochemistry, structure, and the theory of bridge bonding.

The second review is a very comprehensive monograph covering the literature through June, 1969. It is a very useful data source, much of it tabulated in 39 tables. It covers all aspects, preparations, types of amine complexes, their general chemistry, spectral properties, magnetic-, electro-, and photo-chemistry, and kinetics and mechanism of reactions involving amine complexes of chromium(III).

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J. Organometal. Chem., 26 (1971) 438

Chemistry of Acetylenes; edited by H. G. Viehe, Marcel Dekker, Inc., New York, xv + 1320 pages; £28.30. (\$59.50)

The prime claim to distinction made for this book by the publishers seems to be the doubtful one that it is "the first and only text in acetylene chemistry not written by one author". It is very much more than that, for, as Professor R. A. Raphael writes in a foreword, it "provides an authoritative appraisal of virtually every aspect of the rich tapestry of acetylene chemistry".

The book is addressed primarily to the organic chemist, and there is, for example, no account of acetylene derivatives of transition metals. It nevertheless contains much of direct interest to the organometallic chemist, quite apart from providing him with a ready source of guidance on the ways of preparing acetylene compounds

J. Organometal. Chem., 26 (1971) 438-439

which he may need in making new complexes required for studies of organometallic catalysis. Thus the chapter by J. H. Wotiz on Propargylic Rearrangements includes an account of rearrangements involving organometallic intermediates, and the very good chapter on Dehydrobenzene by R. W. Hoffmann naturally deals with aspects of metallation of aromatic compounds and properties of *ortho*-halogenoaryl-metal derivatives. A chapter by Cadiot and Chodkiewicz, with 368 references, is devoted to Acetylene Derivatives of Groups IIIb, IVb, and VB; while it covers 61 pages, much space is taken up by tables of compounds, and the text consists of little more than one-sentence indications of the contents of particular references, but it does provide a good guide to the literature. The account of the Coupling of Acetylenes by the same authors provides a similar very full guide to the literature; it indicates the probable part played by organocopper intermediates in the commonly employed couplings, and mentions the use of trialkylsilyl groups as end-blocking substituents which can be easily removed to give terminal acetylenes after coupling. It also gives an account of oxidative couplings of acetylenic derivatives of magnesium and the alkali metals, and there are few chapters which fail to include examples of use of these organometallic derivatives in synthesis. Organometallic compounds also figure prominently in the chapter on 1-Halogenoacetylenes by S. Y. Delavarenne and H. G. Viehe, and the use of transition metal and organometallic catalysts in cyclization and oligomerisation of acetylenes is discussed in a very good chapter on Cyclic Compounds from Acetylenes by R. Fuks and H. G. Viehe.

Other chapters are: Structure and Physical Properties of Acetylenic Compounds and the Nature of the Triple-Bond (J. Dale); Synthesis of Acetylenes and Polyacetylenes by Elimination Reactions (G. Köbrich and P. Buck); Synthesis of Acetylenes and Polyacetylenes by Substitution Reactions (W. Ziegenbein); Ionic Additions to Acetylenes (E. Winterfeldt); Free Radical Additions to Acetylenes (M. Julia); Partial Catalytic Hydrogenation of Acetylenes (H. Gutmann and H. Lindlar); Acetylenic Ethers and Thioethers (L. Brandsma, H. J. T. Bos, and J. F. Arens); Ynamines (H. G. Viehe); Acetylenes from Nature (F. Bohlmann); Cyclic Acetylenes (A. Krebs); and Dehydrohetarenes (H. J. den Hertog and H. C. van der Plas).

The book is well produced, and while there is some incorrect English by continental European authors which the publishers should have edited out (e.g., "Kinetics of various types of cleavage reactions have been effected."), the errors are not such as to obscure the meaning. Acetylene chemistry is of importance to such a wide variety of chemists, from researchers on natural products to those in transition metal chemistry, that in spite of a very high pricing (with which these publishers among others have come to be associated) it must find a place in every well-equipped research library.

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