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Book reviews

Scandium Its Occurrence, Chemistry, Physics, Metallurgy, Biology and Technology; by C.T. Horovitz (Editor), K.A. Gschneidner Jr., G.A. Melson, D.H. Youngblood and H.H. Schock, Academic Press, London, 1975, 598 pages, £16.00, $42.25.

This substantial monograph deals comprehensively with scandium and its derivatives. The topics are discussed in fifteen chapters as follows: 1, Discovery and History; 2, Distribution in Nature; 3, Geochemistry and Mineralogy; 4, Derivation, Extraction, and Preparation; 5, Physical Metallurgy; 6, Chemical Properties; 7, Scandium Isotopes; 8, Inorganic Compounds; 9, Alloys and Intermetallic Compounds; 10, Organic Compounds; 11, Analytical Chemistry; 12, Technology, Applications and Economy; 13, Occurrence in Living Systems; 14, Biological Significance; 15, Toxicology. Of these, the first two, the last three, and Chapter 11 are by the editor and the others are by H.H. Schock (Chapter 3), K.A. Gschneidner Jr. [Chapters 4, 5, 8, 9, and (with D.H. Youngblood) Chapter 12], D.H. Youngblood [Chapters 7 and 12 (with K.A. Gschneidner Jr.)] and G.A. Melson (Chapter 10). Organometallicists will principally be interested in Chapter 10.

Activity in the area of compounds containing bonds between carbon and the Group IIIA elements is of fairly recent origin, with the exception of studies initiated by Wilkinson et al. in the middle fifties on cyclopentadienyl derivatives. Compounds which have now been well characterised include $(\eta^5\text{-}C_5H_5)_3Sc$, $[(\eta^5\text{-}C_5H_5)_2ScCl]_2$, $[ScAr]_4^-$, Ph_3Sc, and $R_3Sc\cdot 2THF$ (R = e.g. Me_3CCH_2); all these are briefly mentioned (four pages). Other organic compounds of scandium discussed include coordination complexes, e.g. $ScCl_3\cdot 2L$, as well as metal amides such as $Sc[N(Si(CH_3)_3)_2]_3$, alkoxides, and carboxylates. The literature appears to be thoroughly covered in this chapter and includes references to material published in 1973.

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Catalysis: Heterogeneous and Homogeneous; edited by B. Delmon and G. Jannes, Elsevier Scientific Publishing Company, Amsterdam and New York, 1975, xxvi + 550 pages, $45.95, Dfl. 110.00.

This book presents the manuscripts of papers delivered at the International Symposium on the Relations between Heterogeneous and Homogeneous Catalytic Phenomena, held in Brussels, October, 23—25, 1974.

It is clear that the manuscripts have been simply photoreproduced by the publishers and no editing has been undertaken. This method of publishing has considerable drawbacks. For instance, authors have shown variable diligence in ensuring freedom from mistakes both in their texts and in the cited references; there is no evidence that the editors have played any part in maintaining general standards. A further feature is that the typography is not uniform, and some authors would be well advised to invest in new typewriters. The majority of the manuscripts are in English, but eight are in French.

The conference was organised by Belgian chemists and Belgians represented the largest contingent of participants. It is difficult to know what factors entered into the editors' considerations in deciding on membership; it is interesting, for example, to note that of the twelve U.K. delegates, all came from industry, whereas in the West German delegation, for instance, of twenty participants, ten were from University laboratories.

Some of the articles are reviews and others are original papers, and obviously it would be difficult to discuss in any depth thirty-nine quite diverse contributions. The editors' aim was 'to consider the relations between heterogeneous and homogeneous catalytic phenomena', but the majority of the lectures concerned heterogeneous systems. However, Dr. D.G.H. Ballard described work from his laboratory in Runcorn in which homogeneous metal alkyl compounds could be taken as models for the behaviour of heterogeneous catalysts for olefin reactions. Topics discussed by other authors include: (a) the modification of heterogeneous catalysts to change their selectivity (I. de Aguirre and B. Duque); (b) activity and selectivity of organometallic catalysts attached to solid matrices (P.A. Gosselain); (c) stereochemical probes into the mechanism of homogeneous and heterogeneous catalytic hydrogenations (S. Siegel and D.W. Ohrt); (d) the importance of coordination aggregates in homogeneous catalysis by polynuclear metal complexes (Ph. Teyssie); (e) intermediate regions between the usual catalyst classifications (J. Manassen); (f) supported metal complex catalysts (P.R. Rony and J.F. Roth); and (g) comparison of homogeneous and heterogeneous catalysts in hydrogenation (G. Martino).

It is clear that much of the subject matter is relevant to many organometallic chemists, but the reviewer's opinion is that most of the material is accessible in other publications.

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