

# Book Reviews

Quicksilber, Teil A Lieferung 2, 8 Auflage, Gmelins Handbuch der anorganischen Chemie. [Mercury, Part A Section 2, 8th Edition, Gmelins Handbook of Inorganic Chemistry.] Verlag Chemie, G.m.b.H., Weinheim/Bergstrasse. 1962. xl + 709 pp. (467-1175), 285 graphs (Fig. 54-338). 17 × 24.5 cm. In German. Price, \$133.50 clothbound.

This volume is a continuation of the treatment of the element mercury, System Number 34, and deals with electrochemistry (316 pages), chemical reactions of the element (28 pages) and its simple ions (74 pages), and alloys (291 pages). The comments on another volume of this series [*Inorg. Chem.*, 1, 976 (1962)] about coverage of the literature, use of double columns in the table of contents and of English titles, growth in size, coverage of the topics of detection and estimation, etc., apply equally well to this volume.

Many chemists interested in electrochemistry and solution equilibria will welcome the appearance of this volume because of the exhaustive coverage of such topics as standard potentials: (Hg vs. Hg<sub>2</sub><sup>2+</sup>, Hg vs. Hg<sup>2+</sup>, Hg<sub>2</sub><sup>2+</sup> vs. Hg<sup>2+</sup>), position of mercury in the electrochemical series, electrolytic solution pressure, ionic mobility, potentials, cells, mercury electrodes including preparation and applications, electrocapillary curves of mercury, capacity and structure of the metal solution phase boundary layer, dropping mercury electrode including reactions of mercury salts at the electrode, overvoltage on stationary, dropping, and streaming electrodes, overvoltage on cathodic dissolution of oxygen at mercury surfaces, electrodeposition of mercury, and the mercury coulometer.

The reactions of elementary mercury are grouped under the headings: with elements, with inorganic compounds, and with organic compounds.

The alloys included in this volume are those with system numbers lower than that of mercury: Sb, Bi, alkali metals, and ammonium, all group II elements, and Tl. References are included to alloys with elements of higher system numbers. The treatment of the alloys with each element include a phase diagram of the system, preparation, physical properties, electrochemical behavior, and chemical reactions. Where definite intermetallic compounds are formed, each is treated in detail.

Anyone wishing to consult the literature on mercury will find Gmelins Handbook indispensable. With it, the task is relatively direct; without Gmelin, the task might be formidable. All of which attests to the care with which the editors have accomplished a stupendous undertaking. Every user of Gmelin should be deeply grateful.

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**Inorganic Adduct Molecules of Oxo-Compounds.** By INGVAR LINDQVIST. Volume IV of a Series of Monographs in Inorganic and General Chemistry. Edited by MARGOT BECKE-GOHRING. Distributed in the U. S. A. by Academic Press, Inc., Publishers, New York, N. Y. 1963. vi + 129 pp. 23.5 × 16 cm. Price, \$6.50.

The author of this little monograph is very well qualified to consider the subject, having been actively engaged in research on

donor-acceptor interactions for more than a decade. In general donor-acceptor interactions involving oxo-compounds are considered which result in an increased coordination number for the acceptor atom. That large class of adducts of the form AB<sub>n</sub>·pD, for which *n* + *p* is greater than the normal coordination number of A, is excluded from consideration, since obviously ligand substitution must have taken place upon adduct formation. The author also suggests that adducts involving the transition metals have been covered incompletely. This reviewer finds that the author is over modest in this regard.

The first 85 pages of the book present a remarkably complete review of the present state of knowledge of the oxo-adduct type molecules. Donor molecules containing >C=O, -NO<sub>2</sub>, -N=O, >P=O, >As=O, >Sb=O, >S=O, >SO<sub>2</sub>, and >Se=O groups are considered. In addition to a discriminating listing of known compounds, separate chapters are devoted to specific properties of the compounds. The chapter on affinities recapitulates the equilibrium and thermochemical data which have accumulated to date, from which it is possible to deduce relative strengths of individual donors when reacting with certain types of acceptors. Known structures of adducts are illustrated and described carefully. It should be pointed out that much of the structural information on this class of compounds is due to Lindqvist and his co-workers.

The index is admirably complete and the referencing to it leaves nothing to be desired.

The last chapter of the book is best described as a summary of the way Lindqvist looks at this class of inorganic substances from a theoretical point of view. Since his thinking has obviously evolved slowly as more and more experimental facts have emerged and is not the result of hasty theoretical considerations based on scant facts, this reviewer recommends it highly as an introduction to and commentary on this timely topic.

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## BOOKS RECEIVED

January, 1964

W. S. FYFE. "Geochemistry of Solids, An Introduction." McGraw-Hill Book Co., Inc., 330 West 42nd St., New York, N. Y. 1964. vii + 199 pp. \$8.50.

KENNETH B. HARVEY and GERALD B. PORTER. "Introduction to Physical Inorganic Chemistry." Addison-Wesley Publishing Co., Inc., Reading, Mass. 1963. x + 437 pp. \$9.75.

C. D. JEFFRIES. "Dynamic Nuclear Orientation." John Wiley and Sons, Inc., 605 Third Avenue, New York 16, N. Y. 1963. viii + 177 pp. \$5.95.

PHILLIP M. MORSE. "Thermal Physics." W. A. Benjamin, Inc., 2465 Broadway, New York 25, N. Y. 1964. xiii + 455 pp. \$10.50.

AN. N. NESMEYANOV (translated and edited by J. I. Carasso). "Vapor Pressure of the Elements." Academic Press, 111 Fifth Ave., New York 3, N. Y. 1963. vi + 469 pp. \$14.50.