

was always produced, at least to some extent, under all these conditions. Similar experiments with manganese, iron, and cobalt also gave negative results.

Conclusion.—The acetylides of manganese(II), iron(II), cobalt(II), and nickel(II) cannot be prepared under the conditions reported by Durand.¹ It is also unlikely that nickel can be recovered by the use of acetylene as suggested by Terry.²

Acknowledgment.—The authors thank the Explosives Division of E. I. du Pont de Nemours for financial support.

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RECEIVED MAY 28, 1964

Book Reviews

Coordination Compounds. By DEAN F. MARTIN and BARBARA B. MARTIN. McGraw-Hill Book Co. Inc., 330 West 42nd St., New York, N. Y. 1964. x + 99 pp. 14 × 21 cm. Price, \$1.95 paperbound, \$4.95 clothbound.

The book is interesting and well written. The use of examples that make the subject seem alive and vital, as it reflects current research in inorganic chemistry, is especially good. Also, the inclusion of appropriate references so that the student can easily find more information is important for a book of this type. The authors have provided an excellent introduction to coordination chemistry.

The titles of the five chapters give a good indication of the range of topics covered: "The World of Coordination Compounds"; "The Years of Discovery"; "The Architecture of Coordination Compounds"; "The Years of Understanding"; and "Coordination Compounds in Solution." It seems to me that a fuller use of electronic configurations to describe ions of interest would have been useful since many beginning courses now cover this topic in some detail. I think that the only omission worth noting is the mention of ligand field theory without discussing in any detail one of its major successes, *i.e.*, explaining the colors of coordination compounds. The idea of ligand field theory is introduced in a clear and concise manner, and the explanation of the relationship between colors and field strengths would have completed this section on theoretical approaches to bonding very satisfactorily. It seems a shame to bring the student to this point and then stop before he "sees the light" or, in this case, "color."

The book is good factually. Almost anything that might be pointed out would be more in the nature of quibbling rather than a valid question or comment about what is written. I would guess that many students will not understand why both coordination number (CN) 4 for a planar arrangement and CN 6 can have radius ratios equal to between 0.41 and 0.59 and why the figure on p. 10 shows that CN 3 is better than CN 4. In fact, the sizes of the circles in the figure have a radius ratio equal to 0.39. The classic illustration that the arrangement of bonds around the Pt(II) ion is planar involving the resolution of the isobutylendiamine-*meso*-stilbenediamineplatinum(II) ion is sophisticated and satisfying, but many students will not appreciate this without the use of models. Of course this comment applies to the whole of stereochemistry and the authors have thoughtfully provided templates that will allow the student to construct models of the octahedron and tetrahedron.

"Coordination Compounds" can be recommended as a good introduction to the subject.

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Inorganic Polymer Chemistry. By F. G. R. GIMBLETT. Butterworth, Inc., 7235 Wisconsin Ave., Washington 14, D. C. 1963. ix + 452 pp. 15 × 25 cm. Price, \$17.50.

Although the term "inorganic polymer" seems to have a different meaning to each person using it, Gimblett has not

chosen to define it explicitly in his treatise. As "inorganic polymers" he covers, in more or less detail, everything from elements *per se* to coordination polymers containing organic bridging groups. In many instances "polymer" is used to include dimers, trimers, and other oligomers, and, indeed, a goodly portion of the book is devoted to such substances. The emphasis is on noncarbon-containing systems such as phosphates, silicates, phosphonitrilic halides, and binary inorganic compounds, with particular attention paid to the characterization of substances as polymers. There are only a few references to work published later than 1961.

Unfortunately much of the value of Gimblett's compilation is negated by careless writing. A sampling of statements that disturbed this reviewer follows:

"It is possible, as mentioned above, that the presence of excess phosphoric acid in the dehydration [sic] of CdCO₃, CdO, and various zinc compounds influences the nature of the final products."

"If sufficient KNH₂ is present, the second stage in the reaction may be visualized as: [Co₂(NH₃)₈(NH₂)₂]⁴⁺ + NH₃ [sic] ⇌ [Co₂(NH₃)₇(NH₂)₃]³⁺ + NH₄⁺ [sic]."

"The stability of these polynuclear amido complexes is strongly dependent upon the state [sic] of the solution."

"Another way of preparing alkoxides is to dissolve the metal hydroxide in the alcohol: NaOH + EtOH ⇌ NaOEt + H₂O."

"Spontaneous formation of polymeric palladous chloride from the monomer [sic] is an example of addition polymerization."

"In the polyphosphoryl chloride system, again no ionization is possible and the chlorine atoms along the polymer chains are appreciably smaller than those [sic] existing in the phosphoryl dimethylamide system."

Mention should also be made of the references to bridging groups as bidentate ligands; to metal ions as cross-linking agents where they do not cross link; to Mo₃O₁₀⁴⁻ as tetramolybdate; to a molecule existing as a number of resonance forms; to NH₃ in acid solutions, etc., and to inaccurately drawn formulas for metal phthalocyanines and an incorrect equation (3.146).

In concept this book is excellent, but it has not been prepared with enough attention to detail. In addition to the specific points listed, which are only representative of a number of items noted, there are inconsistencies in classification and awkwardness in arrangement that make the presentation unnecessarily hard to follow. The misprints noted should not lead to confusion.

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High-Temperature Materials, No. 1—Materials Index. By PETER T. B. SHAFFER. Plenum Press, 227 West 17th St., New York, N. Y. 1964. xx + 740 pp. 15.9 × 23.5 cm. Price, \$17.50.

This book presents a data summary for properties of eight classes of high temperature materials: borides, carbides, mixed carbides, elements, nitrides, oxides, mixed oxides, and silicides

Research on such materials is of obvious current importance and there has been extensive publication of high temperature data in government reports. Properties which are reported (when "available") include formula, compound name, formula weight, formula volume, melting point, boiling point, vapor pressure, evaporation rate, X-ray density, pycnometric density, theoretical analysis, synthesis, reactivity and temperature limit of usefulness, resistivity, critical temperature, temperature coefficient of resistivity, thermal e.m.f., dielectric constant, dissipation factor, thermionic work function, magnetic susceptibility, critical field, strength, hardness, elastic moduli, Poisson's ratio, creep rate, thermal neutron capture cross section, radiation damage, color, form, refractive index, optical sign, structure, thermal conductivity, thermal expansion, specific heat, and thermodynamic constants.

A complete summary of existing data would be valuable and a critical review of such data would be monumental. This book, unfortunately, is neither for, to quote Dr. Shaffer, "...no attempt to obtain all the data for a specific compound was made. This compilation of data covers only those data which were at the author's disposal and did not include any specific literature searches for the sake of this data compilation." This philosophy is appropriate for a card file on a scientist's desk but with the formal publication of a "Materials Index" it would seem one is obligated to some completeness. For example, although the work of Stull and Sinke on the thermodynamic properties of the elements is cited as a reference, no effort was made to include these modern vapor pressure data, heats of sublimation, etc., in all of the tables for the various elements. The table for Al consists of eight lines (four of which are titles) and two of numerical data on electric and magnetic properties.

An extensive collection of electrical, magnetic, and thermal properties is given for some materials but, in general, the tables are almost random pieces of information. The number of compounds indexed is deceiving, for many require only two or three lines to list all the data "available." In a 100-page sequence of the book 39 pages were at least half blank. Certainly, as the author suggests, the reader may need to add data to some of these blank pages. Much of it has been available for several years.

In summary, this book presents a list of data collected uncritically and somewhat randomly. It is possible that a reader may find a useful piece of information on a high temperature material but certainly there is not a complete coverage. The nature of the data presented, the fact that the book is a reproduction of typed tables, and the high fraction of empty space on the average page make the \$17.50 price appear exorbitant.

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BOOKS RECEIVED

July, 1964

- W. SCHNEIDER, G. ANDEREGG, and R. GUTT, Editors. "Essays in Coordination Chemistry." Birkhauser Verlag, Basel, Switzerland. 1964. 305 pp. 48 sFr.
- G. LEPOUTRE and M. J. SIENKO, Editors. "Metal-Ammonia Solutions." Distributed by W. A. Benjamin, Inc., 1 Park Ave., New York, N. Y. 1964. 320 pp. \$10.50.
- THOR A. BAK, Editor. "Phonons and Phonon Interactions." W. A. Benjamin, Inc., 1 Park Ave., New York, N. Y. 1964. xiv + 640 pp. \$9.50.
- JON MATHEWS and ROBERT L. WALKER. "Mathematical Methods of Physics." W. A. Benjamin, Inc., 1 Park Ave., New York, N. Y. 1964. x + 475 pp. \$12.50.
- WILLIAM L. JOLLY, Editor. "Preparative Inorganic Reactions." Volume I. John Wiley and Sons, Inc., 605 Third Ave., New York, N. Y. 1964. ix + 271 pp. \$9.
- LASZLO ERDEY. "Theorie und Praxis der Gravimetrischen Analyse." Band II. Akademiai Kiado Publishing House of the Hungarian Academy of Sciences, Budapest V. Alkotmany U. 21. 1964. 802 pp. \$18.
- GERHART FRIEDLANDER, JOSEPH W. KENNEDY, and JULIAN MALCOLM MILLER. "Nuclear and Radiochemistry." 2nd Ed. John Wiley and Sons, Inc., 605 Third Ave., New York, N. Y. 1964. xi + 585 pp. \$10.75.