

# Book Reviews

**Coordination Chemistry. The Chemistry of Metal Complexes.** By FRED BASOLO, Northwestern University, and RONALD C. JOHNSON, Emory University. W. A. Benjamin, Inc., 1 Park Ave., New York, N. Y. 1964. xii + 180 pp. \$3.95.

"Coordination Chemistry" is intended for beginning students. The approach is often that found in more advanced courses, but the concepts are intelligible to a well-prepared first-year student. The book is also suitable for an intermediate level inorganic chemistry course as an introduction to coordination chemistry.

Chapter I gives a brief introduction and discussion of historical developments and nomenclature. Chapter II begins with the valence bond treatment with more emphasis on crystal field theory and a brief development of molecular orbital theory. The remaining chapters are entitled: "Stereochemistry," "Preparation and Reactions of Coordination Compounds," "Complex Ion Stability," and "Kinetics and Mechanisms of Reactions of Coordination Compounds." Each chapter is followed by a few problems at an appropriate level and a selection of references for further reading.

Few beginning courses in chemistry allocate enough time to this topic to complete the book. Omissions can be made freely except that several of the later chapters use the material introduced in the chapter on the coordinate bond. In particular, crystal field theory is used extensively.

The book is longer and more detailed than others available at a comparable level. The writing is clear and the content is an authoritative as can be expected at this level. The student should be able to read for himself those chapters not covered in class.

In a few places the discussions could have been improved for self-study by somewhat longer introductions or explanations. The discussion of optical activity would probably require more introduction for beginning students than is given in this book. The first sentence on page 127 states that the heat evolved in a complexation reaction is small. This is true for the reactions discussed, but the reader might get the incorrect impression from this statement that the heats of formation of the complexes involved are also small. The fact that these are replacement reactions should be emphasized. The statement at the top of page 50 that electrons in antibonding MO's are under the influence of only one nucleus is incorrect in the general case.

The book is highly recommended for classroom use or private study at the level intended.

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**Catalysis and Chemical Kinetics.** By A. A. BALANDIN, A. BIELAŃSKI, G. K. BORESKOV, S. BRETSZNAJDER, M. M. DUBININ, B. JEZOWSKA-TRZEBIATOWSKA, E. JOZEFOWICZ, E. I. KLABUNOVSKII, Z. SOKOLSKI, E. TRZESZCZANOWICZ, W. TRZEBIATOWSKI, N. A. VASYUNINA, and K. B. YATSIMIRSKII. Academic Press Inc., 111 Fifth Ave., New York, N. Y. 1964. xii + 255 pp. 16 × 23.5 cm. \$10.00.

This book is a collection of twelve papers on heterogeneous catalysis and two on homogeneous catalytic systems. Six of the papers are by Soviet scientists A. A. Balandin, G. K. Borekov, M. M. Dubinin, N. A. Vasyunina, and E. I. Klabunovskii. They are essentially of a review nature. The Balandin multiplet theory dominates the discussion in four of the papers. However, neither the experimental evidence nor the theoretical treatment makes the Balandin approach any more incisive than it ever was in the last 20 years. The Dubinin theory on adsorption, on the other hand, presents the classical approach to surface adsorption elegantly. Borekov's contribution deals with the important problem of how to pick the best catalyst for a given chemical process.

The Polish contributions deal with (a) straightforward kinetic treatments of the Fischer-Tropsch process (Z. Sokolski) and the

dehydration of alcohols (E. Trzecznanowicz), (b) electric properties of catalyst (A. Bielański), (c) magnetic properties of catalysts (E. Trzecznanowicz), (d) theory of solid-phase nuclei formation.

There is an interesting article by B. Jezowska-Trzebiatowska on the mechanism and kinetics of certain oxidation-reduction systems involving homogeneous catalysis.

A preface by W. Trzebiatowski gives a short informative account of the history and status of catalytic researches in Poland, and Balandin does the same for the Soviet Union. Both suffer from the fact that they merely list names and topics and omit references to key articles. If their accounts are correct the catalytic researches in both countries lack the "light" of modern theoretical interpretation of chemical kinetics and the "lens" of techniques of chemical physics.

The reviewer feels that the scientific community has outgrown the parochialism of presenting any subject from a purely national or "block" point of view, restricting articles to a political or geographical area, and viewing progress from within a national frame of reference. For this reason the book, "Catalysis and Chemical Kinetics" serves a very limited purpose.

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**Rubidium and Caesium.** By F. M. PEREL'MAN. Translated by R. G. P. TOWNDROW. English Translation edited by R. W. CLARKE, A.E.R.E., Harwell. The Macmillan Co., 60 Fifth Ave., New York, N. Y. 1965. xv + 146 pp. 15 × 22 cm. \$9.00.

This very carefully compiled monograph on rubidium and cesium is one of the few of its kind available about these elements. That the coverage is thorough is indicated by the 451 references for the 146-page book. The publication date of 1965 is a bit deceptive, since the book is actually the second edition published in 1960 (containing 346 references) with the addition of another 105 references for the 1960-1964 period; but these new references are not covered in the text of the book itself. Thus, the material in the book dates from before 1960.

The contents of the book are comprised of an introduction (4 pp) which includes brief mention of the applications of the two metals and their compounds; discovery and natural occurrence (7 pp); properties of rubidium and cesium and their compounds (48 pp); systems formed by rubidium and cesium salts (15 pp); analytical chemistry of rubidium and cesium (27 pp); extraction from minerals and ores (15 pp); and preparation of the metals and various compounds (15 pp). There is no separate chapter or section dealing with the interesting applications and possible applications of the metals and their compounds, and all of those briefly mentioned are of pre-1960 knowledge.

The information given in the book is well presented and easily read and understood. However, the lack of an index of any sort hinders the ready finding of any definite aspect of the subject. There is also too little use of subheadings which would make the locating of specific material easier. For example, in the chapter on analytical chemistry there are only two sub-headings: "Qualitative Analysis" and "Quantitative Determination," and this chapter is 27 pages in length.

In conclusion, this book is then a good summary of the literature through 1964, with the material up to 1960 discussed in the text, and would be useful to this extent to workers currently active in the field of rubidium and cesium. Its usefulness is limited because of the lack of an index and of sufficient subheadings to permit the reader to locate readily specific information.

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