

covers of information about several methods, any one of which is difficult to find summarized in a single place (*e.g.*, the chapter on sequestering agents), makes the book a desirable reference volume.

In summary, this is a book not without its faults, some of them almost inescapably associated with the small volume that attempts the large survey. It is also, however, a book of very considerable merit. It should be helpful to practicing chemists and chemical engineers as well as students in these fields. It represents a very good idea, one of which the author can be properly proud and for which some of the rest of us must be appreciative and gently envious.

DEPARTMENT OF CHEMICAL ENGINEERING SHELBY A. MILLER
UNIVERSITY OF ROCHESTER
ROCHESTER, NEW YORK

Theory and Structure of Complex Compounds. Papers presented at the Symposium held in Wrocław, Poland, June 15-19, 1962. Edited by B. JEZOWSKA-TRZEBIATOWSKA, Professor at the University of Wrocław. Pergamon Press, The Macmillan Co., 60 Fifth Ave., New York, N. Y. 1964. xii + 707 pp. 17.5 X 25 cm. Price, \$17.50.

This book is a collection of papers presented at the Symposium on The Theory and Structure of Complex Compounds held in June, 1962, in Poland. The collection consists of about 87 papers, 57 of them in English, 18 in German, 6 in French, and 6 in Russian, although all the abstracts are given in English. The topics cover all the aspects of the modern coordination chemistry. Thus, roughly, there are about 7 papers on theoretical studies, 12 on electronic spectra and magnetism, 5 on vibrational spectra, 4 on crystal structures, 18 on reaction kinetics and mechanism including photochemistry, 9 on preparative chemistry, 12 on stability and thermodynamics, and the remaining 20 on such miscellaneous topics as polarography, rotary dispersion, Mossbauer effect, solvent extraction, ion exchange and paper ionophoresis, thermogravimetric analysis, complex formation in molten salts, and spectrophotometric observations. Transition elements on which the above studies were made not only include the 3d series but the 4d, 5d, 4f, and 5f series also (there are about 5 papers devoted entirely to uranyl ion). In addition, a few papers deal with the chemistry of the compounds of the non-transition elements, *e.g.*, structure of fluoroarsenates, tellurium complexes, extraction studies on GeCl₄, degradation of polyphosphates, and charge-transfer studies of iodine-halogen-benzene complexes.

As is to be expected in a collection of independent submissions, there is a wide range in both technical and editorial quality. Some papers are reasonably detailed and self-contained. Others are mere summaries or abstracts containing sweeping and unsubstantiated statements of conclusion; their function in this collection is little more than to let the reader know that certain types of work are in progress at stated laboratories. Some represent work undertaken from a narrowly parochial point of view almost uncolored by awareness of the world literature. In brief the collection is very uneven. Another point to be noted is the possible alternate interpretations and deductions of the results in some of the articles. Here, the reviewer would like to warn particularly the novices in coordination chemistry not to take all the interpretations for granted, as these represent only the ideas of the authors of the corresponding papers. Some of the conclusions have to be tested and verified before they can be confirmed. As an example, one which is of personal interest to the reviewer is the work of Jakób, *et al.*, on "The Properties of Solid

Photoproducts of Octacyanides of Mo(IV) and of W(IV)." It may be interesting to point out that the reviewer in collaboration with Adamson has reached somewhat different conclusions for the kinetics and mechanism and for the formulas of the intermediate and product species in the photolysis of octacyanomolybdate(IV) complex anion.¹

There are many interesting papers in the book. To name a few, a novel and an elegant approach toward the application of symmetry principles in chemistry has been presented in an article by A. D. Liehr² on "Confirmational Instability of Non-Cubosymmetric Inorganic Compounds in Degenerate Electronic States"; a convincing demonstration of dynamic Jahn-Teller effect in the case of CsTi(III)(SO₄)₂·12H₂O by eliminating the possible removal of orbital degeneracy by lower fields has been shown by H. L. Schläfer; resolution of the racemic mixture of chromium tricarbonyl derivative of *m*-methoxybenzoic acid (one of the very few reports in literature on the separation of enantiomers of an arene chromium tricarbonyl derivative) has been carried out by A. Mandelbaum, *et al.*; and some interesting empirical correlations regarding the instability constants of halogen complex compounds *vs.* the component electronegativities (A. Lodzinska) and oxidation-reduction potentials (E. Danilczuk) have been pointed out.

The book has a pleasing appearance and in general contains relatively few errors, typographical or otherwise. Among those noted by this reviewer are: the numbers 4, 3 should read 6, 4 on the diagram (Fig. 2) on p. 52; $\overset{\cdot}{\underset{\cdot}{\text{M}}}-\overset{\cdot}{\text{O}}-\text{COR}$ instead of $\text{M}-\overset{\cdot}{\text{O}}-\overset{\cdot}{\text{C}}-\text{COR}$ on p. 73 (line 14); Eq. 35 on p. 110 should read

$$\begin{aligned}\vec{S}_{ka} &= \Sigma \cos \frac{2kj\pi}{n} \hat{R}_j - \sin \frac{2kj\pi}{n} \hat{Y}_j = \alpha \ell S_k \\ \vec{S}_{kb} &= \Sigma \sin \frac{2kj\pi}{n} \hat{R}_j + \cos \frac{2kj\pi}{n} \hat{Y}_j = \beta m S_k\end{aligned}$$

and on p. 191, $f(R) = (1 - R)^2/2R$ instead of $1 - R^2/2R$. Also to be noted is that the book lacks review articles, the presence of which has become customary for all conference publications, and importantly an author index.

The book not only covers all the aspects of modern coordination chemistry, but the important point is that many of the articles were presented by the schools from Central European countries which usually publish their work in journals which may not be available at all libraries. Thus, this book makes an important source of recent information in the fields of research studied in that part of the world. This makes it almost a necessity for everyone to own the book.

Although the bulk and material of the book is in keeping with its high cost, it may be somewhat difficult for students in coordination chemistry to own it. But, on the other hand, it should find a place in libraries, and on the bookshelves of researchers and teachers not only in the field of inorganic, but in the fields of analytical, biochemical, physical, and theoretical chemistry as well.

(1) J. R. Perumareddi, "The Photochemistry and Ligand Field Theory of Some Transition Metal Complexes," Dissertation, University of Southern California, 1962, 202 pp.

(2) An extension of such treatment could be found in a complete article titled "Symmetry and Chemistry," a course of eight lectures given at the Conference on Applications of Group Theory to Chemistry, Ohio Wesleyan University, Aug. 21-23, 1963, by the same author. Copies of these are available upon request from A. D. Liehr, Mellon Institute, 4400 Fifth Ave. Pittsburgh, Pa. 15213.

MELLON INSTITUTE JAYARAMA R. PERUMAREDDI
PITTSBURGH, PENNSYLVANIA 15213