

ligand field theory. The editors in their preface state their belief that Grinberg's book might well serve to fill the need for an intermediate level textbook dealing with coordination compounds. This is a good deal to look for in a book which, in addition to being twelve years old, possesses the shortcomings alluded to above. On the other hand, it could be supplemented in practice by a suitable choice of additional readings. The book has very evident merits, and provides a stimulating introduction to an important area of chemistry.

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The Mössbauer Effect. A Review—with a Collection of Reprints. By HANS FRAUENFELDER, University of Illinois, Urbana, Ill. W. A. Benjamin, Inc., 2465 Broadway, New York, N. Y., 1962. xiv + 336 pp. 15 × 23 cm. Price, \$3.95.

Despite the earnest protestations of the discoverer, the recoilless resonance absorption of γ -radiation has become known as the Mössbauer effect. The present volume by Frauenfelder is devoted to this effect, which promises to be a tool of unusual precision and sensitivity in investigations of solid state and nuclear physics, magnetism, chemical bonding, molecular structure, and a variety of related subjects. As part of the Frontiers in Physics Series, this book is somewhat unusual, since it provides both a review of the field to the fall of 1961 and a collection of 39 reprints of papers, most of which appear in their original format.

Following a Foreword and Preface, six chapters provide the reader with an introduction to the general aspects of resonance in γ -ray emission and absorption and are organized in a manner appropriate to the "Lecture Note" character of the first half of this volume. Chapter 1 is a brief introduction to resonance fluorescence and furnishes a modest historical framework into which Mössbauer's 1957 studies can be fitted. Chapter 2 provides a simple theoretical treatment of lattice vibrations and is followed by a brief discussion of experimental procedures (and pitfalls) in Chapter 3. The next three chapters are devoted, respectively, to applications of the Mössbauer effect to nuclear physics, general physics (the gravitational red shift experiments, uncertainty relationship, polarization, etc.), and solid state physics. Chapter 7 is a bibliography of papers on the Mössbauer effect and provides a bridge to the remainder of the book, which consists of reprints and one original paper. The value of the individual reprints depends, of course, on the interests and orientation of the reader, but they range from such fundamental contributions as the original paper by Mössbauer on work with Ir^{191} and the first discussion of the isomer shift by Kistner and Sunyar to much more esoteric treatments of theoretical topics which will be of lesser interest except to the specialist. Except for the magnetism paper by Wertheim and a few paragraphs scattered among various other papers, very little in the way of experimental details can be extracted from this collection. In this area, the reader is left very much on his own. Concerning the preparation of narrow-line sources, for example, the best a physicist can suggest is "find yourself a good chemist."

In typographical format, the "Lecture Note" portion of this volume is easy to read; the illustrations are clear and equations are well displayed (and numbered sequentially throughout). Not quite so cheering is the prospect of tackling several of the reprints, which—due to the necessary reduction in size from the usual 8 × 10.5 in. format of, for instance, the *Physical Review* to the 6 × 9 in. dimensions of this book—can only be adequately read under strong illumination and with good eyesight. A final weak point, literally, is the binding, which—as is characteristic of paperbacks—gives way as soon as one has once gone through the book and attempts a re-reading. Repeated reference to this volume undoubtedly will result in a battle-worn copy replete with broken spine, even under the most careful usage.

Any judgment of the value of this paperback volume must be

made in the light of the more recent reviews by Mössbauer, by Boyle and Hall, and by others. Clearly, no monograph which goes through the time-consuming ministrations of the book publisher can compete in timeliness with more rapid channels of communication. Nonetheless this volume deserves the serious attention among chemists of those who teach in the areas of nuclear and radiochemistry, the solid state and chemical bonding, as well as those whose research interests lie in these fields. Among the latter, especially, the Frauenfelder book will provide a welcome introduction into the fundamental theory, practice, and literature of a very rapidly growing technique.

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Progress in Stereochemistry. Vol. 3. Edited by P. B. D. DE LA MARE and W. KLYNE, University of London. Butterworth, Inc., 7235 Wisconsin Avenue, Washington 14, D. C., 1962. viii + 368 pp. 15.5 × 25.0 cm. Price, \$13.50.

This volume, like its predecessors in the series, describes aspects of stereoisomerism in both inorganic and organic systems. Of the eight chapters, four deal exclusively with strictly organic topics. Two, "Nuclear Magnetic Resonance and Stereochemistry" (R. J. Gillespie and R. F. M. White) and "Steric Effects in Acid-Base Reactions" (V. Gold), treat both inorganic and organic topics. Only two, "The Stereochemistry of Some Elements of Group III" (D. C. Bradley) and "Steric Problems in the Hydration of Ions in Solution" (H. Taube), deal with topics that are rigorously inorganic in nature.

The summary on group III covers all of the elements of the boron family in considerable detail and provides an excellent correlation of published data for a variety of compound types. The treatment of lower oxidation states is particularly useful since it brings together otherwise rather widely scattered information. The emphasis is modern, and the documentation up to date. Interpretation of physical data as an indication of structure is extensive and adequate.

The discussion of hydration in solution represents a particularly good compilation and correlation of a very substantial body of information. Both a description of experimental approaches and an interpretation of the data they provide are included. The treatment is not only a summary of published results but also an extensive discussion of the meaning and significance of these results. Again the choice of references is both timely and adequate.

The chapter on nuclear magnetic resonance provides first a general introductory background and then describes specific published applications. The inorganic systems discussed include aluminum trimethyl dimer; boron hydrides and their derivatives; group IV, V, VI, and VII fluorides; and selected phosphorus compounds. In most instances, the data cited are more supportive of structures deduced from other types of data than primarily indicative. However, the importance of n.m.r. measurements in elucidating stereoisomerism is clearly and emphatically delineated. Although the chapter on acids and bases is organically oriented, many of the reactions described involve inorganic acids. To the extent that correlations of the effects of organic structures upon these reactions are emphasized, much of this material will be of interest to the inorganic chemist. Except to mention references to catalysis by inorganic systems in controlling the stereochemistry of certain addition polymers, it does not appear pertinent to discuss the remaining chapters of the book.

The book is recommended to all who are interested in structure and stereochemistry. The chapters are uniformly well written, well documented, and modern. The volume is attractively arranged and printed. Very few errors were noted.

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