interpretation of their own work. Most aspects of nutrition do indeed find inclusion—the use of mutants in nutritional research, measurement and interpretation of food utilization, isolation of nutritional requirements, symbiotes, nutrition at the cellular or metabolic level, artificial diets, and some case histories where nutrition might possibly become involved in pest control. The problem for the reader is to find guidance for assessing the various authors' differing interpretations and approaches; he may also be left with the wrong impression that insect nutrition can play little practical part in pest control on crops. For example, the final chapter, with the all-embracing title of "Insect control strategies based on nutritional principles: a prospectus," concentrates almost entirely on the possibilities of pest control in manufactured foodstuffs. Even Maxwell ("Host plant resistance to insects—nutritional and pest management relationships") emphasizes the contribution plant resistance can make to our knowledge of insect nutrition at the expense of possible contributions in the other direction.

The book could well have been more argumentative and cohesive and is no substitute for a textbook to a worker seeking an interpreted summary of the literature. For example, the mites in "Food utilization by acarid mites" are *Caloglyphus berlesei*, "Chemical feeding requirements of oligophagous insects" refer to those of the Colorado beetle, and the "Neuroendocrine regulation of insect metabolism and the influence of nutrition" is about *Blaberus discoidalis*. In spite of this, each chapter (in an isolated way) is an entry point into a particular field for the worker changing the orientation of his research or for the graduate student starting a nutrition-based project. I therefore do recommend that workers have this book ordered for their libraries, but it is not a reference book necessary for their own bookshelves.

Most chapters carry an adequately up-to-date bibliography, but, as in so many books published in English, one is left with the impression that the non-English literature has contributed remarkably little to the subject. The book is attractively presented and printed with rather few typographical errors which are likely to mislead (except possibly "phospholysid" for "phospholipid"). It is annoying that legends to tables and figures are hardly distinguishable as such from the adjacent text and that the subject index is rather arbitrary. For example, the phrase "dietary imbalance" may occur only once as such, in a table heading, but the subject is mentioned frequently elsewhere and surely warrants keying out to where it is discussed in the text. The book bears many marks of hasty copy editing: joint authors are variably linked by "and" or "&," lists of authors in the text may be found in both alphabetical and chronological order, species are cited with and without their authors, and an "unpubl. obs." is equally likely to turn up as just "unpublished" or even "unpublished obs."

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Biochemistry of Metal Ions

The Inorganic Chemistry of Biological Processes. M. N. HUGHES. Wiley-Interscience, New York, 1973. viii, 304 pp., illus. $12.95.

This book is an outgrowth of a course designed to introduce advanced inorganic chemistry students to problems in biology germane to their expertise. A more apt title might be "The Role of Metals in Biological Processes," since the text is restricted to a treatment of metal ions and, specifically, those involved in life functions. The metabolic transformations of inorganic forms of elements such as nitrogen and sulfur are discussed only to the extent that metalloproteins are involved. However, to focus criticism on its ambiguous title would be unfair because this book serves a useful purpose within its intended scope.

A second scientific audience will also find this book of value, namely, biologists who are interested in the occurrence of metal ions in biological systems and the functions they fulfill there. To provide sufficient background for both chemists and biologists, Hughes presents fundamental biological information regarding proteins and their mediation of metabolic reactions on the one hand and a general introduction to the chemistry of metal ions on the other. However, in general, biologists would be well advised to have an advanced inorganic chemistry text at hand when they undertake this book. Chemists may require a biology text in order fully to appreciate processes such as oxidative phosphorylation.

This book is properly focused on the nature of metalloproteins and considers the respective contributions of the biochemical properties of the protein and the inorganic chemistry of the particular metal moiety to the mechanism of action of the conjugated complex. Methods of study which yield information concerning these complexes by exploiting either protein or metal properties are reviewed and typical results are noted. Deviations of one component from expected behavior are rationalized in light of contributions or perturbations by the other. Within this framework, examples from the various classes of metal-containing proteins are considered in detail with respect to their mechanism of action, and the strong relation between the specific metal ion involved and the function of the metalloprotein is emphasized. For instance, the properties of zinc which render it a strong Lewis acid are correlated with its role in hydrolytic enzymes; and the presence of the transition elements, copper, iron, and molybdenum, in oxidoreductases is justified through the electron transfer capabilities they possess by virtue of their characteristic unfilled *d* orbitals.

The book is short considering the breadth of the topic and the depth of the treatment. Obviously, then, the material is condensed and selected. However, it is concisely presented, organized, and objective. Each chapter includes a statement of purpose. Also, the book is well referenced (through 1971), thereby providing the reader with ample opportunity to explore interests or gain further explanations.

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Holography

An Introduction to Acoustical Holography. B. P. HILDEBRAND and B. B. BRENDEN. Plenum, New York, 1972. xii, 224 pp., illus. $14.50.

Optical and Acoustical Holography. Proceedings of a NATO Advanced Study Institute, Milan, May 1971. EZIO CAMATINI, Ed. Plenum, New York, 1972. xii, 436 pp., illus. $26.

These two books take up some recent developments in holography that have applications in fields as diverse as medicine, geology, and information storage. The book by Hildebrand and Brenden is a monograph on the theory and applications of holographic technique