

portray to endocrinologists the interplay of concepts in biology and mathematics; and (ii) To provide illustrative examples about computing to enable the reader to apply the techniques presented.

In their first aim the authors succeed well. Their examples are well chosen and clearly demonstrate the application of mathematical and computer techniques. Of particular interest to most endocrinologists would be the sections on ligand-protein interactions and competitive displacement assays, and also on clearance studies and compartmental analysis.

In their second aim the authors have achieved as much as could possibly be expected; that is to provide an illustrative framework. The average endocrinologist with the very considerable aid of this book will still have to devote some considerable effort in adapting the principles described to the particular problem at

hand. The authors themselves admit on p. 21, 'The computer offers speed and accuracy, but skill and experience are needed to attain these goals. Programming computers and providing that programmes are free of errors, demands expert knowledge and can be time consuming. The greatest care must be taken to ensure that the input data is absolutely faultless — the machine cannot correct mistakes'. A formidable warning indeed.

Thus the endocrinologist will not find in this book ready made solutions to particular problems as may be found for example in most popular texts on statistics. Rather the book offers illustrations of an approach which with perseverance and understanding most endocrinologists will find useful.

D. J. Begley

Inorganic Chemistry of Biological Processes (2nd edn)

by M. N. Hughes

John Wiley and Sons; Brisbane, Chichester, New York, Toronto, 1981
x + 338 pages. £9.90

The contributions of inorganic chemistry are becoming highly relevant to our understanding of many biochemical processes, typical examples being oxygen binding to haem proteins, hydroxylation by cytochrome *P*-450 and the electron-transport chains of mitochondria and chloroplasts. This book is intended as an introduction to the field of 'bio-inorganic chemistry' suitable for undergraduates in chemistry, biochemistry and biology.

The book is written by a chemist and therefore the great emphasis is on chemistry rather than biochemistry. Indeed, the biological references in the book are often too simplified and sometimes misleading. For example, viruses are not unicellular organisms (p. 9), intramolecular hydrogen bonding does not always produce an α -helix (p. 4), RNA is not always single stranded (p. 9), the plant cell wall often contains much more than cellulose (p. 11), succinate dehydrogenase is certainly *not* on the outer mitochondrial membrane (p. 320). The discussions of protein structure, chemiosmotic theory, cytochrome *P*-450 and

electron-transport chains (especially that of the chloroplast) are certainly inadequate for honours Biochemistry students, which is a great pity since conventional biochemical textbooks do not usually emphasise sufficiently the chemical basis of such processes.

On the chemical side the book is much better and I found it to be a useful source of information for reference purposes. Often, however, the biological importance of processes is not explained to the level I would have thought necessary for Chemistry students. There are chapters on the transition metals, metalloproteins such as hydrolase enzymes, carbonic anhydrase (although the biological role of this enzyme is not made at all clear), copper-dependent oxygenases, haemoglobin, myoglobin and cytochromes. The chemistry of ferredoxins is well discussed but their biological role is mentioned only briefly. Xanthine oxidase chemistry is dealt with in detail, but the relation of oxidase to dehydrogenase activities and the relative unimportance of the oxidase *in vivo* are not even mentioned. There is a good chapter on nitrogen fixation,

although reductive assimilation of nitrate is mentioned only briefly. Chapter 8 deals with iron transport and storage, ch. 9 with the alkali and alkaline earth metals (although the section on calcium scarcely mentions calmodulin, which is now of great biochemical importance) and ch. 10 with metal ions and chelating agents in Medicine, which surprisingly does not mention the use of desferrioxamine in treatment of thalassaemias although it deals with several more obscure examples.

Overall then, a useful reference work to keep on one's shelf to look up, say, the structure of the active site of ferredoxins or the applications of EXAFS spectroscopy, but not a book I would recommend to students, either of Chemistry (for whom the biological examples are insufficiently explained) or of Biochemistry (who should be amused by some of the errors).

B. Halliwell

Nucleic Acid-Metal Ion Interactions

Metal Ions in Biology, volume 1

Edited by T. G. Spiro

John Wiley and Sons; Brisbane, Chichester, New York, Toronto, 1980

x + 256 pages. £15.55

Studies of metal ions in relation to their interactions with, and involvement in, biological macromolecular structures are currently some of the most fashionable areas of structural molecular biology. Structural and mechanistic investigations of metallo-enzymes and proteins and studies of the anti-cancer properties of several metal complexes as well as of metal ion toxicity continue to be especially fruitful topics in this field.

It is unsurprising that the subject has, from its outset, been an extremely interdisciplinary one, with inorganic chemists, biochemists and biophysicists (among others), all making contributions. The new series of monographs edited by T. G. Spiro, of which the volume under review is the first, is clearly designed to foster such an approach, and therefore has a potential appeal to a wide spectrum of readers.

This volume contains 5 reviews covering most of the currently important areas of metal ion-nucleic acid interaction. The first chapter, on the platinum anti-cancer drugs, is by the pioneer in this important subject, B. Rosenberg; however, this is undoubtedly the most disappointing section in the book. It is actually a reprint of a previously published and highly personalised account of Rosenberg's own extensive contributions. Although this makes fascinating reading, one wishes for a more comprehensive and up-to-date review of platinum anti-cancer drugs.

Barton and Lippard have contributed a chapter on metal ion binding to nucleic acids and polynucleotides, concentrating on the interactions involving the anti-cancer agent *cis*-platinum, and have succeeded in bringing together a large body of chemical and biochemical data. The introductory section in this chapter, on basic principles of nucleic acid structure, are unfortunately rather dated. The short chapter by Loeb and Zakour is concerned with aspects of the mutagenic activity of metal ions, with particular reference to the extensive studies of Loeb and his colleagues on the fidelity of DNA synthesis. This well-written review should do much to interest molecular metallo-enzymologists in the area of DNA polymerase-metal ion interaction.

The final two chapters are concerned with structural aspects of metal ion-nucleotide interactions. Teeter, Quigley and Rich provide a detailed account of the involvement of various metal ions in the tertiary structure of transfer RNA. This section is essentially an account of the MIT groups' own results, and includes much hitherto unpublished data. The final chapter, by Marzilli, Kistenmacher and Eichorn, provides an overall review of the structural principles involved in metal ion interactions with nucleic acids and their constituents. There is much of interest here, even to workers in the field, although one detects a

#3026 in Inorganic Chemistry (Books). Would you like to tell us about a lower price? If you are a seller for this product, would you like to suggest updates through seller support? Get fast, free delivery with Amazon Prime. Prime members enjoy FREE Two-Day Delivery and exclusive access to music, movies, TV shows, original audio series, and Kindle books. > Get started. Back to top. Start by marking "The Inorganic Chemistry of Biological Processes" as Want to Read: Want to Read savingâ€¦; Want to Read. A survey of the occurrence and role of metal ions in biological processes and how they may be studied experimentally. Provides a summary of relevant biology, and properties of transition metal complexes and the mechanisms of their reactions in solution. Discusses the role of platinum complexes in cancer chemotherapy. Features extensive rewriting in light of recent A survey of the occurrence and role of metal ions in biological processes and how they may be studied experimentally. Provides a summary of relevant biology, and properties of transition metal complexes and the mechanisms of their re