BOOK REVIEWS

Inorganic Drugs in Deficiency and Disease. Vol. 14, Metal Ions in biological systems, ed. by Helmut and Astrid Sigel, Marcel Dekker, Inc., New York and Basle, 1982

Volume 14 of professor Helmut Sigel's well established series is devoted to the application of inorganic or organometallic compounds in the treatment of diseases and metal deficiencies. Traditionally, inorganic substances including more or less well defined coordination compounds have kept a firm place in the treasury of empirical drugs. This is exemplified by 'chrysotherapy' *i.e.* the use of gold in the treatment of asthma, tuberculosis, rheumatoid arthritis and other diseases which is reviewed by Dash and Schmidbauer. Until recently even the correct structures in solution had been unknown for some of the gold compounds in use, therefore it is not surprising that information concerning their interaction with biological structures, their mechanisms of absorption, distribution and excretion is accordingly rare. In the case of gold, we are witnessing the development of synthetic methods for broadening the range of gold complexes with physical properties favorable for rapid uptake and distribution and with low toxicity, and the application of sophisticated analytical methods to monitor their passage and action in cellular systems and organisms. Concerning essential elements like zinc and iron, the state of knowledge is far better advanced. This is exemplified by the articles of A. S. Prasad and G. J. Brewer covering the problems of zinc deficiency and its therapy, and of zinc containing drugs, respectively. D. A. Brown and M. V. Chidambaram present a well-balanced survey of the biochemistry of iron, iron-linked diseases and corresponding therapy including a glossary of medical terms useful for the non-medical reader. Also the importance of complex formation in wider biological contexts is covered by several authors (P. F. D'Arcy and J. C. McElnay: drug-metal interaction in the gut; J. R. J. Sorenson: the anti-inflammatory activities of copper complexes; D. D. Perrin and H. Stünzi: metal ions and chelating agents in antiviral chemotherapy, W. Hänsel: complexes of hallucinogenic drugs).

Finally, the article by N. J. Birch on lithium in psychiatry illustrates the wide range of effects and disturbances caused by the multiple, predominantly nonspecific interactions of lithium cations with biomolecules and complex biological structures, and the manifold attempts to characterize these interactions at the molecular level. I found this book stimulating and a worthy continuation of the series.

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Iron Sulfur Proteins. Metal Ions in Biology Series, Vol. 4. Thomas G. Spiro (Ed.). John Wiley & Sons, New York, 1981. x + 434 pp. Figures and Tables. (Sfrs. 200.–)

It goes without saying that this is an admirable account of recent progress in a very important area of bioinorganic chemistry. The series preface announces that a wide audience of non-specialists is invited to share in the excitement over new areas of research in such fields as the iron sulfur proteins. It is tempting to ask whether the reader will improve his insight into biological processes or rather into the variety of techniques involved in bioinorganic research. Chapters 3, 4, 8, 9, 10 and 11 are devoted to physical methods which are relevant in the context of structural properties: X-ray crystallography (C. D. Stout), Mössbauer spectroscopy (E. Münch), X-ray absorption studies (Boon-Keng Teo and R. C. Shulman), low temperature magnetic circular dichroism (M. K. Johnson, A. E. Robinson and A. J. Thomson), and resonance Raman spectra (T. G. Spiro, J. Hare, V. Yachanda, A. Gewirth, M. K. Johnson and E. Remsen). This set of specialist reports is very well headed by chapter 2 where the problem of determining cluster type is discussed (W. H. and N. R. Orme-Johnson). But the unrestricted flavour of chemistry is certainly brought in by chapter 1 on 'Structures and Reaction of Iron-Sulfur Protein Clusters and their Synthetic Analogs' (J. M. Berg and R. H. Holm). This review of synthetic polynuclear complexes, designed to mimic relevant parts of proteins, provides the chemist with an excellent bridge from fundamental chemistry to biological systems. At the same time, it stimulates the reader to reflect about the strategy of bioinorganic research.

Of eleven chapters, four are distinctly oriented to the *in vivo* side. The accounts on iron sulfur proteins in sulfate-reducing and methane-forming bacteria (chapter 5; J. Le Gall, J. G. Moura, H. P. Peck, Jr. and A. V. Xavier) in photosynthetic electron transport (6; M. C. W. Evans), and in the mitochondrial electron-transport chain (7; T. Ohnishi and J. C. Salerno) describe the state of the art very well