

Bioinorganic chemistry

Bioinorganic Chemistry: An Introduction. By Ei-Ichiro Ochiai. Pp. 513. (Allyn and Bacon: London, 1978.) £16.95.

THE intention of this book is to provide an introduction to bioinorganic chemistry, a "discipline . . . rapidly bridging the gap between inorganic chemistry and biochemistry", according to its author. The book, however, fails to bridge this gap, and the tone is set by the introductory sections, comprising a self-contained outline of coordination chemistry and a brief summary of "topics from biochemistry". This neat separation of the inorganic from the biochemical is perhaps inevitable when setting out the principles of the two subjects. But where are the principles of the discipline of bioinorganic chemistry? Succeeding chapters do not disclose them.

Optical and magnetic properties of metalloporphyrins, oxygen-carrying pigments, and details of some synthetic model oxygen carriers, are presented; but the inorganic and physical chemistry is not used to shed any light on phenomena of interest to the biochemist, such as cooperativity or the widely different capacities of haemoproteins to bind oxygen or carbon monoxide. The role of cytochrome *c* oxidase in reducing oxygen is next introduced. Why do the haem centres of, say, this enzyme and myoglobin have such different chemical properties? What could be different about the coordination chemistry of these two sites that is important in determining biochemical function?

Opinion will differ about the relative importance of different problems but it must be part of the role of inorganic coordination chemistry to suggest possible answers to this type of question. One seeks in vain throughout this book for insights on such aspects. The author has, however, sensed the difficulty and provided a chapter on oxygenases, in which an attempt is made to group enzymes according to their common function. But this chapter is still merely a list of compounds and their properties, reminiscent indeed of some treatments of inorganic chemistry. The lists reappear when chemicals are classified under the name of the metal atom. The chapter on copper proteins and enzymes divides crisply into three sections headed "Biochemistry," "Inorganic Chemistry," and "Mechanisms".

The author's difficulty is a real one. Little is known with certainty about the

structures of the metal centres in many proteins. And how is one to guess at mechanisms? This is especially true of copper proteins, although the recent successful X-ray structure of the copper centre in plastocyanin immediately outdates the book. Can the tools of inorganic chemistry help to resolve problems of structure if the principles of the subject so poorly illuminate the mechanisms of action? The author clearly thinks so and there is much reference throughout to the potential for using inorganic ions as probes. It is here that the book is most successful, for example, in recounting the structural information obtained by the substitution of cobalt for the metal in zinc-containing proteins. It is pre-

sumably for this reason that much space is given over to discussion of optical and magnetic properties of metal centres.

The book is full in its coverage, gathering together much of the literature up to about 1974 or 1975. But it is surely not enough to gather the facts and to arrange them in a systematic way. Any successful book must provide insights and correlations drawn from this information. If the reader is left to do it for himself the book will have failed to fulfil its aim.

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Colour and craftsmanship in psychopharmacology

Psychopharmacology: A Generation of Progress. Edited by M. A. Lipton, A. DiMascio and K. F. Killman. Pp. 1731. (Raven: New York, 1978.)

SUNBURST, Steeplechase, Goose in the Pond . . . this book inevitably reminds one of the great American tradition of the patchwork quilt. And a book like this, which gives itself the bold and resounding title of *A Generation of Progress*, clearly aims to produce a design and a total effect. The work is made up from 149 patches which have been contributed by 249 authors or joint authors, and it was stitched together by three editors and a nine-member *ad hoc* committee on behalf of the American College of Neuropsychopharmacology. Quite a sewing party.

In the event, and with all this multiple handiwork, does any sort of grand design in fact stand out? The answer is an unequivocal "yes". The book succeeds not only in terms of its having attracted many worthwhile individual contributions but also by an astonishing feat of editorship, which truly builds a picture of the large movements of twenty years and which identifies the very basic questions.

Ideas, models, and techniques and their mutual relationships are the recurrent themes. The book deals with matters at many levels from neuroanatomical and histochemical, through biochemical pharmacology, behavioural pharmacology, electrophysiological studies, clinical pharmacology and toxicology, the use of drugs in mental disorders, and problems of drug abuse. The relationships between these different levels of endeavour is made

real.

Some sections of the book are necessarily concerned with the jobbing business of factual review, whereas in other parts the authors have been given the task of looking more particularly at concepts. In several chapters there is a throw-away phrase (or grumble) about the "constraints of space", and authors have been kept within the bounds of very tight word limits. Sometimes this demand seems to have been defeating, and an author has not succeeded within his allotted few pages in producing a balanced summary of a research area which really did not lend itself to such compressed treatment. Very short contributions seem in fact generally to have been more successful when developing an idea rather than reviewing an objective area. Papers such as that by Seymour Kety on "Strategies of Basic Research", or a clutch of papers on the methodology of clinical research (with an essay by Joseph Zubin on the biometric approach to psychopharmacology) are particularly rewarding.

To be of value, any scientific review must be critical, and it is immediately evident which contributors to this book have actually read and evaluated the material they are presenting, and which have just taken everything at face value. Confidence is somewhat impaired when the names of referenced authors are woefully misspelt and papers quoted wrongly or irrelevantly.

But that is a criticism only of the odd patch or two. This is a book of enormous worth and importance which gives the live impression of colour and craftsmanship; it is not one of those machine made and commercial productions.

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