Copper Proteins

Edited by G. Spiro
Wiley; Brisbane, Chichester, New York, Singapore, Toronto, 1981
x + 364 pages. £40.50

This book is the third volume of the series *'Metal ions in Biology'* devoted to current research into the structural chemistry of protein–metal ion sites. Both copper and iron-containing proteins play a dominant biological role in the utilization of dioxygen and are to be found as the primary oxygen carriers, oxidases and oxygenases of aerobic cells. Apart from the oxygen-carrying protein haemocyanin, found in arthropods and molluscs, the copper-containing proteins essentially participate in redox electron-transfer reactions. The intensely blue-coloured multicopper oxidases have, since their discovery, fascinated physiologists, biochemists and physical chemists. It is this latter group of scientists who have contributed to the 8 chapters and possibly to most of our definitive knowledge about these proteins. There is a lucid and concise up-to-date review of the blue multicopper oxidases, describing the three different copper sites and their involvement in the four-electron reduction of dioxygen to water. The multicopper oxidases are referred to in several chapters but overlap is minimal and on the whole complementary.

In one of the two chapters devoted to galactose oxidase it is proposed that the active form of the enzyme exists in a copper(III) state and the author goes on to speculate that since the copper(III) state can so readily be attained we might yet expect to find it in other copper complexes. The copper-containing glycoprotein dopamine-β-hydroxylase is introduced by a useful section on dioxygen and its reduction intermediates before describing mechanisms of substrate hydroxylation. In the final chapter, chemical and structural aspects of the copper–zinc containing superoxide dismutase are reviewed in depth.

Detailed accounts of current research into the structural chemistry of proteins with copper ions at their active sites are given with descriptions of new and powerful techniques used to probe these ligation and electron transfer mechanisms. Although the book is intended for a broad audience in the life sciences, it may have limited appeal to those essentially interested in the biological functions of these proteins. Indeed, many may be surprised to read that the ferroxidase activity of caeruloplasmin and the superoxide dismutase activity of the cuprozinc protein are not important biological functions of these proteins.

John M. C. Gutteridge

Sequencing of Proteins and Peptides

Laboratory Techniques in Biochemistry and Molecular Biology, volume 9

by G. Allen
Elsevier Biomedical; Amsterdam, New York, 1981
xviii + 328 pages. $29.75; Dfl 61.00 (paperback); $79.50, Dfl 163.00 (clothbound)

This is an excellent book that I can recommend to anyone concerned with amino acid sequence determination. The author is obviously personally familiar with a high proportion of the techniques that he describes, and is impressive in the way that he introduces comment and criticism to published methodol-