

review style of the book. Figures and illustrations are of a high standard and complement the text well.

As a protein chemist, there is one particular chapter that I would single out for special mention and that is the chapter by Harrison *et al.* on the iron storage protein ferritin. The functional and structural features of ferritin are clearly explained, with the section on the protein structure beautifully illustrated and a delight to read. The book is worth acquiring for this chapter alone.

For those directly involved in research in the field of biomineralization, this book should be an essential purchase. For others interested in the subject, or in related areas, I would suggest that this book is an ideal reference text to have in a departmental library.

STEPHEN K. CHAPMAN

*Department of Chemistry  
University of Edinburgh  
West Mains Road  
Edinburgh EH9 3JJ  
Scotland*

*Acta Cryst.* (1990). **B46**, 576

**A revolution in biotechnology.** Edited by JEAN L. MARX. Pp. 227. Cambridge University Press, 1989. Price £25.00, US \$44.50.

This is intended to be the first of a series of books on important scientific topics for the general reader that is being sponsored by the International Council of Scientific Unions (ICSU). The President of ICSU, John Kendrew, states in his Foreword to the volume that one of the important responsibilities of the ICSU is to bring to the notice of the public scientific advances that will significantly affect our lives or that will illuminate our knowledge of the world we live in.

The text is written by a team of experts for non-specialist readers, and is well illustrated. There are colour photographs too, a large fraction of which are molecular structures: *e.g.* the DNA double helix, carboxypeptidase, antibodies (on their own and interacting with a hypothetical viral particle) and poliovirus. X-ray crystallography is explained in six lines on page 8, in the context of how the DNA structure was determined by X-ray diffraction. This is the sort of book where the distinction between a fibre and a crystal is a minor detail! However, one can

find fascinating facts such as the information that in the world market for enzymes, only three (glucose isomerase and two amylases) account for 50% of the turnover. Production of syrup from corn starch by this method saved the US about \$1.3 billion in foreign exchange for imported cane and beet sugar in one year. Hence, the reader is being sold the benefits of science on an economic level as well as on other levels, such as the role of pharmaceuticals and medicines in maintaining an increasing world population with improved means of food production.

The scientific revolution brought about by the application of physical techniques in biology is the foundation of the biotechnology revolution. It provides an antidote to the fears generated by atomic weapons, and thus improves the way that the community views science and scientists and their role in society. So it is reasonable, therefore, that this book is, to an extent, of the wow/gosh variety. But some detailed self-criticism would not have gone amiss. After all, the economic benefits to the rich nations of using biotechnology as a means to reduce Third World imports, referred to above, is a two-edged sword. It would have been good to have seen some views expressed as to how foreign aid could be applied so that everyone could benefit economically from the biotechnology revolution. Similarly, words of caution are needed in areas such as the possible rate of progress of AIDS research, to avoid raising unrealistic expectations which the scientific community cannot fulfil. There are other awkward issues lurking too. How, for example, will all this new-found biotechnological expertise be used constructively to tackle Third World diseases such as sleeping sickness or malaria? In these cases, with some notable exceptions, there is insufficient financial incentive for the drug companies to do anything. Also, the possibility that biotechnology will be applied in biological warfare is a depressing thought.

This book therefore takes on a difficult task, and, for the first in a series, ICSU have done a reasonable job. It has provided information, and it advertises the benefits of science to government rather well. As for crystallography – well, a great deal has followed from W. L. Bragg's deduction of the structure of sodium chloride from Laue photographs! Crystallographers can be well pleased to see X-ray analysis and its results discussed in such a wide and useful context.

JOHN R. HELLIWELL

*Department of Chemistry  
University of Manchester  
Manchester M13 9PL  
England*