

much has to be left out, and no one reader will be thoroughly satisfied.

Dr Ferdinand starts with good introductory chapters explaining the general role of enzymes and the first steps in enzyme kinetics in relation to bioenergetics. He then covers in 24 pages an outline of protein chemistry. It is clear that his interests lie elsewhere, since this is not inspiring, and it lists methods and results without being very enlightening on principles, and contains errors in formulae. Since most biochemistry textbooks contain fairly good accounts of this material, I wonder if it could not have been omitted. The usefulness of several photographs of models of complete protein molecules is particularly questionable.

His fourth chapter is on enzyme structure and function, and in it he gives a good account of ligand binding and its study, and something both on the types of reactions enzymes catalyse and theories on how they do it. He finishes with ribonuclease to show the nature of how the covalency changes occur. This chapter gives the main ideas on enzyme function clearly, but it nevertheless seems to me to miss the excitement that could have been introduced. That enzymes transform substrates that are normally utterly stable, and do so although they have only about half-a-dozen chemically different groups with which to work, and nevertheless achieve rates of up to 10^7 s^{-1} so that each enzyme molecule can transform molecules almost as fast as these collide with it — such ideas are hardly developed at all.

It is the second half of the book that allows Dr Ferdinand to show his own tastes, and it is bril-

liantly written. He deals with steady-state enzyme kinetics in two chapters, one on independent sites and one on interacting sites, and then devotes two chapters to the control of metabolism. He leads readers fascinatingly through the algebra with good explanations and without departing far from the biological processes being considered. These chapters are truly illuminating, especially on fluxes through metabolic pathways. His first appendix on enzyme nomenclature seems helpful, although I am not sure that the six pages giving the complete classification scheme of the Enzyme Commission are necessary. The second appendix on protein purification may also be useful, although very brief on the principles of some of the methods. He has an excellent system of references, strictly limited to the most useful.

I can recommend the book strongly for its guide to steady-state kinetics, and the relation of this to ligand binding and to overall cellular metabolism. I do not know a simple account that is as good as this, giving interest as well as understanding. The background protein chemistry is less good, but this can much more easily be obtained from textbooks. I miss the excitement possible in the phenomena of making and breaking bonds, topics where biochemistry and chemistry can strongly illuminate each other for elementary students of chemistry and biochemistry. The omission of transient kinetics may be related to a lack of interest in such matters. The author has thought out new ways of describing several important principles and this book enriches the teaching of biochemistry.

H. B. F. Dixon

Introduction to the Spectroscopy of Biological Polymers

Edited by D. W. Jones

Academic Press; London, 1977

xii + 328 pages. £ 11.60, \$ 25.50

This book is a collection of eight chapters, each on a particular branch of spectroscopy that has been applied to the study of biological macromolecules.

The editor has in addition contributed a short introductory chapter, and a final chapter, correlating the use of different spectroscopic techniques in macro-

molecular research. There is undoubtedly a market for a good book on this subject.

It is unfortunate that this book represents a very mixed selection, in terms of both quality and quantity. If the reader will bear with me, I can best illustrate this by quoting figures. The entire book is 317 pages (excluding index but including references). Of this, 128 pages deal with vibrational spectroscopy (infra-red and Raman), 44 pages are devoted to visible and ultraviolet spectroscopy and 82 pages are given to nuclear magnetic resonance and electron spin resonance. This is not a balanced reflection of the use of the various forms of spectroscopy in biological research, as judged by the volume of the world's scientific literature in these fields, and I do not know of a better criterion for the application of research techniques. It seems that the editor has attempted to redress this imbalance in the final chapter, which is perhaps a trifle late.

The technical standard of exposition is generally

good. It is somewhat surprising that the authors of the chapters on vibrational spectroscopy have not mentioned any work on nucleic acids. The chapter on electronic absorption and emission spectroscopy is very scant, with no example of the application of fluorescence polarisation techniques to macromolecules, currently a much-used technique. This chapter contains no references later than 1969. The nuclear magnetic resonance chapter makes a brave attempt to say a great deal in very little space, and I suspect that it would be very difficult reading for someone not in the field.

In spite of the above criticisms, there is much of value in this book. It is a pity that a cheaper paperback version is not available, since at the hardback price I could not recommend it to undergraduate students. However, it may prove a worthwhile purchase to biological scientists interested in acquiring knowledge into physical techniques.

G. E. Chapman

Lipid Biochemistry: An Introduction

Edited by M. I. Gurr and A. T. James

Chapman and Hall; London, 1977

viii + 244 pages. £ 6.50 (cloth) £ 3.95 (paper)

The authors state in the preface that the aim of this book is two-fold; first to aid students in learning about lipids and second to influence students towards research in this area. In my opinion they succeeded completely in this intention. Lipid biochemistry forms the basis of a good deal of biomembrane research and the number of investigators in these areas of biochemistry has increased tremendously during the last two decades. This implies that the number of students that become exposed to these areas of research will increase and this book is a very helpful guide to introduce them to the subject. This is done in a much more easily digestible way than can be obtained via review articles, especially since enough methodology is included to provide newcomers in the field with a sufficient feeling of how lipid biochemistry is studied. In addition,

there are no other introductory texts available that cover such diverse aspects of lipid biochemistry.

Chapter 1 (17 pages) gives a general introduction to nomenclature, stereochemistry and analytical techniques such as extraction and chromatography. The longest chapter (65 pages) is devoted to fatty acids and contains information on their structure, biosynthesis, degradation via α -, β - and ω -oxidation and peroxidation. This chapter also discusses the role of essential fatty acids and their conversion into prostaglandins. For an introductory text, this chapter suffers from the tendency to pay too much attention to rather uncommon fatty acids and perhaps can be shortened somewhat if new developments are to be dealt with in future editions. Chapter 13 (31 pages) deals with neutral lipids. The section on glycerides