

apart from one very short summary, this volume makes no attempt to report the discussions that must have followed each paper.

The papers presented in this book are, as one might expect, of variable quality. Most of the material, however, has either already been published in conventional journals or (on the authors' own admission in

the text!) has been submitted for publication.

Hence these Proceedings will have only a very transient value and I would not recommend their purchase either by individuals or by libraries.

B. Halliwell

### *Cryobiochemistry: An Introduction*

by Pierre Douzou

Academic Press; London, New York, San Francisco, 1977  
x + 286 pages. £12.60, \$24.65

The idea of using low temperatures to slow up biochemical rates of reaction so that their detailed mechanisms can be disentangled is a very attractive one. This book reviews the work of a team who for several years have been attempting to develop the theoretical and practical basis for this type of procedure. It would have been more correct to entitle the book Cryoenzymology since this forms the main body of the approach. The book is excellent in that there is clear discussion of those conditions that are essential for the successful investigation of enzyme systems at sub-zero temperatures. In most circumstances mixed solvent media are necessary and much new basic information is given on the physical and chemical properties of mixed solvents. Other problems discussed are the preservation of solubility,

the avoidance of denaturation, the necessity for higher enzyme concentrations in order to maintain enzyme activity at low temperatures, and the vital point that the slowing of the reaction rates must leave the mechanism unaltered. The author then discusses direct experiments at low temperatures in which reaction mechanisms are determined from the spectroscopic analysis of stabilised enzyme-substrate intermediates. This book is clearly written and laid out and forms an introduction into what is essentially a new field, that will be of increasing interest in the future. It is highly recommended to biochemists interested in enzyme reaction mechanisms and also to all those working with biological systems at low temperatures.

John Farrant.

### *Comprehensive Biochemistry*

Volume 32, part 4:  
A History of Biochemistry

by Marcel Florkin  
Elsevier; Amsterdam, New York, 1977  
368 pages. Dfl 98.00, \$39.95

The historical section of 'Comprehensive Biochemistry' will ultimately comprise 5 volumes; the present volume is the third in the historical series. It details the development of ideas regarding biosynthesis, starting with the eighteenth century studies on fixed air (carbon dioxide) and its importance in the metabolism of plants. Florkin thus covers the gradual development of ideas which are the foundation of modern biochemistry. In particular it traces the conflict between chemists and physiologists as to whether animals had the capacity to carry out biosynthesis or whether they simply degraded and used plant foods. Considerable attention is paid also to the development of ideas regarding the nature of 'protoplasm'. It is particularly interesting to see how such hypotheses delayed progress and how difficult it is for even the most skilled researcher to discard his background training and accept novel concepts.

Experience shows that it is always dangerous to confer too much power of criticism upon even the most eminent scientists, for there are some who, with age, turn theories into unassailable dogma against which they allow no criticism.' (editorial boards beware!)

Professor Florkin shows himself in this volume to be a man of immense erudition but with the erudition goes a keen sense of historical perspective which gives the whole volume its fascination. Ideally, every young

graduate in biochemistry should read this history; it would give him a deep respect for his predecessors and would at the same time give him a healthy aversion to dogmatism. Many young students fail to realize that what they are taught is the current view rather than hard fact; this book emphasizes that even the greatest can be wrong and it is the careful presentation of wrong ideas that makes this history come alive. An added bonus is the presence of portraits of so many of the participants in these classical arguments.

Although this volume runs to over 350 pages it is as readable as any novel and considerably more informative. Successive chapters cover aerial nutrition of plants, conversion of vegetable matter to animal flesh, biosynthesis by animals, the cell theory and the theory of protoplasm, analogy between cell growth and crystal growth, photosynthesis, recognition of amino acids as precursors of proteins, influence of organic chemistry on theories of biosynthesis, urea formation and microgenesis, biosynthesis of fats and sterols, biosynthesis of porphyrins and of amino acids. The historical survey covers advances up to that great modern development – the use of isotopes in study of metabolism – it makes one very conscious how much was achieved with relatively simple means. This is a book for every biochemistry library.

T. S. Work

*Encyclopaedia of Plant Physiology – New Series*

Volume 3

Edited by C. R. Stocking and U. Heber  
Springer; Berlin, 1976  
xvii + 517 pages. DM 145, \$59.50

