

Basic techniques of experiments; Amino acids, proteins and enzymology; Carbohydrates; Lipids and membranes; Nucleic acids; Metabolism.

The nature of the experiments within these subsections is sufficiently broad that by appropriate selection a number of different courses could be constructed of varying degrees of depth to suit the requirements of students studying biology, medicine, dentistry and veterinary science, as well as those primarily committed to biochemistry.

Considerable care has obviously been taken in trying to present the theoretical concepts relating to each experiment in a succinct but easily comprehensible way, and although only black and white illustrations are used, these are of the quality expected from the publishers involved.

This new edition attempts to reflect the changes in basic technical methods which have occurred in the last decade so that liquid scintillation counting, gel-filtration chromatography, thin-layer chromatog-

raphy, polyacrylamide-gel electrophoresis, gas-liquid chromatography and oxygen electrode measurements supplement the techniques described in the previous edition.

As before, the description of each experiment comprises lists of apparatus and reagents required; the necessary practical procedures; suggested protocols for the presentation of results together with a discussion of the expected results and/or exercises related to the concepts being studied. In general this material is well presented although in places the greater use of discrete numbered steps instead of solid text would facilitate the student following essentially unfamiliar procedures with a minimum of error.

Definitely a valuable text for all those involved in the planning and execution of courses in practical biochemistry, the appendix giving the reagent quantities required for classes of different sizes being a particularly useful bonus.

Alan Huggins

Control of Gene Expression

by N. Maclean

Academic Press; London, New York, San Francisco, 1976
xi + 347 pages. £7.80

The past decade has seen an explosive increase in research into the control of gene expression and in the range of systems under investigation. To review such developments in a single volume is a daunting task especially for a single author and recognising this difficulty Norman Maclean has restricted his book primarily to the consideration of the main experimental systems that have been employed in such studies.

The first two chapters present a reasonably clear but somewhat over-condensed view of the general features of control mechanisms and of the present state of understanding of control of gene expression in prokaryotes. These are followed by the three main chapters, about three quarters of the book, on exper-

imental systems in eukaryotes. These are divided somewhat arbitrarily into:

- (a) Systems involving single types of proteins such as immunoglobulins and haemoglobins.
- (b) More complex systems such as muscle, nuclear transplantation and DNA-associated proteins.
- (c) Systems classified as being 'not well understood in molecular terms' and including for example slime moulds, higher plants, mitochondria and chloroplasts.

These chapters survey an enormous volume of work and while they may succeed in the objective of drawing together different experimental approaches and conclusions I find the treatment, perhaps inevitably, rather uneven. Certain sections are treated quite

fully with extensive and quite recent references to original literature and reviews while other topics receive only rather superficial treatment and the choice of references tends to be rather inadequate.

The penultimate chapter is concerned with the role of RNA in gene expression, a topic clearly central to the subject of the book as a whole. While consideration is given to many of the ways in which RNA is involved it does not seem to me that this section is treated in the necessary depth and indeed it contains little more and sometimes not even as much as one would hope to find in a good advanced textbook of biochemistry. In this rapidly moving field the choice of references seems both dated and rather inadequate.

The volume concludes with a chapter entitled

'General Concepts of Gene Regulation' which attempts to draw together conclusions from earlier chapters. It would be extremely difficult to do this successfully and despite a valiant attempt by Norman Maclean I do not feel that he has succeeded.

This book is an interesting attempt at an exceptionally difficult exercise. It is certainly not comprehensive, in places it is lacking in depth of treatment and in some sections at least the choice of references leaves something to be desired. Nevertheless it should be of some value to students and researchers who are concerned to keep abreast of the many different approaches that are being used to explore the control of gene expression.

R. M. S. Smellie

Molecular Evolution

Edited by F. J. Ayala
Sinauer Associates Inc.; Sunderland, Mass, 1976
x + 277 pages. £6.90

If you are interested in evolution you will want to read *Molecular Evolution*. This book is the outcome of a symposium organised by the editor but clear directions to the contributors and some judicious integration by Professor Ayala has produced something more than just another symposium volume. The objective is to review the achievements resulting from the application of biochemical (molecular) methods to the evolutionary aspects of biological processes. The result is an undeniable success and useful reference lists supplement the limited amount of material compressed into a relatively slim volume.

Perhaps inevitably, the approach is orientated towards the biologist. Elementary biochemistry is explained in unnecessary detail from a biochemist's viewpoint while no such concessions are made with the genetic terminology. If, for example, you happen not to know precisely what is meant by percentage heterozygosity then the challenge is there for you to find out.

Presentations from the more biochemical side such

as sequence analysis (Goodman), evolutionary clocks (Fitch) and the evolution of repetitive and non-repetitive DNA (Britten, Davidson et al.) are fairly familiar ground. I found the contributions from the biologists much more exciting although inevitably more speculative. Evolutionary biologists seem by selection (?) to be an argumentative lot and the differences of opinion, clearly expressed, highlight the limited extent of our understanding. What is the importance of protein polymorphisms, how much are they functionally relevant for evolution and by what mechanisms are they maintained? Selander sets the ball rolling on these problems and delivers a provocative thrust that 'the major determinant of the span of variation in estimates of polymorphism is the laboratory in which the survey was conducted'. Indeed, the prodigious nature of the biological surveys required to give reliable evolutionary data is one point well made in this book. Not surprisingly, therefore, work on *Drosophila* species was the first to really bring home the bacon and *A. f. f.* is nicely