

The chapter on insulin action, although brief, contains detailed information on the insulin receptor but there is no mention of the possible role of cyclic GMP or calcium ions in mediating some of the effects of insulin. An excellent chapter is devoted to the action of ACTH on the adrenal cortex but it is unfortunate that the subsequent chapter on adeno-hypophysial hormones devotes several pages to similar material. Indeed the three chapters on androgen receptors, action of female sex steroids and action of glucocorticoids contains considerable overlap of material and a more unified approach to these topics would have been welcome. The addenda for

these chapters also appear to have migrated to the chapter on steroid hormone analogues. The imbalance in the volume as a whole is partly restored by a critical guide to the use of tissue culture in hormone research and a brief chapter on plant hormones (although this topic is also covered in volume 11 of the series).

In conclusion, although the individual chapters are generally well-written, the overlap of material and poor cross-referencing has produced a volume that leaves much to be desired.

A. J. Turner

*MTP International Review of Science. Biochemistry Series One. Vol. 9.*

*Biochemistry of Cell Differentiation*

Edited by J. Paul

Butterworths; London: University Park Press; Baltimore, 1974

iii + 380 pages. £10.45

This carefully edited volume succeeds as a unified text on the biochemistry of cytodifferentiation. The index is useful and the editor has written a thoughtful Introduction and a set of "Editor's Comments" that link the chapters and take the reader through the book in a logical sequence. In the Introduction, Paul explains that he has confined the topics to cyto-differentiation because the association of cells in precise patterns to form tissues and organs is "largely a mystery and biochemistry has not so far made any striking contributions to its understanding." This may be true but nevertheless betrays an unfortunate tendency among biochemists to ignore pattern formation. Biochemists must put aside their 'grind it and spin it' image. After all, in differentiating tissue, the process of pattern formation is in no sense an event secondary to the formation of differentiated cell types. Moreover the processes of epimorphosis and morphallaxis do imply mechanisms amenable to biochemical analysis. Surely in the whole MTP Review, room could have been found for the imaginative

analysis of these implications by molecular biologists such as Crick and Gierer. The result of the omission is that it is left to a microbiologist (Ashworth) to discuss patterns in biochemistry.

Chapter 1 on "The Development of the Cellular Slime Moulds" by J. W. Ashworth is a good account of the biology of Acrasiales with an informal and well referenced review of the molecular biology of *Dictyostelium discoideum*.

Chapter 2 by H. W. Mohr covers the role of phytochrome in controlling enzyme levels in plants. This reviewer is unqualified to evaluate this essay but found it a fascinating account of the physico-chemical basis for photoregulation mediated by phytochrome, the major light-receptor protein in higher plants.

Chapter 3 by J. Paul is a short review of macro-molecular synthesis in sea urchin embryos that concentrates on ribosomes, polysomes, 'informosomes' and mRNA. The publication schedule unfortunately precluded reference to histone polygenes.

Chapter 4 by H. Denis is on nucleic acid synthesis during amphibian oogenesis and early embryonic development. The only systematic account of nucleic acid synthesis in differentiating animal tissues is in this chapter. This is unfortunate as work on insects receives only brief reference in the Introduction. For an understanding of the role of gene amplification in development, the work of Lima-de-Faria on *Acheta* deserves attention as do Ritossa's experiments with *Drosophila*. Although *Drosophila* does not demonstrate ribosomal gene amplification in the oocyte, the work (totally omitted from this volume) on the recovery of the wild phenotype from bobbed X bobbed crossed is of vital importance in throwing light on the mechanism of the insertion of amplified genes into the chromosome.

Chapter 5 by P. A. Marks, R. A. Rifkind and A. Bank is a thorough and readable account of the biology of erythropoiesis as well as the biochemistry of haemoglobin synthesis and erythroid cell differentiation.

Chapters 6 (A. R. Mearns and B. W. O'Malley),

7 (R. T. Schimke), 8 (R. C. Kafatos and R. Gelinas) and 9 (W. J. Rutter, M. I. Goldberg and J. C. Perriard) cover the hard core of the control of gene expression in animal tissues. They are logically arranged and cover oestrogen-induced differentiation, protein synthesis and degradation, mRNA stability and RNA polymerase. The authors' individual styles and emphases are refreshing. It is to be regretted that more space was not available for Moscona's work on glutamine synthase of neural retina and the deductions about transcriptional control that follow from it.

Chapter 9 on "The Role of Chromosomal Proteins as Gene Regulators" by A. J. MacGillivray and D. Rickwood goes beyond the specific confines of its title and includes a systematic review of histone fractions and sequences and the characterization of non-histone nuclear proteins. The chapter includes sections on modification of proteins and chromatin structure. It is a thorough review up to 1973 (552 references).

J. H. Parish

*MTP International Review of Science. Biochemistry Series One. Vol. 10.*

*Defence and Recognition*

Edited by R. R. Porter

Butterworths; London: University Park Press; Baltimore, 1973

ii + 419 pages. £10.45

This volume attempts to cover the whole of immunology from ideas on the structure of antigens through to immunotolerance and immunosuppression. The progression is from well-defined chemical knowledge on antigens and antibody structure, to the more biological and medical regions of transplantation technology. Superimposed on this is the study of the genetics of the various systems which itself runs the gamut from the purely chemical to the bio-medical. Inevitably with immunology, certain parts of the subject, such as those connected with immunoglobulin and antigen structure, are readily understood by the

chemist and biochemist without any other background knowledge, while other parts such as graft rejection and the machinations of the lymphoid system are not so easily grasped. For workers at the medical end of the spectrum the reverse is no doubt true.

As one would expect with such a distinguished volume editor, the standard is high, and the chapters are laid out with frequent helpful subheadings to remind us where we are. Professor Porter himself has contributed an excellent chapter on immunoglobulin structure, and this is complemented by a section on