The section on amino acids is restricted to 56 pages out of a total of 404 in the book. Fortunately, to a large extent, any quantitative short-comings are compensated for by the excellence of the chapter. The author (H. E. Umbarger) has produced a very readable review of the control of amino acid biosynthesis in micro-organisms. Beginning with the elegant experiments of R. B. Roberts, he has summarized the major findings of the last twenty years. When one considers that there are eight other chapters in this volume it is a pity that space could not be spared to bring us similarly up-to-date with amino acid biosynthesis in higher organisms.

In the remainder of the book, thirteen authors contribute to a description of protein synthesis in all its glory, from the highly specific matings of amino acids and tRNAs through to the effects of hormones and the role of termination factors. In addition to the above, the genetic code, initiation, elongation, and the cell-free translation of messenger RNA are all thoroughly described and the structural aspects of protein synthesis – if it is possible to make such a distinction – are covered in chapters on ribosomal structure and function, and the intracellular organisation of protein synthesis. The omission of a separate chapter dealing with the post-translational modification of polypeptide chains was a surprise (I read the Preface last!) and something of a disappointment too when one considers that it would surely not have been difficult to find a well-qualified contributor for such a section. This is an omission which we are promised will be rectified in any later editions.

In general, the various chapters are informative, each has an extensive bibliography and the illustrations are of good quality. As is to be expected with a multi-author volume of this kind, differences in style and presentation are to be found, usually with respect to the amount of original experimental detail quoted or given in the form of tables or figures. This is to be welcomed since it is undoubtedly an important factor in avoiding the monotony which might so easily have been a characteristic of such a detailed review.

At £10.45, the book must be considered good value for those working in the field or for any library frequented by students of biochemistry.

H. Hassall

MTP International Review of Science. Biochemistry Series One. Vol. 8.

Biochemistry of Hormones

Edited by H. V. Rickenberg
Butterworths; London: University Park Press; Baltimore, 1974
iii + 342 pages. £10.45

Since the "Biochemistry of Hormones" is such a broad topic and cannot adequately be covered in a volume of 300 pages, the editor of this volume has chosen to concentrate on the mode of action of hormones rather than their biosynthesis or secretion. In this respect the book may provide a useful introduction to some current topics in 'hormonology' at a level suitable for the postgraduate or final year student. However, the volume suffers from several drawbacks, notably that there is an imbalance in the choice of subjects and that in some cases these topics are rather out-of-date (most of the references are current to 1972).

The volume is said to concentrate on three classes of hormones; the polypeptide hormones, steroid hormones and plant hormones. However, among the polypeptide hormones, glucagon is ignored and insulin is dealt with in 20 pages. In contrast, 5 of the remaining 9 chapters deal with the structure and action of steroid hormones.

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 adenohypophysial 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 cytodifferentiation 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 physicochemical basis for photoregulation mediated by phytochrome, the major light-receptor protein in higher plants.

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