

and although the quality of work described varies, as is inevitable with conferences, a wealth of useful information is contained.

Main sections deal with conformation, synthesis, biologically-active peptides and neurohypophyseal hormones and there are smaller groups of papers on brain-specific and hypothalamic peptides, analytical and isolation procedures and a miscellaneous section on antibiotics, inhibitors and toxins. These section titles underline the wide-ranging character of peptides as a subject. Studying the contents leads the reader to conclude that in many cases a multidisciplinary approach needs to be followed in order to achieve the most expeditious solution to a problem within the field. The main section, on conformational studies, reveals this to be an area of developing interest as electronic hardware becomes more available. The relevance of some of this ingenious work is surely questionable and one wonders how far the incorporation of other groups, such as a spin label, may alter the conformation particularly of a small peptide. Other unrelated techniques may hopefully confirm

results obtained by these methods or serendipity may intervene. Many of the papers which contain synthetic work reveal a welcome trend in the direction for which Dr Meienhofer appealed at the previous Symposium, i.e., a more critical attitude by authors towards their methods and products. Efforts to define and circumvent some of the side reactions occurring during synthesis make an important contribution to the art. For example in the case of liquid hydrogen fluoride treatment such work may set the value of this reagent into a clearer perspective and will hopefully prevent its introduction becoming the greatest non-advance of recent years. Let us hope that the next Symposium will contain more papers of this type.

A tribute is included to Lyman C. Craig who in the course of his work introduced the countercurrent distribution machine and the rotary film evaporator to practical chemists. The book is well produced in the usual readable style and is recommended to all groups interested in the making and actions of peptides.

R. Wade

*Control of Enzyme Activity (Outline Studies in Biology Series)*

by P. Cohen

Chapman and Hall; London, 1976

63 pages. £1.30

The monograph by Dr Cohen is one of a number of recent additions to the Outline Studies in Biology series which aims to assist students in making the transition in their studies from standard texts to scholarly reviews and original papers. Its scope is restricted to a discussion of mechanisms which regulate the extent of expression of the catalytic activity of an enzyme and hence mechanisms which control the amount of enzyme in a system by modulation of the rates of synthesis or degradation are not examined. The question of the evaluation of the *in vivo* relevance of the effects described is also not taken up here since this aspect is considered in a comparison volume of the series ('Metabolic Regulation' by R. M. Denton

and C. I. Pogson). The monographs by Cohen and by Denton and Pogson in fact complement each other very nicely and together provide an excellent and up-to-date view of the subject at a level which should be readily comprehensible to the more advanced undergraduate. Indeed I have already started to use both monographs as required reading for a 2nd year's Honours Biochemistry course on metabolism.

My main reservation in respect to Dr Cohen's monograph is that it is perhaps somewhat unbalanced, although the view which it provides of the topic is extremely interesting. About 25% of the monograph is devoted to discussion of the modulation of enzymic activity by allosteric effectors and the principles of

such modulation are illustrated almost entirely with examples drawn from end-product inhibition of bacterial amino acid biosynthesis. The remainder of the monograph examines the role of irreversible and reversible covalent modification in control of enzymic activity and provides an excellent account of this area. As one might expect, glycogen metabolism is prominently featured including the more recently recognised complexities of non-reciprocal control of synthesis, degradation and multi-site phosphorylation. The attention devoted to control by covalent modification vis-à-vis that devoted to regulation by allosteric effectors seems however somewhat excessive and

presumably reflects Dr Cohen's own interests rather than an assessment of relative physiological importance. While more experienced readers will be able to redress the balance for themselves it may be necessary to provide guidance for the less well-initiated and to point out that relationships exist in allosteric modulation which are more complex than the examples described.

The monograph is on the whole well produced although some of the diagrams could be improved and I found several confusing mistakes in the references.

M. C. Scrutton

*Polypeptide Hormones: Molecular and Cellular Aspects*  
*Ciba Foundation Symposium 41 (new series)*

Elsevier/Excerpta Medica/North-Holland; Amsterdam, 1976  
388 pages. Dfl. 72.00, US \$27.75

Simple recipes are often the most successful, as this superb volume on peptide hormones shows. Take two dozen experts with international flavour, simmer vigorously in comfortable surroundings for two days, when cool pour the results into a concise, well-written book and top with crisp discussion. The occasion was a Symposium in honour of Sir Frank Young's retirement, and aspects of the evolution, biosynthesis, secretion, cellular actions and clinical effects of peptide hormones were expounded with enviable lucidity and enthusiasm in fifteen contributions.

Biosynthesis of many peptide hormones involves the fragmentation of larger precursor molecules and a major emphasis of this book is on the identity and subsequent processing of such prohormones. Precursors of insulin, parathyroid hormone, growth hormone, ACTH, MSH and the neurohypophysial peptides have been examined closely and recent evidence from the translation of messenger RNA in cell-free wheat-germ systems indicates the existence of transient, even larger forms, the so-called pre-prohormones. The biological significance of prohormones and their conversion to active messengers is discussed at length

and fascinating problems and hypotheses emerge. Does heterogeneity of the secreted product imply different receptors and distinct biological actions for such multiple forms? How is the specificity of limited proteolysis conferred and regulated? The suggestion that post-synthetic modification by the attachment of carbohydrate, phosphorylation of seryl residues or sulphation of tyrosine may regulate this cleavage is particularly fascinating. The book is rich in convincing and testable hypotheses — I personally liked the suggestion that aminolysis of peptide chains may account for the origin of the C-terminal amide which is characteristic of so many small peptide hormones.

Other foci of current attention include hormone-receptor interactions, the biological actions of somatostatin and the growth-promoting actions of peptide hormones. Unquestionably, this volume provides a major and significant review of the field at a stage where complex novel mechanisms are beginning to emerge. It cannot, of course, be complete — two missing topics are the possibility of non-ribosomal synthesis of peptide messengers, which some recent reports appear to show, and the discovery of wide-