thermal denaturation are nearly entirely devoted to these. The distinctions between A and B DNA are inadequately described and if the reader is unaware of the structure of C DNA, he well find its mention on p.55 confusing and tantalising.

Chapter 3 is on the DNA and RNA of bacterial and viral chromosomes by M. G. Smith. It repeats some material from chapter 1 and the section on plasmids is disappointingly short. It is unfortunate that 'Diener viroids' are not discussed and only appear (without comment) in Table 3.1.

Chapter 4 on eukaryotic DNA by E. Southern is informed, thorough and well written and is by far the best part of the book.

Chapter 5 on DNA replication in *Escherichia coli* by P. T. Emmerson is thorough and well referenced but written in a condensed rather unreadable style.

Chapter 6 is on "Recombination" by N. Symonds. It is rather unbalanced because the references are nearly all about *E. coli* and phage λ and T4. The importance of fungal systems is emphasised but post-meiotic segregation is curtly dismissed without reference to the organism (*Sordaria*) or the workers (Kitane and Olive).

Chapter 7 on "Bacterial Transcription" by A. Travers is a good review, spoiled only by the fact that it is out of date and lacks reference to promoter and operator sequences.

Chapter 8 on "RNA directed DNA Polymerase" by P. S. Sarin and R. C. Gallo and chapter 9 on "Ribosomal RNA Synthesis in Eukaryotes and its Regulation" by N. C. Craig are both authoritative and well referenced. Both are written in a rather congested style and would have been improved by a bit more space for illustrations.

Chapter 10 on the structure and biosynthesis of tRNA by S. Nishimura is written in the same detailed style but is less well done. Figure 10.1 shows the structure of 40 tRNA molecules numbered 1–40. These numbers are referred to neither in the text nor the references for the figure. Structures 37–40 are very faintly reproduced in the review copy. The implications of Rich's structure are not considered in any detail and the section on biosynthesis is very short (less than three pages).

Chapter 11 on "Nucleic Acids of Chloroplasts" by R. J. Ellis and M. R. Hartley is a well written and interesting account of chloroplast DNA, its function and replication and rRNA. The article is intentionally incomplete. Chloroplast tRNA "is not considered in view of the recent extensive account by Lea and Norris".

Surely it is the function of this publication to draw the relevant material into a well integrated overview of nucleic acid biochemistry. Despite the high qualities of certain individual chapters, it is in this regard that the book is disappointing and fails to achieve its aims.

J. H. Parish

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Synthesis of Amino Acids and Proteins

Edited by H. R. V. Arnstein
Butterworths; London: University Park Press; Baltimore, 1975
ii + 416 pages. £10.45

It could be said, with some justification, that the title of this volume is slightly misleading since amino acids and proteins are by no means given equal treatment. There is a disproportionate allocation of space between the two subjects, but perhaps this is little more than a reflection of the relative research interest in these separate areas of biochemistry at the present time.

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.