

introduction to the nature of the inborn errors discussed and indicates the problems associated with these conditions. An interesting account of the use of cultured fibroblasts in the study of the disorders of the polysaccharide portion of proteoglycans is provided; these cells permit detailed studies on the disorders concerned.

Each chapter in this volume is completed by a comprehensive list of references; there are over 2000 in total. Much of the bibliography refers to work up to 1974 and in some cases it is extended to 1975. The text was remarkably free from misprints and a good subject index is provided.

In summary, a rather uneven picture of the biochemistry of carbohydrates is presented. Excessive

priority has been devoted to structural at the expense of metabolic aspects and emphasis throughout is given to polysaccharides. As a consequence, major omissions exist which relate to carbohydrate metabolism in systems other than vertebrates (apart from a section on polysaccharide synthesis in bacteria and plants). Topics such as fermentation in micro-organisms or the various polymers that constitute the bacterial cell wall are not mentioned. However, a great deal of information is provided in this text which does provide a most useful source of reference to all research workers interested in the biochemistry of polysaccharides and metabolism of carbohydrates.

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Biochemistry of Nucleic Acids

Edited by K. Burton

Butterworths; London: University Park Press; Baltimore, 1974

iii + 364 pages. £10.45

This volume is a collection of eleven review articles on topics related to nucleic acids. The amount of editing seems to have been minimal, presumably to allow individual contributors the maximum freedom (including, for example, the spelling of eukaryotic/eucaryotic). The result is a book with astonishing omissions, for example there is nothing on mitochondrial nucleic acids although chloroplasts have a whole chapter, and there is no mention of homopoly-nucleotide sequences in RNA. On the other hand there is tedious repetition (three of the authors describe pyrimidine tract analysis of DNA; two of them describe the strategy of tRNA sequencing). The cross references are almost non-existent and the index is poor. The book has an elaborate system of numbering sections and sub-sections and yet the authors lamely refer to their colleagues' contributions with phrases such as "see chapter 5".

Despite the shortcomings of the book as a whole,

and the fact that it is somewhat out of date, several of the individual chapters are excellent. Thus the first chapter on nucleotide sequence determination by K. Murray is a concise, readable and thorough review of sequencing RNA and DNA. It is surprising that there is no reference to the presence of 2-methyl ribose in RNA. This chapter and chapter 4 are the exceptions to the rule that cross referencing is inadequate. Murray and Southern were clearly aware of the contents of one another's chapters.

The most extraordinary chapter is the second, "Influence of Nucleotide Sequence on DNA Properties" by R. D. Wells and R. M. Wastell. The choice of material is idiosyncratic in the extreme. The introduction is vague and does not refer to the Pullmans' work on the effects of sequence on helix stability. The authors are preoccupied with experimental studies on 'sequence isomers' of polynucleotides. The discussions of buoyant density centrifugation and

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 will 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.

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Synthesis of Amino Acids and Proteins

Edited by H. R. V. Arnstein
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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.