

Interpretations of biochemistry . . .

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Principles of Biochemistry, 7th Edn, in two volumes.

By Emil L. Smith, Robert L. Hill, I. Robert Lehman, Robert J. Lefkowitz, Philip Handler and Abraham White.

McGraw-Hill: 1983. *General Aspects* pp. 886. Hbk \$36, £29.95; pbk £10.95. *Mammalian Biochemistry* pp. 759. Hbk \$42, £34.95; pbk £10.95.

Biochemistry.

Senior author Geoffrey Zubay. Addison-Wesley: 1983. Pp. 1,268. \$39.95, £18.75.

Biochemistry, 2nd Edn.

By Frank B. Armstrong. Oxford University Press: 1983. Pp. 653. Hbk \$27.95, £24.50; pbk £9.95.

THOSE who were familiar with the sixth edition of *Principles of Biochemistry* will recognize many of the figures in this new edition, and also certain features such as the sectionalization. They will, however, find that much else has changed.

The seventh edition comprises two distinct but related volumes (*General Aspects* and *Mammalian Biochemistry*) and the format has been improved enormously. In *General Aspects* red has been adopted as a second colour for use in figures and headings so that the overall impression is of a book which is now more like those of Lehninger and Stryer. All sections show signs of considerable reworking, updating and expansion being most evident in the accounts of hormone receptors and hormone action, molecular genetics and biochemistry of the immune system. The metabolism section which was really rather dull in the previous edition is now presented in far more attractive way.

Principles of Biochemistry remains the Rolls Royce of biochemistry textbooks — both in terms of price and overall scope. Containing approximately 25% more material than its predecessor, this new edition is a formidable collection of biochemical knowledge with its primary emphasis still being on mammalian biochemistry. A general student might be satisfied with just *General Aspects* (structures of biomolecules, enzymes, metabolism, molecular genetics) but students in the medical sciences would obviously have to progress on to *Mammalian Biochemistry* (body fluids, endocrine system, specialized tissues such as nerve, muscle, eye, gut and human nutrition). Indexing of the books is excellent (taken together the two volumes have 120 pages of index). Referencing, too, is good, each chapter being followed by lists of books and reviews (up to 1982), though unfortunately there is considerable

cross-referencing between the two volumes which could be annoying for a reader who has only one of them.

Any newcomer to the jostling throng of general biochemistry textbooks is likely to go unnoticed unless it really has something extra to offer. While Zubay's *Biochemistry* is an adequate general book covering the subject at a level similar to Stryer or Lehninger, I am not convinced that it will make a major impact. The 32 chapters are written by 26 different contributors, which leads one to hope that the book would be really up to date; so it is disappointing to find that none of the rather few selected texts listed at the end of each chapter is more recent than 1981.

On the merit side, *Biochemistry* contains some excellent figures — in black and red colouring — particularly in the sections on protein structure. There is also a fascinating final chapter on the origins of life. On the other hand, although metabolism is adequately covered there is little attempt to integrate it or to tackle the control of metabolism. Reading the section on the control of glycogen metabolism one would have thought that nothing had happened in this complex and active field since about 1970 — compare this with the up-to-date and

complex presentation in *Principles of Biochemistry*. Other examples of where more attention was needed are the very scant descriptions of biologically important proteins such as collagen or the immunoglobulins.

The second edition of *Biochemistry* by Armstrong is a reworking of the book of the same title by Armstrong and Bennett which appeared in 1979. In a previous review (*Nature* 283, 902; 1980) I wrote of this book that "the text is clearly and concisely presented and the figures are good". I have no reason to change my mind on reading the new edition. The book is approximately 30% longer than its predecessor, the increase in extent being mainly due to the inclusion of a new chapter on lipid biosynthesis — a glaring omission from the first edition — and the addition of a chapter on recombinant DNA research. Each chapter is followed by a sizeable list of further readings (both books and articles) and interesting problems and questions. *Biochemistry* has much in its favour as a general introductory text. □

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Human Biochemistry.

By Wilhelm R. Frisell. Macmillan, New York/Collier Macmillan, London: 1983. Pp. 845. \$37.50, £31.75.

Essentials of Human Biochemistry.

By C.R. Paterson. Pitman, London/Urban & Schwarzenberg, Baltimore: 1983. Pp. 275. Pbk £8.95, \$15.50.

Biochemistry for the Medical Sciences.

By E.A. Newsholme and A.R. Leech. Wiley: 1984. Pp. 951. Hbk £49, \$99; pbk £19.75, \$39.95.

THE boundaries of disciplines within the life sciences are determined to a large extent by the judgement (or caprice) of individual authors and designers of courses. No subject demonstrates this more vividly than human biochemistry. Indeed the very inability to agree on a name (physiological chemistry, medical biochemistry and molecular physiology are just a few alternatives) suggests a crisis of identity. Thus, Dr Frisell prefers to base himself uncompromisingly in pure biochemistry with occasional excursions of physiological relevance, whereas the other authors attempt a total integration of medicine and metabolism.

Human Biochemistry by Frisell is a large

textbook of over 800 pages, resembling at first sight some of the encyclopaedic treatises that have appeared during the past decade. Closer inspection reveals a sound presentation of basic biochemistry with a physiological bias, intended for a single semester course. Possibly this is the reason why some topics, membrane structure and chemiosmosis for example, are absent or treated dismissively.

Part One ("Basic Biochemistry") follows a conventional pattern based on the structure and metabolism of the chief classes of biochemical compounds, together with enzymology and bioenergetics. Part Two ("Metabolic Basis of Human Biochemistry") discusses higher levels of organization, thereby emphasizing the physiological perspective of the basic science presented in Part One. Dr Frisell might have given his book more stature by integrating the biochemistry with the pathology of disease, but he apparently sees the cut-off point between these two disciplines as lying very close to fundamental biochemistry. Even in the lengthy chapter on the elements of nutrition, prominence is given to the listed dietary requirements and metabolic roles of food components, with hardly any discussion of the chemical-pathological basis of deficiency diseases. The treatment of prostaglandins and the biochemistry of nerve tissue sparkle with a certain freshness, but in general the style of presentation is familiar and orthodox.

The author is obviously a teacher of considerable experience, and he never loses sight of his most important reader, the undergraduate student. Every chapter