

that "Notions and concepts that we believe no longer have validity have been passed over in silence"—in this brief sentence a large base of information is thus conveniently jettisoned.

To find out how Green and Baum interpret the universality of membrane conformational changes one needs only to consult the front cover and a figure (p. 58) which explain the phenomena of "nonenergized", "energized" and "energized twisted" states as the conformational cycle of the tripartite repeating unit—this latter entity is considered the key to all membrane phenomena. The electron micrographs of isolated mitochondria showing the various conformational states are recognized facts, but the intricate diagrams derived from these, which form the basis of this book, should, in my opinion, be considered very, very tentative interpretations and definitely not "a logical, integrated interpretation of the mitochondria as an operational and transducing unit". This is, in fact, one view of an overall system which may represent primary, secondary or possibly even artefactual phenomena.

In the last chapter, the authors try to extend their thesis to other energy transducing systems, ranging from pinocytosis to photosynthesis and including vision and muscular contraction. While I do not doubt the universality of some membrane conformation changes, this attempt at universality is stretching things a bit far. For example, the author's claim of a role for the tripartite repeating units in photosynthetic electron transport and phosphorylation is tenuous in the extreme—the evidence is hotly contested, and the inclusion in the book of unpublished work from Green's laboratory does not help matters. The electron flow schemes presented are also of dubious validity. Similar criticisms can be made for deductions on the process of visual excitation and amplification in rod outer and inner segments of the eye.

A concluding postscript chapter purports to lead "to a great simplification of the configurational picture" by now postulating four possible configurational states in all mitochondria. The evidence is derived from six unpublished papers, which is asking much, except from those already convinced.

An appendix has a very useful compilation of many formulae of compounds of interest to workers in the field of mitochondrial research.

I do not feel that this highly personalized book can be recommended for general students in biological fields (as is claimed on the flyleaf), but it may be of interest to specialists in the field who wish to follow the current lines of thoughts and research in the authors' laboratory.

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STEROIDS AFTER NINE YEARS

Steroid Biochemistry

By Erich Heftmann. Pp. xiii + 220. Academic Press: New York and London, December 1969.) 89s.

In 1960, Heftmann and Mosettig wrote *Steroid Biochemistry* as an introductory text for plant and animal biochemists and physiologists, endocrinologists, pharmacologists and clinicians. The enormous increase in knowledge of steroids has rendered this book out of date, and Dr Heftmann has undertaken the daunting task of rewriting it in 26 pages less than the original. Organic chemistry has been kept to a minimum and only occasional use of jargon (hydride shifts) will upset the uninitiated. An attractive feature of the book is the wonderful panoramic view which it gives of steroid biochemistry. In some medical circles steroids mean little more than the adrenocortical steroids and their synthetic analogues. Here we are introduced to the rare and exotic steroids, without known function, which are found in plants and lower forms of animal life. It will come as a surprise to many that some of the well known mammalian steroid hormones

are produced and metabolized in plants. There are fascinating references to the secretion of testosterone by water beetles, which have been used as aphrodisiacs in folk medicine, and steroid cardiac poisons in primitive trials by ordeal. Steroid analogues, drugs and inhibitors, which have found use in academic and clinical work, are mentioned with their structural formulae.

The author naturally does not attempt to refer directly to the original vast literature. He recommends the use of the index (16 pages), which correlates text pages, structural formulae and references in a bibliography of 692 books and reviews. The bibliography contains references to items in Russian, middle European and Scandinavian languages with titles translated. One wonders if the author has personal knowledge of the content of such articles and thus of their worthiness. This form of reference is perhaps the best one can expect in a small book, but it is often frustrating to be unable to trace the source of some statements. One would, for instance, like to check the reputed reduction of deoxycorticosterone to pregnanediol in man, and wonders if indeed it is not misleading even to mention this when so little space can be given to description of metabolism. Similarly, it would seem unwise to mention the alleged occurrence of equilin in an adrenal tumour without qualifying reference to evidence of identification. Predictably, there is no space for the description of experimental results which led to important discoveries.

The book is perhaps weakest in the sections dealing with endocrinology of steroids. One looks in vain for mention of recent work on the action of 5α -dihydrotestosterone. The description of the action of androgens in the foetus and neonate is not clear; nor is the reference to enzyme induction by androgens. One would prefer some reference to chemical and physical methods of measuring steroids rather than bioassays. The concentration of plasma oestrogens of less than 1 mg per 100 ml. is surely a printing error.

These criticisms are admittedly of rather a carping nature—one enjoys reading the book so much. The bibliography and the numerous structural formulae will undoubtedly prove most useful.

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MOLECULAR CYTOLOGY

Handbook of Molecular Cytology

Edited by A. Lima-de-Faria. (North-Holland Research Monographs Frontiers of Biology, Vol. 15.) Pp. xv + 1508. (North-Holland: Amsterdam and London, 1969.) 560s.

THE handbooks published by the Chemical Rubber Company are invaluable reference works; that the *Handbook of Chemistry and Physics* is now in its fiftieth edition and has seven stable mates speaks for itself. Unfortunately, anybody anticipating that North-Holland's *Handbook of Molecular Cytology* might resemble and be as useful as the CRC handbooks is in for a great disappointment. To be sure, this so-called handbook is large and expensive, but there the parallel with the CRC's publications ends. The *Handbook of Molecular Cytology* is nothing more than yet another collection of inevitably outdated review articles. It resembles nothing so closely as a bumper edition of *International Reviews of Cytology* or a one volume condensation of Brachet and Mirsky's *The Cell*.

This book is the fifteenth volume in the publishers' series "Frontiers of Biology" but differs from its predecessors in not being devoted to a restricted topic; it attempts to cover the whole of modern cytology and suffers as a consequence. Lima-de-Faria has gathered together a group of contributors which is distinguished enough, but for the most part all too familiar, with the result that the overriding impression the reader gets is of having seen the book's contents before elsewhere.