Phytochemistry, 1975, Vol. 14, p. 2101. Pergamon Press. Printed in England.

BOOK REVIEWS

Comparative Biochemistry, Molecular Evolution by M. FLORKIN and T. SWAIN. Elsevier, Amsterdam, 1974. 328 pp. 90 guilders or £15.

This volume on molecular evolution, no. 29 in the series on "Comprehensive Biochemistry" edited by M. Florkin and E. H. Stotz, was originally intended to contain five chapters: an introduction to concepts, an essay on prebiological evolution and separate accounts of molecular evolution in bacteria, plants and animals. What we actually have in volume 29A is only two of these, the one on concepts by Florkin and the one on plants by Swain, and we have to await the appearance of volume 29B for the remaining three chapters. This division is unfortunate since it is not possible with the material at hand to fully assess the impact that the new biochemical information of the last 20 years has had or could have in the world of systematics, phylogeny and evolution. Furthermore, the style of writing in these two chapters is so disparate that they cannot be said to complement each other as they should.

The chapter by Professor Florkin is entitled "Concepts of Molecular Biosemiotics and of Molecular Evolution" and contains, for example, sections headed biomolecular *relata*, biosyntagms, ligand-induced modulations of signified, diachronic molecular biosemiotics and coevolutionary diachronic epigenesis. From this it will be seen that the field of biochemical evolution has its own arcane system of nomenclature. These difficulties are recognized by the author since he provides a much-needed glossary at the end of his chapter defining some fifty of these expressions. Does one really need this special nomenclature? Why say "central metabolic biosyntagm" when one simply means "primary metabolism"? Perhaps there is a need for this vocabulary and certainly some biochemists working with macromolecules employ some of these terms in their papers. However it is revealing that T. Swain in his chapter on "biochemical evolution in plants" finds it unnecessary to include any of these terms; his chapter is eminently readable which is hardly true of the more philosophical contribution of Florkin.

In his essay, Professor Swain has achieved a brilliantly integrated synthesis of our present knowledge of biochemical evolution in the plant kingdom, and he brings together for the first time all the varying facets of this fascinating and rewarding field. Very wisely, he begins his chapter by outlining plant classification and by considering what is known of their origin and evolution from purely botanical sources. Against this background, he then swiftly summarizes comparative aspects of the biochemistry of the many different kinds of plant constituent and goes on to consider in turn the evolutionary trends that are apparent in this knowledge. Beginning with the nucleic acids and proteins, he passes onto metabolic pathways, photosynthesis and cell walls and finally deals with biochemical evolution among the lipids, terpenoids, carotenoids, flavonoids and alkaloids. In all, this is a most valuable and up-to-date contribution and there are 484 literature references. If expanded slightly, this chapter would stand on its own as the most significant review of comparative phytochemistry of recent years.

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Fungal Lipid Biochemistry by J. D. WEETE, Plenum Press, New York, 1974, 356 pp. and indices. $25.00 (£11 approx).

This book sets out to describe the lipids of fungi, their occurrences, chemistry, biosynthesis and biological roles. The material is set out in 11 chapters of which the two dealing with ultrastructure were contributed by invited authors. The final result in my view is unbalanced, with the general occurrence of lipids in fungi being the best described.

The author has taken material from more than 1000 references but the absence of an author index makes the following of the progress of individual research workers very difficult. As an example, the species index suggests that only one reference to lipids in *Plasmodiophora brassicae* was included but there has been some quite excellent work by P. H. Williams on this species which might well have been included in chapter 10 or 11. Further there is some evidence for the book having been prepared in too much of a hurry, with typographical errors and other evidence of inadequate proof reading. Also the impression is formed that much of the information has been rather ill digested so that, whilst admirable in concept, the value of this book is greatly diminished. Typical examples are the frequent errors of chemical nomenclature (e.g. 17-methyl-octadecanoic acid is not the correct name for $(CH_3)_2CH(CH_2)_{14}COOH$ but rather 16-methyl-heptadecanoic acid), the incorrect formulation of squalene with one double bond having the Z configuration and three having the E configuration (a failing of many other authors and journals in print also) and the very out-dated and often incorrect sterol nomenclature. The reaction mechanism illustrated for *trans*-carboxylation from a biotin derivative to an acyl-CoA receptor molecule is wrong and bears little resemblance to that illustrated in the original article. It is also remarkable to see in chapter 11.4.3 a paragraph dealing with hormonal-regulation processes of the genus *Achlya* a sentence: "It is not known whether these hormones are sterols" and yet the formula for antheridiol, hormone A of the series of compounds referred to in this particular paragraph, is illustrated (incorrectly) in chapter 5.

These various points and others lead me to the belief that the value of this book to a research worker must be limited, as they all tend to destroy confidence in even the factual assertions as well as the more speculative sections. In addition to the destruction of confidence, such a book could give a student commencing research in this field a lot of erroneous information of a quite basic type.

If I were to be asked whether this book should be purchased by the University Library, I would feel obliged to recommend it not being purchased, and I would similarly recommend any intending individual buyer, since the overall quality appears to be well below that of the price tag.

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The Organic Constituents of Higher Plants by TREVOR ROBINSON, 3rd edition, 1975, 347 pp. $11.00 or £4.75

To those who have not seen the two earlier editions, let me say that this admirable textbook is the only available guide within a single volume to the enormous range of organic structures encountered in the plant kingdom. The author briefly discusses the chemistry, isolation procedures, methods of characterization and biosynthetic pathways for each of the major classes of natural plant constituents. This large format book (22 × 29 cm) is profusely illustrated with chemical formulae and biosynthetic schemes. To my mind, it is an essential undergraduate text in any university course covering secondary plant constituents. In addition, it is an excellent book to have in the research laboratory since it provides most of the key references to all the major classes of plant compounds. This third edition, which updates the second edition of 1967, contains over 1,600 references and covers the literature up to November 1974. It has thus been extensively revised and many new features have been added. Clearly, no one author can ever hope to be *au fait* with every single new development within the phytochemical field and there are, undoubtedly, a few minor errors and omissions and occasional infelicities in emphasis. One could argue that the author might have made more use of biosynthetic classification in his arrangement of topics but, a degree of arbitrariness is inevitable because so many compounds of mixed biosynthetic origin