

proteins are understood is the inner membrane of the mitochondrion, and Racker describes the remarkable progress made in the isolation of its components and their reconstitution into biologically active complexes.

The contents of the present book will already be familiar to workers active in the field, because the symposium was published a year ago as a supplement to the *Journal of General Physiology*. This fact should not deter libraries, especially those lacking the journal, in making the material available to a wider public, for it is a well presented and readable summary of the current status of the subject.

A. H. MADDY

## LIPID METABOLISM SURVEYED

### Comprehensive Biochemistry

Vol. 18: Lipid Metabolism. Edited by Marcel Florjkin and Elmer H. Stotz. Pp. xiv + 398. (Elsevier: Amsterdam, London and New York, 1970.) 180s.

THERE is a tremendous amount of current interest in lipids, largely because of their important role in biological membranes. This volume deals with the way in which lipids are synthesized and catabolized and much of the information is new. Thus, only eight of the 114 references in Thompson's excellent account of phospholipids are to publications earlier than 1960. This advance in our knowledge of metabolism, as most biochemists in the field are aware, results largely from methodological advances, notably in gas liquid chromatography and thin-layer chromatography.

It is perhaps inevitable that advanced treatises have to be produced as multi-author volumes and this volume is a prime example. Although this is a very reasonable attempt to cover many aspects of the subject, it is unfortunately incomplete. Sterol metabolism is largely omitted except for some special aspects of the metabolism of cholesterol in the nervous system, though it had been promised in a list of contents published earlier. In addition, the editors point out that a major chapter on fatty acid oxidation and biosynthesis was not ready in time. Everybody associated with multi-author projects is only too aware of the problem of getting the manuscripts on time, but in a book of this sort it is particularly regrettable.

There are two other serious criticisms. One is the matter of duplication, because, for example, both Johnston in his article on the intestinal absorption of fats and Marinetti in his account of triglyceride metabolism, deal with the two pathways for triglyceride synthesis. I was also disturbed to see that one pathway to triglycerides is referred to as the " $\alpha$ -glycerophosphate pathway" on p. 9 and the "glycerol phosphate pathway" on p. 124. For the record, the same compound is called " $\alpha$ -glycerol phosphate" in chapter five and " $L$ - $\alpha$ -glycerophosphate" in chapter three, with " $L$ -glycerol-3-phosphate" thrown in for good measure. This is all the more curious because the publishers of this volume also produce the journal *Biochimica et Biophysica Acta* which has already adopted the proposed IUPAC-IUB nomenclature for naming lipids.

Davison deals competently with the metabolism of lipids in the nervous system and the special problems associated with a heterogenous organ like the brain which is the richest of all organs in lipid materials. A comprehensive account of ganglioside metabolism by Svennerholm is also largely concerned with the nervous system where these highly complex lipids were originally found. These chapters are up to date in most respects, although there are some new ideas on the biosynthesis of sphingosine which could have been mentioned. There is certainly a great deal to interest the reader, ranging from a 100-page chapter in three sections by four experts

on the assimilation, distribution and storage of lipids in mammals, to the fatty acid metabolism of plant tissues by Stumpf. The excursion into the realm of bacterial lipids by O'Leary is also an invaluable one, covering such intriguing points as the virtual absence of phosphatidyletholine from bacteria.

This volume is meant to be put side by side with all the others of the series in the libraries of the world. Because it is such a fund of references, amounting to a tenth of the book and including papers published as recently as 1968, it is also likely to be coveted by individual workers in this field, provided that they can afford a text which costs about sixpence a page. The index is first class.

G. B. ANSELL

## NATURAL PRODUCTS

### Natural Substances formed Biologically from Mevalonic Acid

Edited by T. W. Goodwin. (Biochemical Society Symposium No. 29, held in Liverpool, April 1969.) Pp. ix + 186. (Academic Press: London and New York, February 1970.) 55s.

THIS slim volume, edited by Professor Goodwin, is based on a Biochemical Society meeting held at Liverpool in April 1969. Under the very appropriate chairmanship of Emeritus Professor R. A. Morton, many themes of the meeting were happy reminders of the repeated contributions of Liverpool laboratories to isoprenoid studies. It is also appropriate that the volume opens with a masterly summary of the chemistry of mevalonic acid by the Cornforths, which leads naturally to the paper by Popjak which is full of interesting, if slightly premature, detail on the "pre-squalene" problem. Yamamoto and Bloch present the oxidosqualene cyclase and Goad gives a full and useful review of the post-cyclization steps in sterol biosynthesis. Rudney's review of the biosynthesis of the prenylated quinones is equally valuable, and Hemming's account of the polyprenols themselves should be of quite general interest. Aspects of the biology of the prenylated quinones are presented in some detail, but without very much clarification of this difficult area. An unusual branch of comparative biochemistry is nicely introduced in Karlson's paper on insect terpenoids, while Battersby's account of biosynthetic steps in the iridoid/indole alkaloid series should particularly impress those to whom this elegant work is novel. Altogether, one can hardly imagine a biochemist or a natural product chemist who would not find something of pleasure and profit here, though there can be few who would find it indispensable.

For a symposium volume, the quality of the different contributions is satisfactorily even, but the book's title is hardly a fair description of the merchandise within. Even biochemists would expect an account of "natural substances formed biologically from mevalonic acid" to include some mention of carotenoids, while organic chemists, whose horizons are habitually wider, will regret that it is only through Battersby's paper that their biochemical colleagues will be reminded of the existence of the lower terpenoids. Professor Goodwin has done as much as anybody to lift British biochemistry from the blood-and-guts level, but the Biochemical Society clearly has a long way to go yet. This book's cumbersome title means, in one word, terpenoids—but presumably the word was deliberately avoided because of its "natural product" connotations. Yet I have recently returned from a mountain range where the air is literally blue with photo-oxidized terpenes; our understanding of the biochemistry and physiology of these plant products is minimal, and it will remain so as long as biochemists disdain to apply their refined expertise to "secondary" processes.

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