

## Aspects of lipid membranes . . .

*Bilayer Lipid Membranes (BLM): Theory and Practice.* By H. Ti Tien. Pp. ix + 655. (Marcel Dekker: New York, September 1974.) \$39.50.

SINCE its rediscovery in 1962 by Tien and his colleagues, the bilayer lipid membrane (BLM) has been used successfully in the elucidation of previously intangible problems concerning the effects of a number of substances on natural membranes at the molecular level. The value of the isolated BLM as a membrane model lies in its simplicity of composition, structure and in its intrinsic inertness. These properties allow its accurate quantitative description as a system, which is essential for interpretation of the effects of extrinsic substances.

This book is, as the author states "a highly personal account" of research in this field. Its stated objectives are to summarise the current status of the research and to present practical methods for the formation of the BLM.

Within the book the principal successes of the past decade jostle with detailed descriptions of technique; though interesting, it will be perhaps confusing for the beginner, and of doubtful value to the experienced worker. And there are several exceptions notable by their absence: nowhere is there a mention of studies of the model unit conductance channel, possibly the most important recent development in the field, initiated by Haydon and his colleagues in Cambridge in 1970. Likewise, nowhere is there a mention of the use of step functions of current and voltage to distinguish between the effects of unstirred layers, diffusion polarisation and surface properties, studies initiated by Läuger and his colleagues in 1971.

In chapters 8–10, some 200 pages or so are devoted to electronic and photo-

electric phenomena. The conditions under which some of the described experiments are carried out and the abbreviations used are not explained explicitly. As these are essential in the interpretation of the results it makes for unnecessarily difficult reading.

The content of chapter 11 ranges from detailed discussions of preparations of membrane forming chemical mixtures to a description of the apparatus for measurement of fluorescence; these are plentiful in detail but lacking in principle. The "simple experiments with BLM" included in the book belie the problems likely to be encountered in practice.

All this is not to say that there is not much useful information in this unique collection of typescript writings—there is, but its value must surely rank as a limited, expensive, and rapidly dating reference book.

Edward Lea

## . . . lipids in cancer cells

*Lipids and Tumours.* (*Progress in Biochemical Pharmacology*, vol. 10.) Edited by K. K. Carroll. Pp. x + 360. (Karger: Basel, London and New York, 1975.) SFr.148; £26.00; \$67.50.

THE current surge of interest in the role of membranes in homeostasis and cancer ensured that a reappraisal of the role of their lipids would follow. In this area, the fluid mosaic model proposed by Singer for the structure of animal cell membranes has gained much favour and has stimulated a number of new ideas. The model considers membranes essentially as solutions of protein in a lipid environment, the fluidity of which determines the ease with which the protein components orientate in response to a number of external stimuli. Accordingly, this review on the subject of lipids and cancer comes at an opportune time and the book will attract readers from a wider spectrum of disciplines in cell

biology than would have been the case a few years ago.

The contributors are well known in their fields and they have covered a comprehensive range of subjects including the glycerolipids, fatty acid metabolisms, proteolipids, lipids in cultured cells, fucolipids, control of lipid biosynthesis and the role of dietary fat in cancer. Unfortunately, the newer techniques of spin label and fluorescent probes are presumably too new to have been included.

The message that lipids in cancer cells are different from those in normal cells seems to be clear but the welter of changes described allows no coherent story to be formed. The use of rapidly growing 'laboratory' tumours carries with it many hazards of interpretation and since this material was used in most of the studies described it places severe limitations on conclusions about the relevance of the lipid changes to the tissue's behaviour as a cancer. Are the changes caused by the rapid growth of these cells? Which normal tissue provides the most appropriate control? Does the high proportion of necrotic tissue in some tumours affect the results? Lipidologists seem to have been slow to use the advantages of animal cell culture systems in which well controlled studies can be made with quiescent and growing normal cells, tumour cells, cells in different phases of the growth cycle, virus and chemically transformed cells and cells growing in medium containing delipidised serum with added lipids. In their chapter on lipids in normal and tumour cells in culture Howard and Howard point out the value of culture methods. An example of its application is the finding that the characteristic glycolipid change found in transformed cells in culture—the simplification of the carbohydrate moiety—is also found in rapidly growing normal cells. In the light of this result the degree to which this change is found in the range of Morris hepatomas can be interpreted as a function of their growth rate or, to put it another way, the time the cells spend in the phase of the cell cycle when the carbohydrate chain elongation is maximal—the quiescent or G<sub>1</sub> phase.

There is, however, much material in this book to prime the imagination of those working in the field of lipids and membranes. The format of the book and the layout of the chapter sections is pleasing. The texts read easily and most contributors have managed to avoid peppering them with references. It would have been helpful if the closing date for the literature survey for each chapter had been given and also if a short addendum with 'hot news' had been added to each section as late as possible before publication. The staggering price of this book (£26.00; \$67.50) will ensure that it will not find its way into many private libraries.

I. A. Macpherson



An Egyptian bas relief dating from 2540 BC showing cabinet makers at work (Mastaba of Tiye, Saqqara). The figure at the right is using a bow drill, perhaps the earliest forerunner of modern machine tools. From *Simple Working Models of Historic Machines*. Paper edition. By Aubrey F. Burstall. Pp. 79. (MIT Press: Cambridge, Massachusetts, and London, 1975.) n.p.