Cell membranes

Pathobiology of Cell Membranes. Vol. 1. Edited by Benjamin F. Trump and A. U. Arstila. Pp. xv+497. (Academic: New York and London, August 1975.) $36.50; £17.50.

THIS volume is the first of a projected "multivolume treatise designed for pathologists and cell biologists interested in the role of membrane alterations in disease processes". Each of eleven chapters was written by one or more experts, and each is followed by an editors' summary. The subject matter ranges from broad topics such as "Cell Membranes and Disease Processes" (B. F. Trump and A. U. Arstila) and "Alterations in Lysosomal Membranes as Related to Disease Processes" to more technical ones, such as "The Use of Circular Dichroism in the Study of the Structure of Cell Membranes" (R. W. Henkens). In large measure, the book deals with the pathogenesis of subcellular lesions with special emphasis on the possible or probable roles of various cell membranes. Consideration is thus given to "The Cellular Mechanisms of Hormonally Induced Tissue Atrophy" (H. J. Helminen), "Thyroid Lysosomes in Health and Disease" (R. Seljelid), "Toxic Changes in Mitochondrial Membranes and Mitochondrial Function" (R. A. Goyer and B. C. Rhyne) and "Human Intestinal Epithelium as a Biological Membrane" (W. O. Dobbins III). These chapters contain much information of a correlational nature, particularly on the ultrastructural level. Other chapters give overviews of some key properties of cell membranes from physicochemical, biochemical, physiological and pathophysiological perspectives and include, in addition to the chapter on circular dichroism, the following topics: "Lipid Peroxidation and Fluorescent Molecular Damage to Membranes" (A. L. Tappel), "Colloid Osmotic Pressure as a Cause of Pathological Swelling of Cells" (J. R. Robinson), "Photopathology of the Erythrocyte Membrane" (J. S. Cook), "The Endocytic Uptake of Macromolecules" (P. J. Jacques).

All of the authors have made it clear that there are gaps between more or less defined phenomena in model membrane systems and the pathophysiological behaviour of cell membranes *in vivo*. Nowhere in biology have models been more popular than in the study of cell membranes. The search for pathogenetic mechanisms has of necessity been either empirical or reduced to narrowly defined, idealised situations. Aware of this, the editors have taken a comprehensive stance in their preface, choice of topics and comments, thus reflecting the Hegelian dictum "*das Wahre ist das Ganze.*"

The book has been written and edited with care, is beautifully illustrated and well printed. It represents a major effort to relate data and ideas about cellular membranes derived from model systems to pathobiological phenomena. It should be read by students of disease, not only to obtain information or as a guide to primary sources, but as an aid to planning experiments. I look forward to the publication of the subsequent volumes.

G. W. Richter

Microprobe analysis

Electron Microprobe Analysis. (Cambridge Monograph on Physics.) By S. J. B. Reed. Pp. xvi+400. (Cambridge University: London and New York, 1975.) £12; $34.50.

THIS is a very useful monograph that fills a timely need for anyone who is considering the possibility of entering the field of microprobe analysis. It is but a short mental step from knowing that high energy electrons produce X rays when they strike solid objects to deciding that this would be a good method of analysing the composition of the object. The pitfalls, however, are numerous. Since the germinal work of Castaing in 1951 the field has developed at an astounding rate, and it is now known how to design suitable instruments and how to convert raw data into compositional details. Instruments are complicated and very expensive, and the investigator must often make the kinds of decisions as when he buys an automobile —which of the optional 'extras' do I really need? The analysis of raw data is equally, if not more, complex as numerous (and not small) corrections must be applied.

Clearly a readable text was badly needed to guide both neophyte and expert through this mass of detail, and this book serves that purpose well. An expert would surely conclude that each individual chapter is too short and glosses over the interesting details, but the essential facts are presented in each case even though some chapters are condensed almost to the point of reading like a telegram. To cover the fields of instrument design and the meaning of the data, the author was forced to summarise a vast literature, and he is to be commended for his efforts.

It would, however, have been valuable to provide the reader with a list of applicable texts and monographs at the end of each chapter for further reading and more detailed study. A carefully selected list would have been more valuable than chasing down the many references scattered throughout the text.

A. V. Crewe