

but the major coverage of staining does not begin until page 27. Embedding is not discussed for the preparation of tissues for the light microscope but is for the electron microscope. In the list of commonly employed dyes for histochemistry Sudan Black B is missing. Many consequential references on microscopy and histo- and cytochemistry are not cited while lesser works are included.

This opening chapter is like the dress that was not long enough to be attractive nor short enough to be interesting. The next five chapters deal with the structure and function of cellular organelles. These are followed by a long chapter on active transport divorced from the initial discussion of the cell membrane. There is a chapter on mitosis and meiosis in which the authors employ "haploid" rather than the preferred "monoploid." This chapter also contains a section on genetics and mutation that is susceptible to misinterpretations. For example, the authors indicate that the prevailing scientific community at the turn of the 19th Century supported Lamarckian views when in reality the then prevailing scientific community favored fixity of species. The statement that "A further analysis of the transmission of these hereditary characteristics was made by the Austrian monk, Gregor Mendel," following one on Darwinism that seems to say that natural selection arises from some chance occurrence, implies that Mendel was seeking a mechanism for Darwinism when in reality he began his work three years prior to the publication of *The Origin of Species*. The concluding chapter on special cells, in this case, heart muscle, and the cerebral cortical cell seems an unnecessary appendage. The general reader can have more confidence in the chemistry presented than in the biology covered by this volume.

William V. Mayer  
University of Colorado  
Boulder, Colorado

CELL ULTRASTRUCTURE, William A. Jensen and Roderic B. Park, 60 pp., \$1.95, Wadsworth Publishing Company, Inc., Belmont, California, 1967.

This collection of electron micrographs by two biologists at the University of California in Berkeley is presented as an introduction to cell structure. The contents of this paperback are divided into 12 main topics: The Cell Membranes, Mitochondria, Chloroplasts, Lysosomes, Golgi Apparatus, Nucleus and Endoplasmic Reticulum, Ribosomes, Chromosomes and Cell Division, Microtubules and Flagellae, Extracellular Structures, and Viruses. Each topic has a brief description of structure and function, followed by several electron micrographs illustrating certain morphological aspects of particular cell entities. The electron

micrographs are, for the most part, of excellent quality and resolution, with examples taken primarily from botanical material. The animal cells represented are from micrographs of numerous other investigators and are rather "classic," in that the micrographs have been seen in other textbooks and collections of electron microscopic observations. Only a few of the micrographs are disappointing. Suggested general and technical readings are listed at the end of each section. The authors write clearly and concisely to an intelligent audience with some background in biology; they condense much useful information into 60 pages for a reasonable price. An appendix includes a comparison of light and electron microscopes in terms of physical principles, and a discussion of the preparatory procedures necessary for observations with the electron microscope.

Edith K. MacRae  
University of Illinois  
College of Medicine  
Chicago, Illinois

PAPERS ON BIOLOGICAL MEMBRANE STRUCTURE, Daniel Branton and Roderic B. Park, Eds., 311 pp., Little, Brown and Company, Boston, 1968.

Membranes are structures of fundamental importance in the life of cells. They limit and facilitate movements of water and solutes organize chemical reactions, and participate in energy transfer. "While our actual knowledge of membrane structure is vastly greater than it was fifty years ago, our knowledge of how membranes work has not greatly increased." This statement, from the introduction to *Papers of Biological Membrane Structure*, is a fair summary of our current state of knowledge, and also points clearly to the timeliness of the book. This is a collection of fifteen research papers, almost all published during the last five decades, describing varied experimental attacks on the structure of membranes. Figures and diagrams, so important as a basis for morphological interpretation, appear with satisfactory clarity in the reprinting. The papers are supplemented with a concise, thoughtful introduction, placing each one in its historical context. This is important, because ideas about membranes have changed greatly in the time period covered. Thus, from the early days of tentative physical studies and analyses of the protein-lipid composition, hypotheses evolved through an era of relatively settled thought dominated by the Davson-Danielli layered model, and the "unit membrane" so effectively championed by Robertson. Accumulating evidence has necessitated the re-evaluations of today, characterized by increasingly complex and heterogeneous membrane models.

*Papers on Biological Membrane Structure* may be recommended to the reader interested in more than super-

ficial understanding of membranes. It would be unfair to criticize the book because it appears to slight, by mere passing reference, detailed physiological and biochemical evidences of membrane organization. Rather, it stresses diverse approaches along morphological lines. Publication of such a collection of original papers on any major biological topic serves the welcome function of rescuing creative, evolving ideas from the vast morass of specialized journals deposited in research libraries. Thus, *Papers on Biological Membrane Structure* is an invitation to the interested reader to trace the development of thought, experimental design, and observation from an early stage to our current level of understanding—and uncertainty—of the organization of cell membranes.

Ingrith D. Olsen  
University of Washington  
Seattle, Washington

THE CELLULAR ROLE OF MACROMOLECULES, P. H. Jellinck, 117 pp., \$2.95, Scott, Foresman and Company, Glenview, Illinois, 1967.

A paperback in the publisher's series in *Undergraduate Biology*, and this one takes up the complex chemistry of metabolism and growth and differentiation. There are line drawings and electron micrographs. As is true in one of the others of this series, references are made, with quotations, to workers in the field. Unfortunately, none are identified as to time or place. In fact, it would be helpful if the publisher would identify the author more thoroughly.

This is the type of book which will find a useful role as supplementary reading or as background reading for the teacher.

THE CONTROL OF NUCLEAR ACTIVITY, Lester Goldstein, Ed., 498 pp., \$7.50, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1967.

The control of nuclear activity in cells has been and still remains one of the most complicated and yet fascinating mysteries in cell biology. The book *The Control of Nuclear Activity*, edited by Lester Goldstein, is the culmination of a symposium on this topic held by the Society of General Physiologists at their annual meeting in Woods Hole, Massachusetts, August 31-September 3, 1966. The experimental approaches as well as the biological systems reported in this study are highly diversified. The overall cost of the book is very reasonable compared with other technical books of its kind. The publishers probably had this in mind when they made the book available. In general, the reviewer recommends this book as an excellent source of vital, up-to-date information on cellular control mechanisms. It is well referenced, relatively free of errors, and should be beneficial for some years to come.