NEW BOOKS

ADVANCES IN OPTICAL AND ELECTRON MICROSCOPY, Vol. 3, Edited by R. Barrer and V. E. Cosslet (Academic Press, 286 p., 1969).

This book is a collection of five unrelated articles covering both light and electron microscopy. Although not intended as a textbook for either discipline, each section will serve as an invaluable reference for that particular area.

Probably one of the least understood and most often neglected areas of light microscopy, that of mensuration, is described by D. W. Humphries (University of Sheffield, England) in a chapter that is exceptional in both scope and detail.

The chapter by R. J. Thomas (Western Regional Research Lab, USDA) on application of microincineration to electron microscopy is a valuable resume of the art up to the present. Advantages, disadvantages, pitfalls and sources of artifact are all outlined in sufficient degree to be of inestimable help to anyone contemplating using this technique. The applications that each reader will immediately see in his own area will be many and exciting. The author has mentioned the obvious application of electron microprobe analysis to the mineral residues as a means of qualitative analysis with the increase in sensitivity resulting from the removal of the organic portion of ultrathin sections of biological tissue. This approach of microincineration and electron probe analysis will undoubtedly become a major tool in the fields of biology, botany, histology, etc.

The assessment of electron microscopic autoradiography by M. A. Williams (University of Sheffield, England) emphasizes again, fortunately, that fixation methods must be tailored to the specific aims of the microscopists and will vary depending on what portion of the tissue he wishes to preserve. This chapter also contains some startling revelations concerning the errors resulting from judging section thickness by interference colors and the effects this may have on interpretation of autoradiographs. The section on analysis of the electron micrographs treats well the statistical methods and precautions necessary to intelligently use the method. This chapter is the more valuable in that it does not attempt to sell a method, but presents pros and cons with equal clarity.

The small angle diffraction techniques described by R. P. Ferrier (University of Cambridge, England) may be new to many electron microscopists and his list of advantages and disadvantages is thus most timely. The additional information one can obtain about materials (both biological and nonbiological) can extend the usefulness of the electron microscope. The subject is well presented with an extensive bibliography.

The chapter on Zoom systems by Benford and Rosenberger (Bausch & Lomb) explains in detail how these relatively new optical systems work and what they can do for us. Even though one can use a Zoom microscope without knowing how it is made, this information will be extremely valuable to anyone who occasionally needs to modify or design optical systems.

The book is well written and contains a wealth of detail. It will be valuable to anyone involved in light or electron microscopy.

A. P. MURPHY
The Procter & Gamble Company
Miami Valley Laboratories
Colerain Pike
Cincinnati, Ohio 45239