Biochemistry

Histones and Other Nuclear Proteins. Harris Busch. Academic Press, New York, 1965. 280 pp. Illus. $9.50.

This book only partially succeeds in its aim of orienting the reader to the current status of knowledge of nuclear proteins, a subject that is difficult to review in a concise and definitive fashion. This is due in part to the uncertainty of summarizing studies on proteins the functions of which are largely unknown and the purification and characterization of which are incomplete; the operational definitions and terminology vary among research groups, and thus provide an additional source of confusion. These difficulties are evident in this book.

The major part of the book deals with the histones. Histones are discussed with regard to variety of types, their isolation, structure, and metabolism. Speculative chapters deal with possible roles of histones as structural elements of chromosomes, as repressors of genes, and so on.

The protamines are given a much briefer treatment along some of the same lines.

A second section deals with the "acidic proteins" of the nucleus. These proteins are operationally defined and have been separated only into operational classes. The emphasis on detailed chemical descriptions, such as amino acid compositions and N-terminal analyses of these classes, which are mixtures of proteins, seems excessive. To a lesser extent this comment also applies to data on the histones. The final part of the book provides a brief discussion of the enzymes of the nucleus, with emphasis on those of nucleic acid synthesis, and closes with a summary of other enzymes localized in the nucleus.

The extensive bibliography contains many current references. Access to the references is somewhat impeded by an adequate but not luxurious subject index. Illustrations and tabulations of data are plentiful, although I feel that such extensive tabulations of properties on only partially resolved mixtures are unjustified.

The presentation is often that of a review article. The emphasis reveals the author's research interests; in particular, a large amount of space is devoted to comparisons of nuclear proteins from normal and tumorous cells, with considerable data from the author's publications.

In a number of places the style, organization, and conclusions seem inappropriate. For examples, why present twice, and in unnecessary detail, a calculation of histone turnover (Table 7-IV and p. 185)? Why include model studies of interaction of DNA with a basic protein, pancreatic ribonuclease, in the section on nuclear ribonucleases (p. 238)?

STEVEN ZIMMERMAN
National Institutes of Health, Bethesda, Maryland

Mathematics

Differential Equations. Shepley L. Ross. Blaisdell (Ginn), New York, 1964. xiv + 594 pp. Illus. $10.

This is a textbook written at an elementary level. The topics dealt with in part 1 are those covered in the conventional course. Part 2 includes a little Laplace transform theory, a little Sturm-Liouville systems and Fourier series, a good discussion of nonlinear equations, and a little second order partial differential equations. Other texts are listed at the end of each chapter. This is a *parvum-in-multum* book, and one is mildly astonished at how little has been covered in 594 oversize pages. The author does get the practice across very well, but in the process the student is talked to death (perhaps the author's term "leisurely" is more accurate). Even so, when one comes to the exciting parts of the text, the neophyte finds that the proof is "beyond the scope of the book" or that "it can be shown." The treatment is largely by recipes, and numerical examples are worked out in detail. Little indication is given of what is behind the switchboard. For example, there is no intimation that the usual rules for solving, say, first order and more general nonlinear equations reflect invariance under simple groups. The prospective mathematician needs a diet richer in the unifying abstract ideas. However, the book can be commended to the engineer or working scientist whose interest is in the solution of particular equations.

D. G. BOURGIN
Department of Mathematics, University of Illinois, Urbana

Electron Microscopy

Cellular Fine Struture. An introductory student text and atlas. James A. Freeman and Jack C. Geer. McGraw-Hill, New York, 1964. 208 pp. Illus. $9.50.

Since the advent of the electron microscope, the theory and operation of the microscope, the techniques of preparing tissues for use in it, and the interpretation of the fine structure of cells in a wide variety of tissues have been treated in several excellent books. But these books, because of their detail or complexity, may be difficult for the beginning student or the scientist whose background is inadequate. On the other hand, Freeman has intentionally limited his account of cellular fine structure to what he considers to be essential. Moreover, he has made an effort to elucidate the elementary principles of biological electron microscopy and biochemical cytology. Despite the broad scope of biological electron microscopy, he has substantially accomplished his objective by presenting a fairly comprehensive treatment in a book of less than 200 pages. If there is to be any criticism of this work, it must be made on the matter of thoroughness.

The first part of the book is devoted to the techniques of electron microscopy and to the interpretation of electron micrographs. The sequence of events in the preparation of tissues for electron microscopy is described in the text and depicted with three-dimensional diagrams. The second part is concerned with the description of the basic components of the cell, with particular emphasis on their membranous nature. Numerous electron micrographs are supported by explanatory illustrations. The last part of the book consists of an account of the fine structure of representative constituents of epithelium, muscle, nerve, and connective tissue. With the aid of light micrographs, electron micrographs, and three-dimensional illustrations, the interrelationships of cells are nicely demonstrated.

Despite minor imperfections and the brevity of the bibliography, this book will be useful to the beginning student in electron microscopy, to the scientist in nonbiological fields, and to the medical or graduate student as a supplement to his textbook of histology.

J. C. THAEMERT
Department of Anatomy, School of Medicine, University of Colorado, Denver