

Book Reviews

• Readers' comments on reviews should be addressed to the Editor.

Botany

THE VASCULAR CAMBIUM: ITS DEVELOPMENT AND ACTIVITY, by William W. Phillipson, Josephine M. Ward, and Brian G. Butterfield. 1971. Barnes & Noble, New York. 188 p. \$4.50.

Any biologist interested in developmental plant anatomy will want this book. The authors assume the reader has some knowledge of general plant anatomy and that the basic terminology of cell types in cambium, wood, and phloem is familiar to him. The book leads the reader to an understanding of terms by illustrating usage rather than by constructing formal definitions. For example, in the discussion of the origin of vascular cambium the authors say, "There are two opposing and extreme viewpoints, though most morphologists have taken some intermediate, usually undefined, position." The remainder of the discussion describes the development of vascular cambium from procambium, as reported by several botanists. As a result of this method of presentation, the student develops an understanding of the term "vascular cambium" as it is used.

The nature of changing spatial relationships in growth as the diameter of a plant axis increases is stated very concisely. Geometric requirements and aspects of growth are outlined, and the interrelationships are clearly indicated. The chapter on cambial activity summarizes information on effects of plant hormones on the vascular cambium. The final chapter is on experimental control of cambial development.

By way of comparison: the chapters on vascular cambium in two plant-anatomy textbooks are 13 and 16 pages long, respectively, although additional references to cambium occur in other pages of these books. Because *The Vascular Cambium* extensively summarizes information in one place, it will be valued by anyone interested in plant anatomy, dendrology or dendrochronology, tree growth, or plant development.

Daniel F. Burton
Mankato State College
Mankato, Minn.

EXPERIMENTS IN PLANT PHYSIOLOGY, by Francis H. Witham, David F. Blaydes, and Robert M. Devlin. 1971. Van Nostrand Reinhold Co., New York. 245 p. \$6.50 (softback).

This laboratory manual, which consists of 56 exercises, is obviously writ-

ten by people who have had considerable experience teaching plant physiology. Each exercise has a list of materials needed, a clear and concise procedure section, and instructions for reporting results. At the end of each experiment is a list of references, which will be of considerable value to the highly motivated students. However, those who prefer to have a brief introduction dealing with the theory on which the experiment is based will be disappointed.

The manual contains many more experiments than could ordinarily be completed in a two-semester course. There is such wide variation in degree of complexity of the experiments that challenging ones can be found for beginning as well as advanced students of plant physiology.

The authors have based many of their experiments on the published works of such well-known plant physiologists as F. Skoog, C. A. Miller, F. W. Went, and F. B. Salisbury. Furthermore, many of the other exercises are taken from time-tested experiments designed in the teaching laboratories of noted plant physiologists; for example, several exercises were taken from experiments written by B. S. Meyer, D. B. Anderson, and C. A. Swanson.

An appendix provides aids for scheduling; these will prove invaluable to the instructor who attempts the exercises for the first time. There is a section on preparation of materials and reagents.

I look forward to using this well-designed, carefully written, rather comprehensive laboratory manual in my own classes. I feel it will be widely used by plant physiologists throughout the nation.

Reginald D. Noble
Bowling Green (Ohio)
State University

TREES OF THE NORTHERN UNITED STATES AND CANADA, by F. H. Montgomery. 1970. Frederick Warne & Co., New York. 144 p. \$4.95.

This is a hard-backed, pocket-sized identification handbook for 163 tree species. Montgomery has developed keys that use line drawings and non-technical language. In addition there are 136 figures and 24 photographs. The distribution of each species is noted. This book should be on the shelf or in the pocket of naturalists and botany students.

William T. Barker
North Dakota State University
Fargo

Cell Biology

CELL BIOLOGY, by E. J. Ambrose and Dorothy M. Easty. 1970. Addison-Wesley Publishing Co., Reading, Mass. 510 p. \$12.50.

This book was written either for a separate course in cell biology or as a component in a course combining cell biology with organismic and population biology. Though it presupposes previous instruction in chemistry and biology, it does give a review of fundamentals in these fields. A student without at least a year of college chemistry will find difficulty in understanding the sections on biosynthesis and other molecular phenomena. The book avoids mathematics.

The first section treats in detail the structure, function, and synthesis of cellular components while considering the molecular and organelle levels of organization. The properties of the cell's surface are given special attention. Next, a short section has to do with mitosis, life cycles, and heredity of cells. Although heredity of microorganisms is emphasized, gene-mapping in *Drosophila* is considered in some detail. The other lengthy section considers cellular movement, along with the biology of development. The mechanisms of whole-animal development are correlated with cellular activity. A short section dealing with simple life and the origin of life concludes the book.

Cell Biology is well illustrated with photographs and line drawings. Each chapter is concluded with a bibliography of pertinent secondary literature, which should be available in all college and many high school libraries.

The treatment of enzyme kinetics and of bioenergetics is low-key. The physiology of neurons is ignored except in a general treatment of membrane potentials, where many of the current concepts are explained.

The authors are to be commended for writing a book that can be used in an introductory-biology course: they present complex material in an easily understood manner. This book joins several others that have been published within the year to fill the need for textbooks in cell biology.

Donald L. Wise
College of Wooster (Ohio)

CELL BIOLOGY, by Robert M. Dowben. 1971. Harper & Row, Inc., New York. 584 p. \$12.95.

Because it is difficult to know what is cell biology and what is molecular biology, biochemistry, and genetics, it is difficult to know what a textbook about cell biology should be like. Text-