

In this edition as in previous editions, we present the reader with a dynamic plant—an organism full of color, intricate pattern, and beauty. New insights continue to be uncovered into the relationships among plants and into the interrelationships between structure and function of plant organelles, cells, tissues, and organs.

For this sixth edition, we have revised the entire text. Some chapters have been completely rewritten, while in others we have made additions and revisions to incorporate some of the new findings and interpretations that have occurred in the ever-changing field of botany. Examples of some of the major revisions included in this edition are listed below. The five kingdom system of classification of organisms has been introduced to illustrate our changing concepts of the evolutionary relationships among organisms. However, in this book we continue to study organisms that traditionally have been considered plants. The chapter on cell division has been rewritten to include a comprehensive treatment of the phases that each cell must undergo in preparation for cell division and DNA replication, *i.e.*, the cell cycle.

The variations and significance of differential responses of plant genotypes to several nutrient stresses are included in the discussion of mineral nutrition of plants. The rapidly developing understanding of the process of photosynthesis has necessitated revision of our treatment of photosynthesis, particularly with respect to electron transport in the thylakoid membranes and the pH gradient and formation of ATP.

The material on bacteria has been completely rewritten, with a new emphasis on diversity within the group: diversity in terms of ultrastructure, metabolism, habitat, and morphology. Both the bacteria and the blue-green algae are now presented in the same chapter to stress the unifying prokaryotic character that holds these two groups together.

The survey of the algae has been expanded with material on economical importance of various divisions and by the inclusion of many new illustrations. The result is two algal chapters, rather than one as in the last edition. The two fungal chapters have also been revised, largely from a taxonomic viewpoint. In line with generally accepted ideas of mycologists, we recognize three divisions. Additional attention is paid to certain pathogenic fungi, mycorrhizal fungi, the Fungi Imperfecti, and lichens.

New material has also been introduced in the chapters dealing with the other groups of plants. For example, leafy liverworts, the economic importance of *Sphagnum*, phylogenetic relationships among bryophyte classes and between bryophytes and other groups are all discussed.

Particularly significant is the use of over 250 four-color illustrations in nearly 50 color plates. Each illustration has been evaluated for its teaching effectiveness, and we have attempted to balance the use of color throughout the book. Thus, where stained sections of plant material especially reveal differences in tissue characteristics, we have included numerous colored illustrations that correspond to the microscope slide material most commonly used by students in the laboratory. The physiology sections contain illustrations of color differences associated with mineral deficiencies, etiolation, and dye reduction in the Hill reaction. Floral characteristics and differences in pigmentation among diverse groups of plants are illustrated in sections dealing with ecology and taxonomy.

To insure rapid and easy reference, figure numbers

of the color illustrations are printed in boldface in the text and are accompanied by the page number of the appropriate plate.

Again it is a pleasure to acknowledge the very significant contribution of Alice Baldwin Addicott whose skill and artistry are evident in the many new drawings and diagrams. Special thanks go to our colleagues who generously gave of their time and help in making certain sections of this revision possible: Bruce Bonner, growth and development; Emanuel Epstein, mineral nutrition; Jim Doyle, evolution; Norma Lang, algae, including blue-green algae; Karol Paterson, leaf regeneration; John Tucker, angiosperms; Mark Wheelis, bacteria; Kenneth Wells, fungi.

We owe a special debt to our reviewers: Neal Barnett, University of Maryland; Brian Capon, California State University, Los Angeles; Brian Davis, Virginia Polytechnic Institute; Patricia Gensell, University of North Carolina, Chapel Hill; Frank Gleason, Santa Rosa Junior College; Margaret Goodhue, University of Wisconsin, Stevens Point; Richard Jensen, St. Mary's College; Sue Madison, Louisiana State University; Richard Pippen, Western Michigan University.

In addition, we thank the many other colleagues who willingly assisted us by contributing stimulating ideas and excellent illustrations in the preparation of this edition.

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