nate enthusiasm for "progress" and "development" has become tempered in this decade by a skeptical questioning of human activities that crowd other species into an ever shrinking corner.

If this is environmentalism, it is a seat-of-the-pants variety—one without inner coherence or biological rationale that may respond to the plight of the endangered condor but plump enthusiastically for the breeder reactor. For all its deficiencies and inconsistencies, however, this erratic environmentalism is a potentially powerful force which, if informed and deepened, can help advance the wise stewardship of our natural heritage in its entirety.

If the concerned environmentalist will actually study this big fat book, he or she will learn much about human affairs in the United States, yesterday and today, as they relate to wildlife conservation. A more probable readership consists of students and professors. With its well-referenced papers and its adequate index, this is an excellent compilation of reviews.

As an overall assessment of wildlife conservation in the United States, however, the book is deficient in critical analysis. While the initiated reader will find shadows of some continuing problems on these pages—the poverty of wildlife habitat on farmland, for example, or the increasing financial pressures on state wildlife agencies—the roots of these problems are not explained. And some fairly recent developments, such as the implications of the principles of island biogeography for the successful functioning of wildlife sanctuaries, are not mentioned. A chapter dealing explicitly with such matters, the current failures and problems, and new challenges and opportunities in wildlife conservation would have identified more clearly some targets for the future.

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The Growth of Fungal Hyphae

Fungal Walls and Hyphal Growth. Papers from a symposium, London, April 1978. J. H. BURNETT and A. P. J. TRINCI, Eds. Cambridge University Press, New York, 1980. x, 418 pp., illus. $57.50. British Mycological Society Symposium 2.

Fungal walls and hyphal growth are the subject of much activity in experimental mycology. It is thus not surprising to find that some of the topics covered in this volume of papers presented at a meeting of the British Mycological Society have also been reviewed recently in other publications, in some instances by the same authors. Such redundancies tend to limit the value of the book for specialists. For nonspecialists, however, the book offers advantages. It is the only recent one devoted exclusively to fungal walls and hyphal growth. The chapters are cross-referenced, and a detailed subject index and an index of names are provided. Most chapters are relatively short, clearly written, and adequately illustrated. The sequential arrangement of chapters is judicious.

The first six chapters are devoted to various aspects of wall structure and growth. The uninitiated will discover, for example, that fungal walls are chemically and physically complex and that the chemical composition of the majority of the fungi is still not known in detail. He or she is also likely to come to the realization that an understanding of wall growth will require the combined efforts of people trained in various disciplines. Both initiated and uninitiated readers will be reminded that protoplasts and temperature-sensitive mutants are important research tools that have too often been neglected.

Chapters 7 through 10 are devoted to chitin synthesis and degradation. This group of chapters is important not only for the demonstration that chitin plays a skeletal function in many fungi but also for the account of the progress that has recently been made with regard to the enzymology and the localization of chitin-synthesizing systems. Thus, chitin synthetase appears in most cases to exist in a zymogen form that requires partial proteolysis for activation. Microvesicular structures called chitosomes, originally discovered in *Mucor rouxii*, have now been isolated from a variety of fungi. These chitosomes seem to play the role of carriers of zymogen molecules, transporting them to the cell surface, where chitin microfibrils are synthesized and assembled. Progress is also recorded in the case of the mechanism of chitin synthesis taking place during stipe elongation in *Coprinus cinereus*.

The inclusion of three chapters on enzymes hydrolyzing wall polymers is appropriate since many such enzymes have been isolated from fungi and may play an indispensable role in wall growth, septation, and differentiation.

The rest of the book is devoted to the possible relationship between membrane transport and hyphal growth and to discussions of the regulation of macromolecular composition, branching, mathematical modeling, and the kinetics of mycelial growth.

The volume has real didactic value, both in its substance and in its technical features, and could well be adopted for advanced mycology and microbiology courses.

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Plant Motility

Physiology of Movements. W. HAUPT and M. E. FEINLEIB, Eds. Springer-Verlag, New York, 1979. xviii, 732 pp., illus. $100. Encyclopedia of Plant Physiology, New Series, vol. 7.

Because early schemes of classification typically categorized every living thing that is not an animal as a plant, botanists have traditionally had a wide range of organisms with which to explore the physiology of movements; gliding bacteria, flagellated algae, and amoeboid slime molds have shared attention equally with seedlings bending toward the sun or flowers snapping stylar lobes together when vibrated by insects. Given such diversity it has been possible to select a number of simple organisms specially suited for the study of subcellular actions that many of the "lower" groups share with "true" or vascular plants—for example, cytoplasmic streaming, chloroplast migration and orientation, flagellar beating, nuclear movement, and chromosome separation. Uninhibited by the modern narrowing of taxonomic bounds and enthusiastic about the rewards of comparative physiology, the editors of this volume in the new series of the *Encyclopedia of Plant Physiology* have continued this tradition, allotting only six out of two dozen chapters exclusively to vascular plants. Thus, the book is of far greater interest than the title of the series implies, serving both plant biologists and those who would never consider working on an organism with vascular tissue or even with chlorophyll.

The idea that model systems presenting one or a few cell types are more amenable than higher plants to analysis at the molecular level is reinforced by many of the chapters; indeed, it is a heady experience to compare chapters from the old and new series of the encyclopedia and realize how much progress has been made toward determining mechanisms in simpler systems. However, greater sophistication of approach to higher-plant movements is impressively documented in several chapters, and one wonders if