citations do not appear in the text. Even so, the authoritative nature of the work is sure to make it a standard reference, and libraries everywhere will want to have it on their shelves. It is a bargain for what it provides. As far as I am concerned, the only important title that has been omitted and that includes valuable information and literature citations that would complement *Fruits of Warm Climates* is *Tropical Tree Fruits for Australia* (compiled by P. E. Page, Queensland Dept. Primary Industries, Brisbane, 1984). Morton's ability to cover and compile the quintessentials of a literature that in itself is overwhelming is staggering. We can only wish her good health, a long life and continued productivity.

A. D. KRIKORIAN, *Biochemistry, State University of New York, Stony Brook, New York*

ENTOLOMA IN NORTH AMERICA. *Cryptogamic Studies, Volume 2.*

By Machiel E. Noordeloos; edited by Walter Jülich. Gustav Fischer Verlag, Stuttgart and New York; VCH, Deerfield Beach (Florida). $50.00 (paper). v + 164 p.; ill.; index. ISBN: 0-89574-276-4 (from US). 1988.

POLLEN: ILLUSTRATIONS AND SCANNING ELECTRON-MICROGRAPHS.

By Yozo Iwanami, Tetsuo Sasakuma, and Yoshio Yamada. Kodansha, Tokyo; Springer-Verlag, Berlin and New York. $72.50. viii + 198 p.; ill.; index. ISBN: 0-387-18833-9 (from Springer, NY). 1988.

This curious book is a compilation of miscellany concerning pollen biology. SEM photos of grains comprise about half; the remainder is devoted to brief treatments of such topics as pollination, pollen physiology, and salynology, featuring studies by the authors. Although a number of interesting research results are provided, the reports are anecdotal and pictorial, with few methodological details, no indication of sample sizes (or even of quantitative results) and, worst, no references to papers where these details may be found. As a result, the book is of tantalizingly limited use to research scientists, although it is too technical and telegraphic for lay readers. A number of the illustrations would be ideal for lectures on pollen biology. Potential buyers should examine the book to determine its usefulness to them.

JAMES THOMSON, *Ecology & Evolution, State University of New York, Stony Brook, New York*

COMPARATIVE WOOD ANATOMY: SYSTEMATIC, ECOLOGICAL, AND EVOLUTIONARY ASPECTS OF DICOTYLEDON WOOD. *Springer Series in Wood Science.*

By Sherwin Carlquist; Series Editor: T. E. Timell. Springer-Verlag, Berlin and New York. $198.00. x + 436 p.; ill.; subject index. ISBN: 0-387-18827-4 (from New York). 1988.

This volume represents a landmark and will serve as the standard reference on the topic for many years to come. In my opinion, no one can review this book since *the expert* has written it. Notice is drawn here to it because all libraries purporting to have a collection of foundation works in plant biology will need to acquire it. The topic is covered comprehensively, yet the text is highly readable—in some places the text is attractively conversational in style, and throughout one sees the depth of knowledge and breadth of personal experience of the author. I don't think it an exaggeration to state that this book will be the first place one will look to gain an in-depth view and interpretation of wood from an anatomical perspective. While the subtitle is "Systematic, Ecological, and Evolutionary Aspects of Dicotyledon Wood," there are also physiological and developmental threads throughout. A very attractive feature of the book is that attention is drawn not only to what is known, but also to what *is not* known.

The work, while expensive, is beautifully produced. The subject index is predominantly from the perspective of taxonomic groupings—e.g., family or genus, followed by detailed entry. To have broken it down more would have required increasing the volume length considerably. The table of contents is detailed and clear enough to follow and can therefore supplement the index.

A. D. KRIKORIAN, *Biochemistry, State University of New York, Stony Brook, New York*

FUNGAL DECOMPOSITION OF WOOD: ITS BIOLOGY AND ECOLOGY. *A Wiley-Interscience Publication.*

By A. D. M. Rayner and Lynne Boddy. John Wiley & Sons, Chichester and New York. $143.00. xiv + 587 p.; ill.; index of generic and specific names, subject index. ISBN: 0-471-10310-1. 1988.

Wood microbiology has come of age. Interest in wood decomposition has grown from such diverse fields as utilization, preservation, forest ecology and pathology, and biotechnology. Wood is considered not only as a source of lumber and paper, but as a source of renewable energy and industrial chemicals. An understanding of wood's central role in forest ecology, greater efficiency of traditional uses, and the potential uses in the future will rely on clear understanding of the natural processes of decomposition. Great advances have been made recently in the ecology, biochemistry and micromorphology of wood decay. Thus there has been a growing need for a book that brings together the scattered information on fungi and their activities in wood.

Anyone even peripherally interested in wood biodegradation will welcome this book. It is authoritative. The authors have a clear and complete grasp

of the subject. The liberal inclusion of many tables, data and detailed information will make the book very valuable as a reference work, particularly because of the attention to citations, the long list of references, and the organismal and subject indexes. Some information is not available elsewhere. The sections on the ecology of fungi in wood are quite strong; this is an area in which the authors have contributed much to the development and testing of ecological theory.

As admitted in the preface, the balance of subject matter emphasis is uneven and biased toward the authors' interests. Also, the logic of organization and the titling of chapters and subsections is sometimes not clear: discussions of coherent subjects are in some cases split among chapters. The treatment is intentionally advanced; some basic concepts, such as comparison of the chemistry, morphology, ecology and etiology of the major decay types, are not featured prominently and may be missed by the novice in a sea of otherwise valuable detail. These features may make the book difficult for readers with no prior familiarity with the topic. A less important problem is the inconsistent quality of the figures.

Although such features (and the price) may pose some difficulty for beginners, the simple fact that previously obscure or unpublished information is now assembled in an authoritative and complete book will be a boon to anyone interested in the subject.

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INTRODUCTION TO PHYCOLOGY.

By G. Robin South and Alan Whittick. Blackwell Scientific Publications, Oxford and Boston (Massachusetts). $39.95 (hardcover); $34.95 (paper). viii + 341 p.; ill.; index. ISBN: 0-632-01769-4. 1987.

This volume is meant to provide undergraduates with up-to-date perspectives on phycology, possibly within one semester. It is stunningly elegant: electron micrographs of excellent choice and good resolution; line drawings of morphology with cunning stippling, unobtrusively yet effectively bringing into relief the important points; an extensive bibliography with full titles and pagination. The botanical classification is applied throughout. Common sense and history dictated that cyanobacteria — the prokaryotic algae — be included, as explained in the introduction. Algal flagellates are treated with emphasis on fine structure; but some indubitably genuine algae that are scandalously voracious protozoa are hushed over, reminiscent of a Victorian Gothic romance (*Jane Eyre* comes to mind, also Charles Addams's *New Yorker* cartoons in which family members with unsavory proclivities are sequestered for propriety's sake in a barred attic). Then follow chapters headed "Cellular and Subcellular Organizations" (superbly illustrated) in which unicellular and multicellular organization are contrasted, culminating in seaweeds; and reproduction and life cycles are described with many good diagrams. The chapter, "Photosynthesis and Biochemistry," is a fine outline of CO_2 fixation and related topics, nitrogen fixation, and classical inorganic requirements, with a concise outline of trace-element and vitamin requirements; then it discusses details of pheromones in Phaeophyceae. The chapter on algal ecology centers on phytoplankton and the zonation of seaweeds, noting briefly the recent discovery that many minute flagellates combine phagotrophy and photosynthesis (the balance depending on circumstance), thus forming a loop in the producer-consumer food pyramid; algal symbioses is adequately treated.

The chapter, "Evolution and Phylogeny," tries to defend the classical phycological turf. The discussion of phylogeny is à la Lynn Margolis — bestrewn with neologisms and, from several other authors, airy speculations jarringly at odds with the earnest conservatism of the preceding chapters. The last chapter — "Algae, Human Affairs and Environment" — is a catch-all, touching on toxic cyanophytes, dinoflagellate red tides, organic pollution, eutrophication, and algae as foodstuffs and sources of colloids; a few pages on cultivation of macro- and microalgae follow.

What to make of these beleagured efforts to present algae in an attractive yet rather static light? The student and instructor must turn elsewhere for modern orientation on where algae fit in the evolutionary panorama. That well under way, one can happily cherish the book as the culminating masterpiece of its genre: a superb introduction to how perfervid botanists view algae.

The protistologist David Patterson had recently to orient a meeting of embattled protozoologists, dealing with vast, horrendous, poorly treatable algal diseases, and where advances ever more clearly rest in large measure on an accurate grasp of phylogenetic relationships. Said he:

> Partisan schemes that consider only algae or only protozoa . . . are no longer acceptable as they misrepresent present knowledge and understanding (D. R. Patterson, *Mem. Inst. Oswaldo Cruz, Suppl. 1,* 83: 580–600, 1988; p. 588).

He proposed a scheme to "faithfully depict ignorance" . . . (op. cit., p. 582).

Conclusion: If you *will* work with algae, flagellated or phagotrophic or otherwise, and you have students, get the book and hope that a new edition, remaining within student means and faithful to artistry, will