BOOK REVIEWS

The Jepson Manual: Higher Plants of California. Edited by James C. Hickman. University of California Press, 2120 Berkeley Way, Berkeley, CA 94720. ISBN 0-520-08255-9. 1993. xvii + 1400 pp/240 illus. $65 (cloth).

Many superlatives are used to characterize California (and Californians); now the State has a new flora which can only be described as monumental. Jim Hickman (editor), Dieter Wilken (project manager), Larry Heckard (project originator), et al. must be heartily congratulated for their ideals, energy, and fortitude in organizing and carrying to completion within 10 years this multi-authored (approx. 200) volume.

This “manual” (8.5 x 11 inches and nearly 5.5 pounds) includes descriptions of the 173 families, 1222 genera, 5862 species, and 1169 subspecies or varieties known to occur outside of cultivation in California. The first chapter introduces the “Philosophy and History of The Jepson Manual Project.” The next several chapters are basically an explanation on how to use the manual and include: conventions used, abbreviations and symbols, commonness and rarity, horticultural information, and geographic subdivisions of California. These chapters are critical in order to properly use and understand the manual, because it is written for a broad, California-based audience including “beginning students, self-taught amateurs, environmental consultants, native-plant gardeners, employees of diverse government agencies, ecologists, and academic systematists.” The ecological and horticultural conventions and symbols are especially unique to California, albeit completely logical and usable to non-native Californians such as myself. The last two chapters of the introduction, “California’s Geological History and Changing Landscapes” (by Jeffrey P. Schaffer) and “California’s Changing Climates and Flora” (by Dieter H. Wilken), are detailed and very interesting to read. The key to families worked very well for those I tried. The taxonomic treatment (the bulk of the text) is arranged alphabetically by family (and genus and species) under four main groups: ferns and fern allies, gymnosperms, dicots, and monocots. Keys are provided to the genera, species, subspecies, and varieties. The format of the descriptions is short, concise, and generally very consistent within the various treatments, and along with the keys is adequate to identify the plants. Nearly all genera are illustrated by small (very good) line drawings arranged in composite plates (240 total plates). Next follow three appendices. Appendix I is a “Floristic Summary: Numbers of Taxa in Taxonomic Groups” (for example, the proportion of endemics among all species, subspecies, and varieties is 30.6%). Appendix II is a “Classification of California Plant Names” (based on Lellinger for pteridophytes and Cronquist for flowering plants). Appendix III is titled “Name Changes from Recent References” (reflecting scientific name changes of California plants from those accepted by, for example, Munz). The book ends with an Index that includes all common names used in the manual, scientific names of families and genera, and synonyms. An informative and attractive color plate, “Geographic Subdivisions of California,” is found on both inside covers and on p. 45 of the text, and a very pretty jacket covers the book. All-in-all a very nice flora at a price you can afford!—JAMES L. LUTEYN, The New York Botanical Garden, Bronx, New York 10458-5126, U.S.A.

The Botanizers: Amateur scientists in nineteenth-century America. By Elizabeth B. Keeney. The University of North Carolina Press, Chapel Hill, NC. ISBN 0-8078-2046-6. 1992. 206 pp. $34.95 (cloth).

Professor Keeney relates a fascinating story of the waxing and waning of botanical studies in the developing educational system in the United States from before the Civil War to the early 20th century. Today, environmental concerns are certainly waxing, “botanizing” seems to be healthy judging by the fieldbooks available in the bookstores, while professional systematic botany is scarcely holding its own. Keeney’s book serves to provide some historical perspective of nature study in the schools, and to the relationship between amateur botanists and the professionals. Keeney discusses the background of the authors of the major botanical textbooks of the 19th century: Lincoln Phelps, Amos Eaton, Asa Gray, and Alonzo Wood. It is still easy to find copies
of the publications of Alonzo Wood or Asa Gray in used book stores. One chapter, entitled "Gender and Botany," relates something of the careers of Mary Katherine Brandegee, Alice Eastwood, and Kate Furbish. In fact, it was a woman, Lincoln Phelps, who dominated the botanical textbook market in the eastern United States before the Civil War. For most of the period covered, botanizing was considered a suitable diversion for proper young ladies, but only the young men were expected to wade through the brush or muddy themselves in the field!

The urge to study nature is inborn, and every generation seems to have a new push to incorporate this urge into education. Keeney discusses the changing rationale for nature study: self-improvement, personal health, mental exercise, and utilitarian purposes. Much of the impetus for including nature study in the 19th century curriculum was to reacquaint the youth of the growing towns and cities with nature. How much more work there is to be done today when only a miniscule fraction of Americans actually live on farms! Illustrated books and the panoply of visual presentations can give today's students, without the everyday familiarity with nature of earlier generations, a view of the world unavailable previously.

It is gratifying and frightening to realize how far science has come in a century and a half in the period covered by this book. In the 19th century, a textbook and a condensed version of the flora of the northeastern United States could sufficiently cover botany. Whole areas of study such as evolution were at that time only roughly perceived, while other areas such as genetics and DNA were unknown in any scientific way. Would it be possible to re-introduce systematic botany into the high school curriculum? With the scientific and information explosion of the late 20th century, this seems to be an impossibility—there are simply too many fields of knowledge to present to the young. The relative importance of systematics at all levels is rapidly losing ground to the "cutting-edge" disciplines, for better or for worse. The herbarium of the New York Botanical Garden is one of the major present-day repositories for much of the botanizing done by the students chronicled in this book, as smaller colleges and universities decide to no longer maintain herbaria or a position for a systematic botanist. In several large centers such as New York, St. Louis, Washington, D. C., and Chicago, almost all the systematic botany has been concentrated in a single museum, while the surrounding universities ignore systematics or offer only sporadic courses. The beginnings of this divorce between the amateur botanists and the professionals is chronicled in The Botanizers.

The style is not that of a densely constructed research paper for a scientific journal, and at times I wished for a more tightly edited text. Then I would smile to myself, realizing that part of the charm of the book was to ramble through the history of botanical education in the United States much as we botanizers ramble through the countryside.—MICHAEL NEE, The New York Botanical Garden, Bronx, New York 10458, U.S.A.
knowledge of *Arum*: it is well written, concise, the keys workable, and the synonymy and descriptions complete. The chapter on cultivation is generalized but is supplemented by cultivation notes supplied for most species. The plants are very well illustrated. Both Sellars and Farrer are excellent artists providing detailed illustrations of the plants and their colors; Sellars appears to be superior in representing the texture of the leaves and spathes. In the copy I have at hand, the plates are well printed with true and well registered colors. The line drawings are accurate and detailed with excellent stippling; the drawings would be easier to find and cite if the figures were numbered (as was done for the color plates and the maps).

The distribution maps are the weakest part of the book. It is often not immediately apparent what geographic area a map represents. Each map should have included geographic coordinates and more geographic names including key towns and rivers. Use of broadly spaced diagonal lines does not permit the resolution necessary to accurately depict the range of each species; it also forces the inclusion of large bodies of water within the ranges of some species, something I find quite disconcerting.

The book is very well done (despite the disproportionate space allotted here to the shortcomings of the maps) and its acquisition should be seriously considered by botanists and aroid enthusiasts.—WAYT THOMAS, The New York Botanical Garden, Bronx, New York 10458-5126, U.S.A.

**Erdtman’s Handbook of Palynology.** Edited by S. Nilsson and J. Praglowski. 2nd revised edition. Munksgaard International Publishers, 35 Norre Sogade, P.O. Box 2148, DK-1016 Copenhagen K, Denmark. ISBN 87-16-10846-9. 1992. 576 pp. $111.00 (cloth).

The original edition published in 1969 was the first comprehensive textbook of palynology and quickly became established as a popular standard reference. The new edition has been extensively revised and modernized to produce a fine book that is certain of similar success. The book is composed of sixteen main themes, many of which are authored by Erdtman, with updated articles by invited specialists such as: Stephen Blackmore, Donald E. Stone and W. J. Kress, William A. S. Sarjeant, Siwert Nilsson, and Yvonne Arremo. The sixteen themes include: pollen and spore morphology; palynology and electron microscopy (by A. Dunbar); palynology and cytology; pollen and spore morphology and plant taxonomy; pollen production, weight and dispersal of pollen grains, etc.; recent pollen spectra; pollen analysis and criminology; the apocrats and the history of weeds; pollen diagrams from bog and soil profiles; palynology and economic geology; photomicrography of recent and fossil pollen grains and spores (by K. E. Samuelsson and Y. Arremo); scanning electron microscopy (by S. Blackmore); the application of transmission electron microscopy and cytochemistry in palynology (by D. E. Stone and W. J. Kress); microfossils other than pollen and spores in palynological preparations (by W. A. S. Sarjeant), and aeropalynology (by S. Nilsson).

The first eleven themes provide a sound and well-balanced coverage of palynology and present insight into many interconnected disciplines without altering the original ideas or main text. Articles by invited specialists convey current methods and concepts in an attempt to cover the 20 years of development since the book was last published. Articles by Blackmore and by Stone and Kress are of special interest because electron microscopy and cytochemical techniques continue to be important in palynology. Both these articles provide brief but excellent coverage of current techniques and their applications plus a list of pertinent, up-to-date references.

The book is well illustrated with line drawings and light, scanning electron, and transmission electron micrographs. Most illustrations are of excellent quality and the inclusion of a white background behind most of the black letters in the figures enhances the readability of the figures. Some of the plates, however, are not as crisp as those in the original edition, and there are several mistakes. For example, in plate 22 the R for ribosomes is missing in the figure, plate 29 is upside down (even though this does not affect the information being presented), and plate 53 has an unmarked and uncaptioned figure. These are minor problems and should not detract from the overall quality and usefulness of this book.

The text is complemented by an expanded list of references including new periodicals and handbooks.

The price of the book may prove prohibitive.
to many prospective purchasers, particularly students. It is hoped that the publishers of the new edition will also produce a soft-cover version in the near future. The textbook is a must for anyone interested in plant taxonomy, paleobotany, phytogeography, ecology, acrobiology, agriculture, criminology, and other fields related to the science of palynology.—CYNTHIA M. MORTON. The New York Botanical Garden. Bronx, New York. 10458-5126, U.S.A.

BOOKS RECEIVED

Arboles y Arbustos de los Andes del Ecuador. By Carmen Ulloa Ulloa and Peter Moller Jorgensen. AAU Reports 30. Department of Systematic Botany, Aarhus University in collaboration with Departamento de Ciencias Biológicas, Pontificia Universidad Católica del Ecuador, Quito. 1993. Distributed by Aarhus University Press, Aarhus University, DK-8000 Aarhus C, Denmark. ISBN 87-87600-39-0. 263 pp. 80 DKK (paper).

Neotropical Montane Forests: Biodiversity and Conservation: Abstracts from a Symposium at The New York Botanical Garden, June 21–26, 1993. Edited by Henrik Balsev. AAU Reports 31. Department of Systematic Botany, Aarhus University in collaboration with The New York Botanical Garden. 1993. Distributed by Aarhus University Press, Aarhus University, DK-8000 Aarhus C, Denmark. ISBN 87-87600-40-4. 111 pp. 78 DKK (paper).

Ectomicorrizas y micorrizas vesiculo-arbusculares en Caatinga Amazonica del Sur de Venezuela. By Bernard Moyersoen. Scientia Guianae. No. 3. 1993. Distributed in Europe by Koeltz Scientific Books, D-6240 Königstein, Germany, and in U.S. and Canada by Koeltz Scientific Books, Champaign, Illinois 61821. ISSN 0798-1120, ISBN 980-07-1486-3. 82 pp. (price not given).

Umbelliferae (Apiaceae) of India. By Prasanta Kumar Mukherjee and Lincoln Constance. American Institute of Indian Studies and Oxford and IBH Publishing Co. Pvt. LTD. Distributed in the U.S. by International Science Publishers, 52 LaBombard Rd. North, Lebanon, NH 03766. ISBN 1-881570-26-6. 1993. 279 pp. $59.00 (cloth).

Nature's Champion: B. W. Wells, Tar Heel Ecologist. By James R. Troyer. The University of North Carolina Press. P.O. Box 2288, Chapel Hill, NC 27515-2288. ISBN 0-8078-2081-4. 1993. 243 pp. $24.95 (cloth).

Forest Dynamics: An Ecological Model. By Daniel Botkin. Oxford University Press, Inc. 200 Madison Ave. New York, NY 10016. ISBN 0-19-506555-7. 1993. 309 pp. $49.95 (cloth).

The Vascular Flora of Pennsylvania: Annotated Checklist and Atlas. By Ann Fowler Rhoads and William McKinley Klein Jr. American Philosophical Society, 104 South Fifth Street, Philadelphia, PA 19106. ISBN 0-87169-207-4. 1993. 636 pp. $50.00 (cloth).