BOOKS

Illustrations of Pteridophytes of Japan, Volume 4, edited by S. Kurata and T. Nakaike. Tokyo: University of Tokyo Press, 1985. x + 850 pages + maps. Available in the United States from Columbia University Press. $64.95.

DAVID E. BOUFFORD

This volume represents the fourth in a regularly appearing series that began in 1979 and that eventually will treat the more than six hundred species of ferns and fern allies occurring in Japan proper, the Ryukyu Islands, and the Bonin Islands. As with volumes 1 through 3, Volume 4 treats one hundred taxa, providing for each a full-page habit–habitat photograph, a full-page line drawing of a frond or of fronds, frequently with detailed drawings of critically important parts (scales, sori, etc.), a full-page map showing distribution, and numerous citations of specimens on which the distribution is based. The citations are extensive and take up the major portion of the book. Photographs of spores taken through a light microscope of every taxon treated in the text are covered in seven pages at the back of the book; three pages of documentation accompany these photographs. The book is entirely in Japanese except for plant names and the measurements for the line drawings. Despite this, English-language readers can obtain much useful information. For those interested in growing ferns, the photographs provide habitat data, and the distribution maps are extremely helpful for determining hardiness, especially if one considers that species that grow on Hokkaido or through the central backbone and northern portions of Honshu probably would grow in New England and in much of the Appalachian region, and that ferns from other parts of Japan probably would grow throughout the warmer parts of the eastern and southeastern United States. The line drawings (by several different artists) are valuable aids in identification.

The major families covered in this volume (their names are given in Japanese only) are the Equisetaceae, Isoetaceae, Marattiaceae, Schizaeaceae, Pteridaceae, Davalliaceae, Plagiogyriaceae, Cyatheaceae, Aspidiaceae, and Aspleniaceae, but not all genera in each of those families are treated. For example, Volume 4 covers most Japanese species of *Dryopteris*, but others are covered in volume 2; species of *Pteris* are also in Volumes 1 and 4. An unfortunate aspect of the work is the absence of synonymy.

The book is of the highest-quality production, and the illustrations and photographs are first rate. For anyone interested in the relationships of North American and eastern Asian ferns the illustrations alone are highly informative and useful. For the quality of production the book is reasonably priced, but if one thinks of buying the complete set one should consider the total cost of what may eventually be a seven-volume set.

Additional comments on this series can be found in the reviews of volumes 1, 2, and 3 published in the *American Fern Journal* (Cranfill, 1982; Price, 1982, 1984).

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David E. Boufford is Curatorial Taxonomist of the Arnold Arboretum's Living Collections.

Native and Cultivated Conifers of Northeastern North America: A Guide, by Edward A. Cope. Ithaca, New York, and London: Cornell University Press, 1986. 231 pages. $39.95 (cloth), $17.95 (paper).

RICHARD WARREN

This book is wholly directed at the identification of conifers and at distinguishing them from each other. It gives no attention to cultivation, propagation, or the diseases that affect them.

The order Coniferales contains sixty-four genera and some five hundred seventy species. In order not to be tediously encyclopedic, a manual, or guide, on conifers, therefore, requires thorough winnowing of the material to be discussed. Only then can the size be manageable and the treatment sufficiently thorough to interest horticulturists and taxonomists. The author has done this wisely, focussing on northeastern North America (Canada to southern Pennsylvania, and the Atlantic shore to Kansas).

But even with such defined boundaries one cannot be strict. When he was in doubt about the hardiness of a plant, for instance, the author usually has included it. He lists, for example, *Cunninghamia lanceolata*, *Pinus ayrcahiute*, and *Sequoiadendron gigantea*, which do grow in the Boston area, but with considerable difficulty. He has not included the "southern pines," other than those, such as *Pinus echinata* and *Pinus virginiana*, which are not exclusively "southern." We miss the other southern species, of course, but that can't be helped; the dividing line has been drawn as judiciously as possible. One inconsistency does catch the eye, namely, the inclusion of a drawing of *Cypressus macrocarpa*, which is definitely not hardy in the northeastern United States—nor does the author contend that it is. The inclusion of the drawing is unnecessary.

With the passage of time, the numbers of genera officially accepted in the Coniferales, as in other orders of plants, has inexorably increased. These have grown in the last twenty years from fifty-four (Dallimore and Jackson, 1966) to sixty-four (the present work). Eight have been added in the Podocarpaceae and two in the Cupressaceae. The author lists these in Appendix 2, a helpful tabulation of the genera currently recognized.

According to modern custom, the Taxaceae are included in both Cope's present treatment and Dallimore and Jackson (1966).

Cope's tally of cultivars is comprehensive—2,669 in all. Many of his descriptions are telegraphic: "growth conical, rapid," "growth rounded, dense, branch tips feathery, some leaves needle-like," "growth columnar to conical, twigs cord-like, clustered." Even though some have no description (*nomina nuda*), the checklist is useful, since even setting down the name by itself is a form of introduction to the reader, who may only be needing reassurance that the plant exists.

The illustrations are an interesting and important part of the book. Their best feature is the fine line drawings of branchlets with their attached leaves, clear and simple, designed to show such things as hairiness and grooving of the branchlets, the shape, attachments to the branchlet and presence or absence of stomata on the leaves. They are set alongside the keys principally to demonstrate a decisive feature for establishing identification. This use of focussed drawings to draw attention to a taxonomic point and juxtaposed to the appropriate spot in the key should be used, in my opinion, more widely in books of this kind. The quality of the drawings is, on the whole, of high standard. A few, however, such as of leaf attachments on *Taxus*, are too congested to demonstrate the desired features clearly.

Photographs of one of this species stands at the beginning of the treatment of each genus. These usually do show the habit, but the photographic reproductions are not clear enough in most instances to reveal details of foliage.

The author confines himself to vegetative characteristics to establish identification, a praiseworthy attempt at simplification, but like most of us who have attempted to do this, he has frequently given in and mentioned cones. He understandably resorts, for instance, to noting the exsertion of the cone scale bracts in *Abies fraseri* to distinguish it from *Abies balsamea*. I also wish that he had added other features, such as position of the resin canals in the leaves of *Abies*. These can help in distinguishing the species of that genus. Furthermore, those who, unlike myself, are in full possession of their olfactory powers, will surely miss reference to odors of crushed foliage. The aromatic odor of members of the genus *Thuja*, for instance, is strikingly and pleasingly different from that of members of the genus *Chamaecyparis*, which is dull and somewhat foetid, particularly that of *Chamaecyparis nootkatensis*.

In some places the presentation is slightly confusing. To derive a full description of a plant, one must study not only the separate treatment that appears after the key, but also that contained in the key itself. *Pseudotsuga menziesii* (the Douglas fir), for instance, appears on page 146, followed by a general description, including that of the characteristic cone, but to appreciate the importance in identification of the very characteristic pointed winter bud, one must turn to page 21, where it appears in the key to coniferous genera. The index, however, is very good, and everything can be found with assiduous turning of pages.

Although outstanding manuals on conifers have appeared over recent decades in Europe and Britain, we have not seen one from the United States since Liberty Hyde Bailey's *The Cultivated Coni-*

fers was published in 1933. This excellent manual, like Bailey's the result of work done at Cornell University, is, therefore, doubly welcome.

Richard Warren, M.D.., is an Associate of the Arnold Arboretum and Honorary Curator of its Conifer Collection.

Rocky Mountain Alpines: The International Alpines Conference 1986, edited by Jean Williams. Portland, Oregon: Timber Press, 1986. 300 pages. $35.00.

JUDY GLATTSTEIN

When wildflowers are mentioned, people tend to think first of the ephemerals of the spring woods—trilliums, violets, bloodroot—then, perhaps, of "meadow gardening" pursued as an alternative to keeping a lawn. Rock gardening, for some reason, they distinguish from wildflower gardening. But ever since Reginald Farrer of England began writing on the virtues and shortcomings of alpine plants in the early years of this century, interest in them has grown. In the decades since, plants have been brought into cultivation from the mountain ranges of Europe and Asia. In 1934, the American Rock Garden Society was formed. At long last, wildflowers from the mountains of America are taking their rightful place as desirable plants for rock, or alpine, gardens both in the United States and abroad.

The Second Interim International Rock Garden Conference was held in Boulder Colorado, from June 28 through July 3, 1986, its theme being "The Rocky Mountains, Backbone of the Continent." A book, *Rocky Mountain Alpines,* was prepared in advance of the Conference, like the Conference the shared responsibility of the American Rock Garden Society, the Denver Botanic Garden, and the Rock Mountain Chapter of the American Rock Garden Society. Over forty authorities on various aspects of the Rockies contributed material about their specialties. Hardbound and three hundred pages long, this hefty ($8\frac{1}{2}$ by 11 inches) book is no pocket guide for slipping into your pack as you scramble about above ten thousand feet. It is too big and heavy for that.

Rocky Mountain Alpines is definitely a book for the advanced amateur—rather than novice—in rock, or alpine, gardening. The Latin names of plants are used, as they should be, and familiarity with many of the plants is tacitly expected. Most chapters conclude with a list of references; there is also a bibliography of books and periodicals.

The book is divided into three parts: "The Roots of the Rockies," "Wild Rock Gardens of the Rockies," and "Rocky Mountain Plants in Cultivation." Black-and-white illustrations of plants and scenery and excellent four-page color sections scattered throughout the book enhance the text. "The Roots of the Rockies" covers the geology, climate, and early botanizing and rock gardening in the Rockies. Maps and charts give clear information on hardiness zones, solar radiation, and precipitation. "Wild Rock Gardens of the Rockies" is divided into five sections. Since it stretches some three thousand miles, from Canada into Mexico, there are regional differences in

the Rocky Mountain chain. The five sections deal with "Northern Rockies: Glacier and Muskeg," "Middle Rockies: Sagebrush and Scree," "Southern Rockies: Peaks and Parklands," "Colorado Plateau: Canyons and Color," and "Western Drylands: Plains and Plateaus." Chapters within each section describe a particular area, "walking" the reader onto a trail and describing plants to be found along the way. A map of the area to be discussed precedes each chapter.

For the rock gardener, Part Three (on Rocky Mountain plants in cultivation) is the most valuable part of the book. It, in turn, is divided into three sections. The first deals with Denver Botanic Gardens's experience with these plants in cultivation in the Rocky Mountains. It has six pages of valuable information on seed propagation. In my opinion, Denver Botanic Gardens have an excellent, world-class rock garden. The second section, "In the Garden: Adapting to Microclimates," is probably the most uneven portion of the book. I find it to be more of an eclectic grouping of information on the cultivation of plants than a discussion about adapting to microclimates. It deals with cultivation under lights and in troughs (containers), commercial production, cultivation in a rare-plant nursery and in dry sand, cultivation on hummocks, and the overall design of private gardens. The information on culture is good and should be helpful to gardeners attempting to cultivate plants from the drylands of the West in more humid climates. The third section, "Around the World: Adapting to Different Climates," has chapters on the cultivation of Rocky Mountain alpine plants in the Northeast, the Midwest, and the Northwest regions of the United States; Great Britain; Iceland; Czechoslovakia; and Japan. This section, too, is uneven in quality. The information about climatic conditions and on providing proper growing conditions in the various countries or regions is helpful. Brief, one- or two-line items about individual plants are sometimes useful, often cryptic.

Rocky Mountain Alpines provides a guide to areas worth visiting for the sake of their floras, whetting the reader's appetite. Its discussions of propagation and cultivation lend hope to the lowland gardener. Most importantly, it focusses attention at last on the fascinating flora of the Rocky Mountains. Growers of exhibition dahlias probably will find little of interest in the book. Rock gardeners will love it.

Judy Glattstein, a landscape consultant, who specializes in perennial-border design and the use of native plants in the landscape, chairs the American Rock Garden Society's Connecticut Chapter. She is an instructor at The New York Botanical Garden and at the Brooklyn Botanic Gardens.

Azaleas, by Fred Galle. Portland, Oregon: Timber Press, 1985. 438 pages. $65.00.

C. J. PATTERSON

There has been a need for a comprehensive book on azaleas for a long time, a situation aggravated by the avalanche of new information and registered cultivars over the last ten years. Dr. Fred C. Galle, retired director of Callaway Gardens in

Georgia, has undertaken to write just such a book.

His credentials for the task are impressive. Decades of devoted work at Callaway Gardens have given him direct experience with the horticultural side of evergreen azaleas, and a personal enthusiasm for our native deciduous azaleas (the subject of his doctoral dissertation) has schooled him as a botanist. He is a hybridizer and has introduced both his own azalea hybrids and selections, taken from the wild, of native species and natural hybrids. In addition, he is by nature a careful, meticulous, scholarly worker, with a writing style that flows very smoothly and is easy to read. To expand the scope of his book he has brought in assistance on the technical chapters on hybridizing and diseases.

The book begins simply, with a discussion on the use of color. The heart of the book begins with a set of wonderful keys and a very brief treatment of azalea nomenclature and taxonomy. Deciduous and evergreen azaleas are discussed separately in a format that describes all the species in that section first and then deals with the hybrids of that section.

Dr. Galle has divided the hybrids into groups according to hybridizer, parentage, and/or place of origin, forming a series of lists. Each cultivar is described by hybridizer, parentage (where known), date of introduction and/or registration, size, growth habit, and color. The lists make up the bulk—about three-fifths—of the text.

The lists can be confusing because azalea varieties have frequently been segregated into new categories, where before the varieties had been combined in the public's mind. There is, fortunately, an index of all the named varieties, which allows one to find a particular azalea, even in total ignorance of its origins or hybridizer.

The book closes with very readable and clear chapters on pests and diseases, cultivation, hybridizers, azalea introductions, and lists of azaleas under several headings.

Unfortunately, *Azaleas* is not without flaws. It is a very large volume, six hundred pages in a large format (including three hundred sixty-six color plates) and deals with a complex subject. No reasonable reader demands perfection in a book of such size and scope, but the editing of *Azaleas* (the publisher's responsibility) is worse than usual. Inaccuracies and misspellings dot the work like plums in a pudding, detracting from the whole. The index is inaccurate, and the photography is mediocre, with many dark, ill-defined, and blurred shots—not to mention one photograph that is upsidedown.

Yet not only the editing could have been better. I can only say that any reader not already thoroughly familiar with the taxonomy of deciduous azaleas would have to come away frustrated, confused, and disappointed from the chapter on that subject. After explaining that the classification of deciduous azaleas is controversial and presenting a tantalizing "tip of the iceberg," Dr. Galle proceeds to pick one system to use and blithely continues using it, failing to tell us why he chose it, or even to explain clearly how the systems differ from one another. In fact, he dismisses years of careful research on this difficult and important problem (including his own) by presenting an outline of other books that have published the research results. Even a casual reader is likely to want at least a summary of the research; the serious reader

is genuinely hampered in his understanding of this section. There is the additional annoyance of having paid more than sixty dollars for a "complete" work on azaleas only to be referred to other books for the information one seeks. Add to this the long list of new evergreen azalea species about which only sketchy information is yet available and one is left with the suspicion that we will need yet another "definitive work" on azaleas in the not distant future.

Despite its flaws, *Azaleas* is still the best and most complete (and certainly the most ambitious) reference work devoted solely to azaleas yet written. Every good horticultural library should own it, and I am sure that many private gardeners and gardens would benefit enormously from its enthusiastic treatment of this important group of plants.

C. J. Patterson is one of the mainstays of the Arnold Arboretum's Plant Information Hotline. A member of the American Rhododendron Society, she is an avid grower and collector of native deciduous species of azalea.

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