BOOK REVIEWS

Rhododendrons in Horticulture & Science. Edited by George Argent & Marjory McFarlane. Edinburgh: Royal Botanic Garden Edinburgh. 2003. viii + 312pp., 56 colour plates. ISBN 1 872291 49 X. £35 (softback).
DOI: 10.10M/S0960428604210071

This book covers the presentations given at the 2nd International Rhododendron Conference held from 17 to 19 May 2002 at the Royal Botanic Garden Edinburgh (RBGE) and very ably organized by the editors of this book. This conference was co-sponsored by RBGE, the Royal Horticultural Society (RHS) and the Scottish Rhododendron Society. RBGE has for long been the world centre of rhododendron classification and it was very fitting that another conference should have been held there.

An amazing conglomeration of different subjects connected with rhododendrons was fitted into the three days, possibly a wider range than has ever been gathered together before. So much information was packed into a short space of time that even those with a prodigious memory could not possibly remember any but a small part of the proceedings. To have it all written up in the form of a book enhances the value of such a conference enormously, refreshing one's memory and putting together details long forgotten.

The subjects covered range from descriptions of gardens and plants in the wild, which are easy to listen to and read, to the ultra-scientific dissertation that the layman can find all but impossible to understand. Included are several photographs (mostly in colour), many diagrams, charts and graphs, and a photograph of all who attended.

Several papers cover plant hunting in the wild. Kenneth Cox writes about Frank Kingdon Ward's *Riddle of the Tsangpo Gorges* and recent explorations by him and others of the same area, leading to a new edition of the book, edited by him with many new illustrations. David Chamberlain tells us about rhododendrons in the wild from a taxonomist's point of view, while David Binney gives us some idea of the vireyas he found on the island of Sulawesi which had been little explored until recently. George Argent describes the distribution of vireyas in New Guinea according to altitude and Steve Hootman produces a vivid description of the rhododendrons he saw on the Burmese (Myanmar) and Tibetan frontiers with Yunnan. Rebecca Pradhan details the rhododendrons of Bhutan.

Conservation comes very much to the fore with David Rae on the impact of the Convention on Biological Diversity, and Li De-zhu and David Paterson on the joint project near Lijiang, Yunnan of RBGE and the Kunming Botanical Institute, which includes the repatriation of rhododendron species from cultivation. Also connected

with conservation are the papers given on alien invasive weeds including *Rhododendron ponticum* L. by Harry Evans, followed by a history of the same plant in Britain by Ian Rotherham who points out the similarities in the behaviour of *R. ponticum* and *R. maximum* in its native North America. The pros and cons of *R. ponticum* in the British countryside are discussed.

Gardens are by no means neglected, with fascinating descriptions of Glenarn by Michael Thornley and Pukeiti, that great garden in New Zealand, by Graham Smith. The exciting new project in the Bremen Botanic Garden is described by Hartwig Schepker and Michael Werbeck.

The cultivation of vireyas is becoming much easier now that we know how to treat them. David Mitchell tells us the secrets of how they are grown at RBGE and Chris Fairweather writes on growing them commercially.

The register of rhododendron hybrids in their thousands is about to be published by the RHS based on the monumental work of Alan Leslie. Included in the poster descriptions near the end of the book, Susan Grayer and Diana Miller discuss the importance of 'standard' herbarium specimens and photographs in the future identification of registered hybrids. Michael Lear and Rachel Martin cover the enormous task of sorting out the hybrids at Exbury. Late-flowering hybrids are discussed by Mike Robertson. Jim Gardiner explains the importance of the rhododendron hybrid trials at Wisley.

A problem that keeps on threatening us with additional horrors is diseases. Stephan Helfer tells us the latest on powdery mildew. Roy Watling gives us a frightening list of what can affect rhododendrons but luckily the majority of these diseases are of little consequence to most of us. Special attention is drawn to hygiene. Cold hardiness is also discussed from a scientific angle.

Taxonomy is ably covered by Kathy Kron on rhododendron relatives, Gillian Brown on vireyas, Eric Nielsen on vireya leaves and David Rankin on the importance of leaf waxes in classifying species, such as those in subsection *Taliensia*, which are difficult to sort out. James Cullen writes about the importance of verified living collections in taxonomy. His assertion that only botanic garden collections are of importance is strictly not true as a few private collections have more accurately named plants (with or without collector numbers) than most, if not all, botanic gardens.

Finally, there are descriptions of the various posters. These I find the only unsatisfactory part of the book. The effect of lime-tolerant rootstocks was written up before any conclusions could be made, so I see little point in including it. A molecular phylogeny of lepidote rhododendrons based on a low copy number nuclear gene sounds interesting in its introduction but I defy any layman to understand the rest.

This book is well worth reading by all rhododendron-lovers, both those who attended the conference and those who did not, for the wealth of information it covers.

P. A. Cox

Flora Ornamental Española. J.M. Sánchez de Lorenzo de Cáceres (coordinador). Tomo 1, Magnoliaceae–Casuarinaceae (2000); Tomo 2, Cactaceae–Cucurbitaceae (2000); Tomo 3, Salicaceae–Chrysobalanaceae (2003). Coedición Junta de Andalucía, Consejería de Agricultura y Pesca; Ediciones Mundi-Prensa (Madrid, Barcelona, México); Asociación Española de Parques y Jardines Públicos. ISBN 84 8474 000 3 or 84 8474 000 5. €110/£75 for the three volumes.

Flora Alpina. D. Aeschimann, K. Lauber, D.M. Moser & J.-P. Theurillat. Vol. 1, Lycopodiaceae–Apiaceae; Vol. 2, Gentianaceae–Orchidaceae; Vol. 3, Register. Bern, Stuttgart & Wien: Haupt Verlag. 2004. ISBN 3 258 06600 0. £193. NB. The German edition is reviewed here. The French edition is listed at the price of £154.
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Here are two new well-illustrated Floras, both of considerable interest to gardeners and growers, and each with its own particular scope, content and style.

The first of them, *Flora Ornamental Española*, is devoted to those plants cultivated in the gardens of Spain including the Canary Islands. As yet incomplete (six volumes are planned), it is worth drawing to the attention of interested gardeners, as it appears not to be widely known outside its native country.

The writing of the Flora is coordinated by one of its authors, J.M. Sánchez de Lorenzo de Cáceres of the Servicio de Parques y Jardines, Ayuntamiento de Murcia; the other authors are A.L. Lillo (Consejería de Medio Ambiente, Communidad de Madrid), M. del Mar Trigo Pérez (Universidad de Málaga) and X.A. de Vilardaga (Colegio Oficial de Ingenieros Técnicos Agrícolas de Cataluña).

Following the system of G.L. Stebbins (as used in V.H. Heywood's influential *Flowering Plants of the World*, 1978 and subsequent editions and reprints), there is a full apparatus of keys, synonymy, descriptions and observations, apart from a key to families, which may however appear in a later volume. The keys and descriptions are short and precise, and the observations contain information of various kinds, including propagation techniques, growing requirements, site conditions, common cultivars, etc. The layout is spacious and easy to use, being facilitated by the fact that the names, synonymy and observations are printed in green, the keys and the descriptions in black.

For most genera there is a photograph of at least one species. These photographs are of various sizes, inset into the text in various ways, and generally of very high quality. They will be of enormous value to the user interested in identifying cultivated plants in Spain and the Mediterranean generally.

This is a beautifully produced work, and I look forward to its completion.

The other Flora deals with the wild plants of the mountains of Europe, mainly the Alps, but also the Pyrenees, Apennines, Jura, Vosges and Schwarzwald, the Dinaric Alps and parts of the Balkan mountains. The Flora '. . . präsentiert 4,500 Gefässpflanzen, welche die pflanzliche Diversität des Alpenbogens verkörpen' (presents 4500 vascular plants, which embody the plant diversity of the Alpine region). A detailed introduction provides information on the history of plant

exploration in the areas under consideration, and elucidates the details provided with each species. These details contain much useful information for students of alpine botany and growers, including distribution maps in the areas covered by the Flora, total geographical distribution, nomenclature, vernacular names (in German, French, Italian, Slovenian and English), life-forms, height, phenology, soil pH and fertility, water requirements and altitude. All this information is provided in an extremely compressed but easily understood form. A loose plastic sheet with explanations of most of the abbreviations and symbols used is provided with volumes 1 and 2.

The species are listed following Melchior's *Syllabus der Pflanzenfamilien*, vol. 2, ed. 12 (1964). There are no keys and no descriptions as such, but each species takes up a quadrant of a left-hand page, where all the above information is provided. On the facing right-hand page, the equivalent quadrant is taken up with one or more photographs of the species in question. These photographs, by Konrad Lauber, are the real heart of the work. Their quality is uniformly excellent and in some cases quite outstanding (e.g. *Pritzelago alpina* subsp. *brevicaulis* in vol. 1, p. 569). My colleagues interested in the growing of alpines have spent a lot of time just admiring these photographs, and comparing them with the plants that they grow. As a source of illustrations for alpine plants the book is outstanding; not only beautiful in itself but immensely useful in terms of providing clear and accurate images of a very wide range of plants likely to be seen while wandering through the mountainous regions of central Europe, or through any botanic garden with a good alpine section. It has to be said though that the book is perhaps too heavy for easy carrying through rugged terrain.

The third volume, *Register*, is mostly taken up with the main index, but also includes a table of the families and genera included, a list of endemic taxa, and indexes to the common names in the five languages given in the text.

This is a book that should be known and used by anyone, whether traveller or gardener, interested in alpine plants.

J. CULLEN

Flora of Siberia. Vol. 1. Lycopodiaceae–Hydrocharitaceae. Editor-in-chief L.I. Malyschev. Enfield, NH: Science Publishers, Inc. 2000. 208pp. ISBN 1 57808 072 X (Volume 1). US$75.

DOI: 10.10M/S0960428604230074

This volume, the first of a series of 14 first published in 1988, now appears in English translation. The preface outlines the difficulties in gathering information for such a large region. The different phases of activity required to produce this series occupied most of the 20th century. The first 20 pages contain keys for all the families described in this and the following volumes. These keys are particularly valuable as this is the first time a key has been provided for all Siberian higher plants. This volume covers 160 species of pteridophytes, conifers with *Ephedra*, followed by the

first part of the monocotyledonous plants – the *Liliopsida*. This arrangement is acknowledged to be unusual but was chosen to correspond to the *Flora SSSR*.

The main part of the book consists of short species descriptions and clear line drawings interspersed with the text. These drawings selectively illustrate the essential comparative features where this is significant for identification. Notes are given on the distribution elsewhere in the world with more precise details on the regions within Siberia, and there are maps for most species at the end of the book. The descriptions are necessarily brief and as a result do not always include the characters essential for differentiation, for example the distinction between *Cystopteris fragilis* and *C. dickieana* which depends on contrasting spiny as opposed to rugose-verrucose spores. The imperfect knowledge of the Siberian flora is reflected in the inclusion of a species of *Marsilea* not actually recorded in Siberia, but which has been found close to the borders, and might well be present.

As a translation the text reads very well. There are occasional ecological notes and the descriptions of many familiar British species might add an occasional useful pointer to the more difficult groups in this country, especially *Potamogeton*. The keys will be particularly helpful as they are deliberately constructed to identify the less difficult species first. The first eight volumes have now been published in English. For anyone working in Siberia or the adjacent regions this will be an indispensable series.

H. McHAFFIE

Algae of India and neighbouring countries. I. Chlorophycota. V. Krishnamurthy. Enfield, NH: Science Publishers, Inc. 2000. ix + 210pp., 3 plates + 38 figs. ISBN 1 57808 052 5. £52 (hardback).
DOI: 10.10M/S0960428604240070

Over the past 40 years, various books containing accounts and descriptions of sections of the algal flora of the Indian subcontinent have been published. The taxonomic groups that have been covered in these works include cyanophytes, *Zygnemataceae*, *Vaucheriaceae*, *Charophyta*, *Ulotrichales*, *Chlorococcales*, *Oedogoniales*, *Volvocales*, *Dinophyceae*, marine diatoms, and *Rhodophyta*. Whether these publications are the fruits of a coordinated, premeditated effort to produce ultimately a complete algal Flora of the Indian subcontinent seems unlikely, but it is clear that each has made a significant contribution to advancing our knowledge of algal biodiversity in that part of the world. Despite this progress, there is still some work to be done as no accounts exist for groups such as the brown algae, the golden algae, the euglenoids and the cryptomonads in the Indian subcontinent. The publications listed above include no fewer than six dealing with green algae in India. However, anyone who is familiar with this group will realize that coverage is far from complete and that several gaps remain. The purpose of Krishnamurthy's book is to fill these gaps, as the author puts it, by putting together 'all information not covered by earlier monographs except for the order Bryopsidales and family Desmidiaceae'.

The classification that Krishnamurthy has chosen as a taxonomic framework is that of Silva (*Synopsis and Classification of Living Organisms*, 1982) and for the marine taxa that of Silva, Basson & Moe (*Catalogue of the Benthic Marine Algae of the Indian Ocean*, 1996). Thus, we are presented with a Flora that deals with the following orders: *Tetrasporales*, *Chaetophorales*, *Ctenocladales*, *Phaephilales*, *Ulvales*, *Acrosiphoniales*, *Cladophorales*, *Siphonocladales*, *Dasycladales*, *Trentepohliales* and *Coleochaetales*. According to the Preface, work has already started on Silva's remaining green algal groups (these are not mentioned by name, but will presumably include *Chlorosarcinales*, *Prasiolales*, *Sphaeropleales*, *Bryopsidales*, and perhaps desmids), the result of which will be published as a second volume.

There is nothing intrinsically wrong with an algal Flora that uses orders as the main taxonomic points of orientation and navigation, so long as it does not compromise a user's ability quickly to determine the species of an alga. Unfortunately, it must be said that for the phycologically uninitiated, Krishnamurthy's book poses an insurmountable challenge: there is no key to assist in deciding to which order a specimen belongs. The situation is further compounded by the fact that the book covers only a limited number of the currently recognized chlorophyte orders, on the grounds that (as stated above) certain groups have already been dealt with in the past. So, unless one already has a good idea to which order an algal sample belongs, this book will not be of much help, especially to novice collectors of algae who have no idea where to start. However, once that hurdle is taken, keys are provided all the way to the species level. The lack of a general identification key to the major chlorophytan groups is a serious omission which the author may wish to rectify in the forthcoming second part. Such a key should be a tool not only to guide the user to the correct order in the present publication, but also, where necessary, to steer them to one of the previously published Indian green algal Floras (for example, Ramanathan's *Ulotrichales* which deals with the unbranched filamentous green algae).

The author has chosen a rather conservative approach in deciding which taxa to include. Records were deemed acceptable for inclusion not merely by being reported for the geographical area under consideration (India, Pakistan, Bangladesh and Sri Lanka) but only if also accompanied by either a description or an illustration, or both. This means that the simple appearance of a species name in a published list or inventory, without further descriptive information, has been ignored. This approach has undoubtedly resulted in an increased level of accuracy regarding the identity of the species included; the downside is of course that, by rejecting all names that have appeared in species lists without further details, only a fraction of the total green algal biodiversity of India and adjacent regions is represented. A compromise would have been to include all taxa recorded for the Indian subcontinent, and to mark those whose identity could not be independently verified as 'uncertain'. It is not clear whether the author ever considered this option although I found at least one case where the author broke his self-imposed rule: *Nautococcus mammilatus* is included (p. 35) despite the acknowledged lack of a description or figure in the original record.

The species descriptions are generally adequate, although they vary in the amount of detail and in format. This is presumably a reflection of the amount of information in the original record. Full citations are given for the original descriptions of all species. Approximately half the entries are accompanied by line drawings, the vast majority being redrawn from original sources.

Readers will look in vain for new, critical taxonomic reassessments of groups of green algae based on material collected in India; the only instance where the existing taxonomy has been modified in a significant way is the description of one new species (*Draparnaldiopsis krishnamurthyi*) and the synonymizing of species names in a number of cases. This lack of 'new' taxonomic insight combined with the strong geographical focus means that it is questionable whether the book can be referred to as a monograph, as stated in the Preface. It is essentially a collection of previously published floristic reports from the Indian subcontinent, and as such will be valued by anyone interested in the green algal biodiversity of that area, especially those who have difficulty accessing the primary floristic literature which is often not widely distributed in other parts of the world. The production quality of the book (paper, printing and binding) is good and at a selling price of £52 in the UK it represents fair value for money.

H. SLUIMAN

Biology of Apples and Pears. John E. Jackson. Cambridge: Cambridge University Press. 2003. 500pp. ISBN 0 521 38018 9 (hardback).
DOI: 10.10M/S0960428604250077

This book landed on your reviewer's desk (with a thump) on account of his interest in *Malus* and *Pyrus* as part of the Royal Botanic Garden Edinburgh's Phenology Project. Wishing to improve his scanty understanding of such phenological parameters as dates of bud burst, flowering, start and end of shoot elongation, and leaf fall, he eagerly turned to the index to look up 'date', 'first flowering date', 'phenology', 'photoperiod', 'climate change' and 'weather'. None was to be found, despite the cultivar and general indexes covering six pages and seeming reasonably comprehensive.

The author and publisher could quite rightly object that this is hardly fair to them. But it does provide the opportunity to point out that the book's title could be misleading. In fact, *Biology of Apples and Pears* does not pretend to be a general treatment of *Malus* and *Pyrus* biology: as implied by its inclusion in the series Biology of Horticultural Crops, the book is written for horticulturists. Little or no attention is paid to taxonomy, ecology, wild species or anything outwith the horticultural field – and not even to phenology, which is surely relevant in view of climate change. 'Successful production depends both on the climate, especially the local microclimate, and on effective adaptations to this in terms of cultivar selection and cultural practice' (p. 17). Quite.

There is a brief introductory section – including the history of apple and pear consumption and cultivation from 6500 BC onwards, trade in the fresh fruit, and

taxonomy. The wild species and principal hybrids are summarized in tables, and mention is made of Barry Juniper's theory that the sole genetic parent of domestic apples is *Malus sieversii* (Juniper *et al*., 2001). The other wild species have their uses, however, since resistance to various diseases and tolerance to low winter temperatures are being introduced from *M. hupehensis*, *M. baccata* and some hybrids. The genetic status of crop trees is further complicated by the fact that a single tree may comprise rootstock, interstock and scion – all of different origin and sometimes not even from the same genus (e.g. pear, *Pyrus communis*, grafted onto quince, *Cydonia oblonga*). Perhaps therefore we do need a comprehensive monograph of the biology of *Malus* and *Pyrus*, including the ecology and phenology of all the wild species and principal cultivars. There is, at least, a wealth of information now available on *M. sieversii*, with the welcome translation of Dzhangaliev's 1977 treatise (Dzhangaliev, 2003).

The bulk of Jackson's book comprises detailed and clearly written expositions of root systems; grafting, budding, and interstock effects; shoots; leaves; photosynthesis and related physiology; flowers and fruit; mineral nutrition and water relations; diseases and pests; and biotechnology. There is a good number of tables and pen and ink drawings and diagrams, and about 10 black-and-white photographs. The book is well written, edited and designed, and it is thorough and functional. Oh, so functional! I searched long and hard (admittedly not reading every page) for some spark of humour or humanity, or even a picture of an apple or pear to create a receptive mood. So far as I can see, the only portrait of fruit is apple 'Beauty of Bath' in bare outline sections, each day from petal fall up to day 12, to show seed and fruit development (p. 296). The nearest I could manage to a faint smile was in reading Acknowledgements to colleagues 'who gave generously of their time for discussion, but are not in any way responsible for any errors of [*sic*] weeknesses [*sic*] in their text' (p. xii).

Apart from the overwhelmingly favourable impression gained of the book as a functional horticultural textbook, there are two design features making the book difficult to use. One concerns paper quality. It is admirable to have photographs printed next to the text discussing them, but this unfortunately means that the whole book is printed on heavy coated paper. No problem in daylight or other diffuse lighting, but I tried reading the book at night under a desk lamp, and found it was quite difficult to avoid reflection from the paper, rendering the text illegible. Surely it is possible to print photographs to an acceptable standard on paper that is not so reflective.

The second grouse concerns the 15 reference lists. Although it may seem a convenience to have a list at the end of every chapter, it means that the end of the chapter must first be found and marked in some way – and this soon gets complicated if several chapters are being consulted at once. And, worse, it is no easy matter to discover if a given publication is mentioned in the book. I happened to be looking for a reference to Langenfel'd (1991), which is recommended for anyone seriously interested in *Malus*, and I was faced with having to look in all 15 lists. What is the

point of separate lists? A combined list is easier to use, and avoids a good deal of duplication; and that might have reduced the weight of the book by a gram or two. . . .

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G. H. HARPER

Comparative Epidemiology of Plant Diseases. Jürgen Kranz. Berlin: Springer-Verlag. 2003. 206pp. ISBN 3 540 42688 X (hardback).
DOI: 10.10M/S0960428604260073

Comparative epidemiology is the tool for evaluating similarities and differences between diseases and their hosts, and their reaction to pathogens. The aim is to recognize common patterns and types among the apparently endless diversity of epidemics of hundreds of diseases. Ultimately a number of basic epidemic types may become apparent. This is of great importance for the main application of plant disease epidemiology: crop protection.

This book is written in seven chapters encompassing a philosophical introduction, a short chapter on the scope of 'across comparison' (jargon!), and one on the methodologies used in comparative epidemiology, including data acquisition, experimental design, evaluation, and statistical and non-statistical comparison analyses. The components of disease – pathogen and host – are discussed (chapter 4) as are the temporal (chapter 5) and spatial (chapter 6) aspects of disease epidemics. The final chapter deals with the comparison of the effects of epidemics.

As this book deals mainly with abstract concepts (comparison of systems), the author is at pains to ensure proper terminology, using precise definitions. Unfortunately (and understandably), this leads to a highly technical style, not suited to the uninitiated reader. However, by no means are all examples cited artificial simulations or mathematical models, and the author demonstrates his insight into practical plant pathology in the choice of comparisons from his own experience as well as from the literature, ranging from epidemics in wild host plant populations to those of crop plants in greenhouses and fields and those in totally controlled conditions.

This book is aimed at dedicated students or practitioners of plant pathology and plant disease epidemiology. It attempts to offer an introduction into how to conduct comparative research. People with an interest in other areas of pathology or

epidemiology (veterinary or human) may find useful information, concepts and ideas in the text. At a price of around £60, I would not expect many ecologists to purchase it. There are few errors and omissions that I noticed – fig. 6.9 claims to map the risk of favourable climatic factors, when it really only shows disease incidence at particular dates, with no reference to climate. I would like to have seen more coverage of the influence of environmental factors on epidemics, especially considering the possibility of striking new circumstances due to climate change.

The author quotes over 400 references and adds a useful if somewhat idiosyncratic subject index. As I close the book I wonder if my concept of plant disease epidemiology has become more enlightened about common patterns and types. In a complex world, where a multitude of variables can each have a significant influence on the outcome, it is hardly surprising that we cannot yet reduce the diversity of existing pathosystems to an opportune number of basic types so that, as the author puts it in the introduction, 'The plant pathologists then would see just the forest, rather than a multitude of trees'.

S. HELFER