

REVIEWS

E.G. BOBROV & N.N. TZEVELEV (eds): **Flora of the USSR. Alphabetical Indexes to Volumes I–XXX.** Science Publishers, Inc., Enfield (NH), USA, 2004. 241 pp. ISBN 1-57808-334-6. Price: USD 99.50.

With the publication of this index to the Flora of the USSR the translation of this Flora has been completed. The present volume is a direct compilation and translation of the indices to the Flora of the USSR omitting the indices to Russian vernacular names.

FRITS ADEMA

G.J.H. GRUBBEN & O.A. DENTON (eds): **Plant Resources of Tropical Africa 2. Vegetables.** PROTA Foundation/Backhuys Publishers/CTA, Wageningen, The Netherlands, 2004. 667 pp., illus. ISBN 90-5782-147-8 (book only). Price: EUR 40 (Industrialized Countries), EUR 20 (Developing Countries). Also published with CD-ROM: ISBN 90-5782-148-6 (book + CD-ROM). Price: EUR 50 (Industrialized Countries), EUR 25 (Developing Countries).

Just two years after the official start of the PROTA programme the first ‘regular’ volume of this series has appeared. This volume, numbered 2, describes 350 ‘primary use’ vegetables in 275 review articles. In addition a long list of vegetables with other primary uses is given. A list of references and indices to scientific and vernacular names conclude the volume.

Those who are familiar with the PROSEA series will see that the layout and organisation of the review articles faithfully follows the PROSEA model. After a brief introduction with particulars about the volume the review papers are given in alphabetical order (genus, species). These articles give information on names and synonyms, origin and distribution, production and trade, properties, a description and other botanical information is included. Agricultural aspects are treated in sections on growth, ecology, propagation and planting, management, diseases, harvesting, yield, breeding, etc. The illustrations give line drawings for a fair number of species and distribution maps for many species.

The clear presentation of the information makes ‘Vegetables’ a most readable book that is recommended for everyone with an interest in ethnobotany, economic botany or tropical agriculture. The editors and publishers are congratulated with the speedy publication of this volume.

FRITS ADEMA

A.R. HEMSLEY & I. POOLE (eds): **The evolution of plant physiology. From whole plants to ecosystems.** Elsevier Academic Press, London, United Kingdom, 2004. 512 pp. ISBN 0-12339-55-26. Price: GBP 66.00.

This book presents the contributions to a symposium with the same title, organized by the Paleobotany Specialist Group of the Linnean Society of London and the Royal Botanic Gardens, Kew. The organizers of the symposium and editors of the book present ‘the evolution of plant physiology’ as a new field of study. That we are dealing with a new field is clear if only because one ponders over what the title refers to. Some of the authors do just that in their contributions, in a concise and stimulating manner.

The substance of the book is about vital processes in plants during their evolution, which is closely connected to what the editors call paleophytophysiology. The editors divided the contributions somewhat arbitrarily into four groups. Part I, 'The origins of plant physiology', contains three chapters on changes in vital processes that have been necessary for the transition from living in water to living on land, or the invasion of the land, in at least a number of plants. Vital processes considered are photosynthesis, plant water relationships and the role of sporopollenin in reproduction. Part II, 'Evolution of plant physiology from the molecular level', contains seven chapters about molecules which probably played an important role in the emergence of new body-plans, the protection to radiation damage and heating, and the transport of water. Substances that are discussed at some length are, among others, auxin, ethylene, lignin and other phenolics, aquaporins, cutin, and again sporopollenin. Part III, 'Evolution of anatomical physiology', is in eight contributions concerned with anatomical characteristics of land living plants. The contributions range from the evolution of the megaphyll, leaf morphology and the distribution of stomata in relation to photosynthesis, comparison of water transport in broad-leaved gymnosperms and angiosperms, angiosperm wood characteristics in relation to water transport and habitat preference, the evolution of self-incompatibility in angiosperms, to the dispersal of fruits and seeds. Part IV, 'Evolution of environmental and ecosystem physiology', is in five contributions concerned with adaptation of groups of plant species to apparently large scale, geological changes in environment. The contributions are concerned with the rise and fall of podocarps in Australia, fossil and extant *Metasequoia* living at high latitudes, and tolerance for low nutrient concentrations. For those of us who have difficulties in picturing the various geological eras, the stratigraphical map in colour, at the inner-side of the back-cover, is of help.

The authors have worked with apparent enthusiasm. Almost every chapter presents an up-to-date review of literature on the concerned subject (some literature references are even from 2002). The reviews are often accompanied by interestingly new analyses and interpretations. Even molecular genetics are dealt with in some chapters. Data discussed are derived from fossil as well as extant species.

With a book like this, one is inclined to briefly check whether or not one is still informed about possible new developments in one's own fields of interest, and to leave it at that. But that would be an injustice. The editors did succeed in bringing together a variety of different subjects in an accessible way so that taking notice of the broad content of the book is warranted. In doing so, one does not have to follow the editors entirely. Instead one could start perhaps with general reflections on possibilities and pitfalls of the new field (for instance, Chapters 4, 5, 6, 8, 16, 17). Moreover, when moving on, one's reading should not be choosy, as numerous chapters present the reader with stimulating perspectives and ideas. In some regards the coverage of relevant subjects is somewhat unbalanced. Some chapters overlap, other subjects are underrepresented. For instance, in view of the profuse attention for photosynthesis one would expect some mention of sugar transport in the phloem. One would perhaps like to see more attention for molecular genetics and stress physiology. But such criticisms are perhaps unfair to a report on a first symposium on a new field of study. Any gaps in coverage noted therefore, encourage further developments and a next symposium.

LENIE GOOSEN-DE ROO

ROLAND KELLER: **Identification of tropical woody plants in the absence of flowers. A field guide. 2nd ed.** Birkhäuser Verlag, Basel, Boston, Berlin, 2004. xii, 294 pp., (colour) illus. ISBN 3-7643-1453-X. Price: EUR 62.

The first edition of this key to non-flowering woody plants of the tropics appeared in 1996 and was reviewed for *Blumea* by Van Balgooy (*Blumea* 42 (1997) 255). Although a great effort was made to adapt the keys to additions and remarks by a score of botanists, still many of the comments of Van Balgooy seem to be true. The second edition is still a difficult book that requires a great knowledge of tree architecture, morphology and anatomy. The indented keys make it often difficult to compare the opposing parts of a lead directly. A few ad hoc solutions have been made to keep the leads readable. Quite often the opposing part of a lead reads like 'not so' or 'with different characters' making a choice difficult. Reading through the key for Leguminosae it strikes one to find *Leucomphalos* (entered as *Bowringia*) and *Baphia* (including *Airyantha?*), both with unifoliolate (or simple) leaves, in different parts of the key. It is also quite strange to find genera with pari- or imparipinnate leaves in the leads for 'simple or simply pinnate' and in those for 'compound' leaves. Better would have been to have leads for simple (or unifoliolate) leaves against compound leaves followed by simply pinnate versus bipinnate leaves, etc.

As a whole the book is nicely printed, however, the ample use of different type faces make some pages a bit chaotic. The black and white drawings (all by the author) are quite informative. The last section of the book with the colour photographs add some charm to the whole.

FRITS ADEMA

DAVID MEAGHER & BRUCE FUHRER: **A field guide to the mosses and allied plants of southern Australia.** Flora of Australia Supplementary Series Number 20. Australian Biological Resources Study / The Field Naturalists Club of Victoria, 2003. 280 pp., colour illus. ISBN 0-642-56828-6. Price: AUD 48.00 (including surface postage).

This guide to mosses, liverworts and hornworts covers Tasmania, the Australian mainland south of 30° S latitude, and the offshore islands belonging to this region. The authors have attempted to bring the identification of the common species within reach of students, field naturalists, bushwalkers, and professional botanists. To reach such a varied audience the morphological descriptions are generally limited to characters visible with a hand lens. Author's names of species have been left out because they might present a barrier to readers without a background in biology and can be found easily in other literature. A general introduction of life cycle and morphology of the three main groups is followed by chapters on species likely to be found in 17 selected habitats, field equipment, herbarium techniques, microscopic analysis, notes on taxonomy and distribution, and a list of genera not included, mainly because the species are rare or confined to Tasmania. Concluding chapters contain suggestions for further reading, a glossary of bryological terms, and an index to species.

Photographs and descriptions of 148 mosses, 92 liverworts, and 2 hornworts constitute the main part of the book. They have been arranged into twelve groups based on field characteristics. These can be keyed out, but within each group the species must be identified by comparison. The photographs (mostly half-page) are laudably provided with a scale bar. Most are as good and useful as one may expect from pictures of

bryophyte patches, but some are rather uninformative because they show insufficient detail (extremely so in *Cephaloziella exiliflora*), a few seem to have lost detail in printing, and among the pictures of the few species I know well those of *Thuidiopsis furfurosa* might in fact relate to *T. sparsa*. The illustrations are accompanied by concise descriptions of morphology and habitat. The geographical distribution is indicated by listing the appropriate states. In addition, there are mostly brief notes on properties of numerous similar species and in a final section (confusingly termed ‘similar species’) one finds species listed with which confusion might occur. Often line drawings are provided showing a leaf, capsule, or other diagnostically important structure visible with a hand lens.

In recent times, several important books on Australian bryophytes have been published and the bryophyte volumes of *Flora of Australia* are in the making, but a popular moss guide opening the field to naturalists was lacking until now. Such guides are valuable not only because they can arouse interest and satisfy curiosity, but also because some users may become priceless amateur bryologists, adding more eyes in the field to those of the few professional and semi-professional bryologists present in this huge country. Unfortunately, Meagher and Fuhrer’s attractive book contains quite a few inaccuracies and factual errors in species descriptions and other sections. Anyhow, certain identification is difficult and often not possible without using microscopic characters, but these errors are misleading. They are likely to confuse and discourage rather than encourage budding bryologists. On the other hand, this book with numerous photographs of Australian bryological marvels is a must for bryologists from abroad. When visiting Australia they should bear in mind that Australian plants can not be picked without permission from the owner of the property or a licence from the government to collect on public land.

DRIES TOUW

A.M. PRIDGEON, P.J. CRIBB, M.W. CHASE & F.N. RASMUSSEN: **Genera Orchidacearum, Volume 3: Orchidoideae (Part 2), Vanilloideae**. Oxford University Press, Oxford, 2003. xviii, 358 pp., 21 colour plates, black and white drawings, maps. Hardcover. ISBN 0-19-85071-19. Price: GBP 100.

The third volume in this important series treats 114 genera allied to *Codonorchis*, *Chloraea*, *Cranichis*, *Goodyera*, *Pterostylis*, *Spiranthes*, and *Vanilla* respectively. This is something of a backwater in the huge Orchid family in that most of these genera have no horticultural value whatsoever, and for the great majority no modern revisions exist. Generic delimitation in some groups is still problematical, especially in the subtribes Goodyerinae and Spiranthininae. The main difference with previous orchid classifications, as far as the present volume is concerned, is the recognition of the Vanilloideae as a separate subfamily, rather than as a tribe within the Epidendroideae, and the inclusion of the spiranthoid orchids in the subfamily Orchidoideae. Another, somewhat unexpected result, and likewise due to the analysis of DNA sequence data, is the position of *Pterostylis* within the tribe Cranichideae instead of the Diurideae. A fine demonstration of the fact that appearances can be deceptive in this plant family!

The title of the series is slightly misleading since not only genera, but also all taxa at higher rank are described in detail. While the emphasis is on phylogeny, more general biological subjects, including palynology, cytogenetics, phytochemistry, ecology and

pollination are also treated, if only to show how little we know in many instances. ("Nothing is known of pollination in *Baskervilla*.")

The genera, alphabetically arranged within the subtribes, are described in detail, with indications of type species, etymology, distribution and cultivation, in addition to the subjects already mentioned. For each genus a more or less typical representative species is illustrated with a full page line drawing showing habit as well as floral details and there are 105 colour photographs in 21 plates. Both drawings and photographs are generally of high quality. Geographical distributions are shown in grey range-maps, which perhaps do not do real justice to the often highly localised occurrence of many orchid genera. For example, for the genus *Cheirostylis* almost the whole of Central and Southeast Africa, the whole of Madagascar, Southeast Asia and part of Northeast Australia are shaded. I am sure that if the known localities for this genus would have been plotted in a dot map the impression that this genus can be found almost anywhere in the Paleotropics would be seen to be quite wrong. On the other hand, sometimes the maps are not inclusive enough: for the genus *Anoectochilus* the Philippines have wrongly been left blank, while *Galeola* is known from New Guinea. But on the whole the generic treatments are up-to-date, most informative and accurate.

My only significant point of contention with this series is the principle that all genera are treated equally, which means that monotypic genera and those containing hundreds of species are afforded more or less the same amount of space. In this way the reader will not get a sufficiently clear picture of the diversity of the family as a whole. Moreover, this principle implies that the text depends very much on the lumping or splitting tendencies of the contributing authors. A case in point is the genus *Pterostylis*, which is here (rightly so in my opinion) treated as the sole member of the subtribe Pterostylidinae. The same author now advocates the view that *Pterostylis* should be split up in no less than 16 genera. Luckily for the editors of *Genera Orchidacearum* he only changed his mind during or after publication of the present volume. These same editors are to be complimented for the high internal consistency of this series, of which the present volume is exemplary. The pricing is undoubtedly beyond their control and beyond the means of many individuals, regrettably.

ANDRÉ SCHUITEMAN

SHARON L. SPRAY & KAREN L. MCGLOTHIN (eds): **Loss of Biodiversity**. Rowman & Littlefield Publishers, Inc., Oxford, UK, 2003. 175 pp. ISBN 0-7425-2567-8. Price: GBP 65.

'Loss of Biodiversity' is the second issue in the series 'Exploring Environmental Challenges'. It deals with the multi-dimensional aspects of the loss of biodiversity. Where biologists consider loss of biodiversity generally as the reduction in the number of species in an ecosystem due to habitat fragmentation, unsustainable land use and related subjects, this book puts loss of biodiversity in a wider perspective. Issues as ethical perspectives, environmental economics, politics and policymaking, and international cooperation on the loss of biodiversity are raised. All issues are illustrated by examples from practice. Unfortunately, most examples are from the USA, while the majority of the biodiversity hotspots lie in the tropics. Nevertheless interesting subjects to consider when studying biodiversity and the rapid loss of it.

NIELS RAES

T. WALTERS & R. OSBORNE (eds): **Cycad classification. Concepts and Recommendations.** CABI Publishing, Wallingford, UK, 2004. xxvii, 267 pp., illus. ISBN 0-85199-741-4. Price: GBP 55 (USD 100).

Cycad Classification is a report on the Cycad Classification Concept Workshop held in April 2002 in Miami, Florida, USA. The purpose of the workshop was to develop guidelines for an internationally acceptable and stable evolutionary classification of the Cycadales. Fifteen papers explore these concepts from various points of view including morphology, ecology and DNA-analysis. Several papers use specific cases (*Zamia*, *Macrozamia*, etc.) to illustrate problems and solutions. The whole set of papers and the discussions about the concepts are summarized in a set of guidelines (Roy Osborne & Terence Walters, *In search of the True Tree: Guidelines for Classification*, p. 195–217). However, this final chapter also indicates that there are still some problems to be solved. A world checklist of Cycads and a glossary of terms conclude this book.

Cycadales, more especially the species rich genera, are taxonomical difficult. A good understanding of the genera and their species is important both for conservation purposes and for the trade in cultivated species. This volume on concepts and guidelines is a big step forward towards a better understanding of the Cycadales. I recommend this book for everyone with an interest in Cycads.

FRITS ADEMA

DAVID M. WILLIAMS & PETER L. FOREY (eds): **Milestones in systematics.** The Systematic Association. Special Volume Series 67. CRC Press/Systematic Association, 2004. xvii, 290 pp., illus. ISBN 0-415-28032-X. Price: USD 95.

This book contains a collection of essays based on papers read at a symposium with the same title held within the 3rd Systematic Association Biennial Meeting in 2001. The authors selected have a first hand experience of the changes in the field of systematics. Because of this bias all contributions have at least some historical component. Another obvious component is philosophy as papers deal with explanations, concepts and language of science. Several papers deal with phylogeny reconstruction and cladistics, which leads to contributions on computers, homology, paleontology, parsimony and systematics. The last two papers deal with cladistic biogeography and evolutionary developmental biology. Together the papers give a very good, readable and critical overview of what happened in the last 50–60 years in systematics, especially in the fields of phylogeny and cladistics. For those systematists who tend to think that their ideas are totally new, some of the discussions may be an eye-opener.

FRITS ADEMA