

Book Reviews

The ancient woodland of England: the woods of south-east Essex. Oliver Rackham. Pp. 120, with numerous black & white maps, sketches, graphs and halftones. Rochford District Council, Rochford, Essex. 1986. Price £6 (ISBN 0-9511863-0-2).

This splendid detailed account of the history, and natural history, of all the woodland in a particular area should not just be of interest to those of us in Essex familiar with many of the woods described.

Apart from listing the species occurring in each wood (about as far as most of us go), a subjective sketch map of the main tree/shrub communities is provided for each wood, together with a map of physical structure, showing features such as boundary pollards and banks, ponds, pits and earthworks and, as far as is known or can be reasonably inferred, the management history of each segment. Each wood is fitted into its historical context from information gleaned from old estate records, maps, plans and even the 1940 aerial photos taken by the Luftwaffe.

Above all, this book is an example of how one can go about recording and describing (and accounting for) in an easily visually assimilated way the semi-natural plant communities of a given area. It is however essentially a book about the trees and shrubs and woodland history. The more interesting of the ground flora species in each wood are mentioned, but not mapped, and the mosses, liverworts and lichens are dismissed by the comment "very little is known". To Rackham the past is a key to the present. In the case of these groups, however, the information readily available from local bryologists and lichenologists could perhaps have provided a richer key to the past.

What next? One hopes that this is but the first in a series of regional woodland handbooks for eastern England.

K. J. ADAMS

Flora of Surrey. Checklist and supplement. A. C. Leslie. Pp. 117. A. C. & P. Leslie, Guildford. 1987. Price £4.50 (£5 incl. postage, from Dr A. C. Leslie, Monksilver, 72 Boxgrove Road, Guildford, Surrey, GU1 1UD).

J. E. Lousley's *Flora of Surrey* was published in 1976. The present volume updates that Flora and at the same time provides a most useful checklist of the species, including all the aliens, that have been recorded from the county. The alphabetical checklist format, following the pattern of *A checklist of the flora of Cambridgeshire* by G. Crompton & H. K. L. Whitehouse (1983), makes the supplementary material much easier to assimilate and to use. An unfortunate omission is a map to show both the geographical features of the county and the 10-km grid squares that are listed after species to denote distributions: not everybody knows Surrey as well as the author. However, this aside, Alan Leslie is to be congratulated on his scholarship and the care with which he has assembled his material. Text entries are terse, but packed with small detail: dates, new localities, determinations by experts, references, and comments on taxonomy, distribution and status. Nomenclature is up-to-date, and there is full treatment of some difficult groups such as *Epilobium*, *Hieracium*, *Rosa* and *Rubus*. The thorough coverage of aliens, both naturalized and casual, benefits from the author's extensive knowledge of horticultural taxonomy. Succinct, but by no means severe, this most readable little volume should stimulate more fieldwork and inspire 'Surrey' botanists to provide material for a subsequent supplement that, according to the introductory section, is already in preparation. We have here a firm foundation for any future projects on the flora of a most interesting and varied county, and a model for floristic checklists.

J. R. AKEROYD

George William Francis, first Director of the Adelaide Botanic Garden. Barbara J. Best. Pp. xiii + 182, with 1 colour and 33 black & white illustrations and 8 maps. Botanic Gardens of Adelaide, 1986. Price \$A 30.00 (or \$A 31.35 incl. p. & p. from Mrs B. J. Best, 7 Fernbank Terrace, Stonyfell, S.A.5066, Australia).

The Royal Botanic Gardens, Sydney, A history 1816–1985. Lionel Gilbert. Pp. xiv + 210, with 11 colour plates, 52 black & white illustrations and end-piece maps. Oxford University Press, Melbourne, 1986. Price £23 (ISBN 0–19–554719–5).

Histories of botanic gardens in Australia may seem a long way from the concerns of British field botanists, but these two have a rather special claim on their attention. This is particularly true of Mrs Best's biography of her great-grandfather, G. W. Francis (1800–1865), for he is that same Francis whose *Analysis of the British ferns and their allies* lit the fuse of the great Victorian 'pteridomania' in 1837. In the quarter of a century before his emigration to Australia, in 1849, Francis acquired a considerable standing as a botanist in Britain, twice serving on the Council of the B.S.B.I.'s ancestor, the Botanical Society of London, and applying, albeit unsuccessfully, for the Chair of Botany at King's College London. At first a schoolmaster in Shoreditch and then, briefly, in Boulogne, he appears to have turned to full-time authorship. One of his stunning diversity of books, *A Practical Manual for Levelling Railways and Canals*, points to his having picked up somehow expertise in surveying, and it was to be by that that he was to earn his livelihood during his first years in Australia. Almost immediately on his arrival in Adelaide, however, he had begun lobbying for a publicly-funded botanic garden to be re-established and in 1855 that ambition was not only realized, but he himself was appointed Superintendent (from 1860 Director and Secretary). Far less well-known to posterity than his indifferent successor, Richard Schomburgk, Francis threw himself into the job with the utmost zeal and, with the aid of eight labourers, transformed a swamp into forty acres of horticultural magnificence. Based on extensive archival research in Adelaide and London, with eighteen letters written by Francis to the elder Hooker (eleven of them dealing, most informatively, with the London years) reproduced as an appendix, this is a valuable contribution to botanical history which British librarians should not overlook.

While the Adelaide publication was timed to commemorate the 150th anniversary of South Australia's founding as a colony, the Sydney one celebrates, considerably more lavishly, the 170th birthday of its considerably older Gardens. The British connection there is pre-eminently "the everlasting Charles Moore", younger brother of David Moore of *Cybele Hibernica*. Trained successively at Trinity College, Dublin (under Mackay), Regent's Park and Kew, he was appointed Director in 1847, on the strong recommendation of Lindley, and continued in office for the next forty-seven years. He found the Gardens badly run down and, just like Francis, left them raised to a state of excellence; but, unlike his brother, he was essentially a gardener rather than a botanist and it remained for his successor, Joseph Henry Maiden, to create a scientific establishment which quickly outshone its rival at Melbourne once that had been deprived of the great Baron von Mueller. Maiden was similarly English-trained, but in his case the training had been in London University science, which he had exchanged for its Australian counterpart as a result of poor health. The National Herbarium is the main monument of his further, 28-year Directorship.

Dr Gilbert has the advantage over Mrs Best of being an experienced professional historian and his work has a firmer touch, but both authors have produced very readable accounts, far removed from the ponderous worthiness that has traditionally been the hallmark of the history of institutions.

D. E. ALLEN

Systematic and taxonomic approaches in palaeobotany. Edited by R. A. Spicer & B. A. Thomas. Pp. 321, with 66 text-figures. Systematics Association Special Volume No. 31. Oxford University Press, Oxford. 1986. Price £40 (ISBN 0–19–857704–4).

This book contains 19 papers presented at an International Symposium held at Goldsmiths' College in 1985, together with a final chapter that presents an overview of the contents. There is plenty of interest to those primarily concerned with living plants, including discussions of the taxonomic problems inherent in dealing with dispersed plant fragments that make the poorest herbarium

specimen seem a complete plant. The problems of interpreting fossils are often compounded by differences in their mode of preservation that make comparisons between specimens of different kinds extremely difficult. Nevertheless, several papers document the often surprising detail that can be extracted from fossilized plants.

The perennial question of the origin of angiosperms highlights distinct differences between authors in the ways that they recognize and delimit monophyletic taxa and in their concepts of the processes of evolution. J. A. Doyle & M. J. Donoghue provide an excellent phylogenetic study of the problem, in which cladograms representing different hypothetical relationships between seed plant groups are compared in an experimental way. One interesting finding is that several rather different hypotheses share approximately equal levels of parsimony. This emphasizes the need for critical studies of homologies and of particular fossils. P. R. Crane provides an example of just such a reassessment of the Bennettitales, identified by his earlier phylogenetic studies as a key group in determining the relationships of seed plants and the origins of their reproductive structures. In contrast to these two chapters, that by N. F. Hughes contends that the origin of angiosperms is most likely to be revealed by detailed investigations of mid-Cretaceous dispersed pollen. This assertion is interesting because it is a matter of some controversy whether angiosperm pollen grains possess any unique attribute by which they may accurately be recognized. Doyle & Donoghue do not provide any palynological character unique to the angiosperm clade; and, despite the great, and increasingly well documented, diversity of seed-plant pollen grains from the Cretaceous, this approach is unlikely to provide an explanation of angiosperm phylogeny.

R. A. Spicer discusses the diversity of early angiosperm leaf remains and draws conclusions concerning the evolutionary processes operating during the period of major radiation of the flowering plants. Rather than interpreting the diversity of leaf fossils as indicating the presence of many distinct taxa, he suggests that early angiosperms hybridized freely and showed great plasticity in leaf morphology. Chance long-distance dispersal of their small seeds is invoked as an important mechanism by which angiosperm populations became reproductively isolated. Plasticity in leaf form is described as improving photosynthetic activity, although no literature is cited to support this assertion, and tracing the evolution of plasticity is identified as an important priority. Spicer, like many palaeontologists, apparently views evolution during periods of major radiation as differing, in mode as well as tempo, from that occurring at other times. Perhaps palaeontologists often do differ from neontologists in their conceptual framework. R. J. Burnham, in a chapter on the Ulmoideae, states that palaeobiologists are unique in the biological sciences in their ability to include geologic time as a dimension of working hypotheses. I suspect that many phylogeneticists and biogeographers would consider their hypotheses to include a temporal element. M. E. Collinson's chapter emphasizes the continuity of time between fossil and living plants and suggests that palaeobotanical and neobotanical approaches to taxonomy should have similar principles although they require different systems of nomenclature. Time itself is the subject of P. R. Grant's contribution, which deals with the relationships between time and the continuity of the fossil record. Other contributions deal with further ramifications of the nomenclatural problems and with particular groups of fossil plants.

The volume is generally well edited and attractively presented. It provides interesting and stimulating reading for all botanists and especially those with an interest in plant evolution and diversity. Unlike some symposium volumes this one has a coherent theme which the contributors have addressed directly. In common with most such volumes it is expensive, but it is a worthwhile purchase for the specialist.

S. BLACKMORE

The botanists: a history of the Botanical Society of the British Isles through a hundred and fifty years. D. E. Allen. Pp. xv + 232. St Paul's Bibliographies, Winchester, 1986. Price £15 (ISBN 0-906795-36-2).

This book reflects the author's impressive knowledge of the history of British botany, his expertise and diligence in research and his ability to synthesize disparate pieces of information into a coherent account of a society that has probably had more than its fair share of crisis and forceful

and fractious members. Despite the irreparable loss of the Society's records in 1864 and again in 1941, David Allen has still been able to trace the main sequence of events in its tortuous history with the aid of existing archives, personal correspondence and whatever fragments he could discover in print.

A Lambeth doctor who was a keen botanist and gardener persuaded a number of other amateur enthusiasts to support the creation of the Botanical Society of London in 1836. Unlike the conservative Linnean Society, which refused membership to women until 1904, the Botanical Society of London welcomed their involvement from the start. The first paper presented to the Society on 'The influence of light upon the Common Broad Bean' apparently "excited great interest . . . with the ladies."

It was a society of ambitions outstripping its ability to implement them adequately. A botanical garden was considered, field excursions were organized and specimens were exchanged between members. Provincial secretaries were assiduous in their recruitment of new members. When still only four years old, the Society felt sufficiently confident to publish its *Proceedings*. The *Phytologist* regularly recorded its activities and even published many of the papers presented at its meetings. It seemed to have an assured future when Hewett Cottrell Watson joined it. A well-informed amateur botanist of independent if modest means, a bachelor who positively enjoyed austerity, endowed with abundant energy and forthright to the point of rudeness, Watson was in every sense a formidable person.

It was not long before he was imposing changes and reforms upon its submissive membership. An objective he never lost sight of was his endeavour to make the Society's herbarium a record of "more complete information respecting the local botany of the British Isles . . . calculated to assist those investigations into the laws which determine the geographical distribution of plants". He initiated the practice of publishing short notes on a select number of the plants that were distributed to members. The *London catalogue of plants* which provided an up-dating of scientific names was another of his innovations. By concentrating on the Society's role in the exchange of plants, Watson believed he had provided it with a secure foundation, but portents of its impending dissolution were already apparent. There was a conflict of interest between the clubbable London members and the active collectors, the administration creaked and finances were mismanaged. The end came in November 1856 when the Society was dissolved and its library and herbarium duly auctioned.

Its invaluable service for the exchange of plants was fortunately kept going by John George Baker, President of the Thirsk Natural History Society or the Thirsk Botanical Exchange Club as many preferred to call it. The Club depended upon Baker's commitment and dedication, and when he moved south to take up an appointment at Kew in 1866 the Club, in effect, went with him. A trivial incident provoked Watson's resentment and resignation. A rapid succession of Curators created a climate of instability in the Club's affairs and almost brought it to extinction. Charles Bailey, efficient, reliable and, above all, diplomatic, pulled it out of the morass and served for 24 years, a paragon of a Secretary. Such a person was hard to follow, and in some respects George Claridge Druce was a most unsuitable successor – "inclined to be cocky" was the opinion of one acquaintance. His excessive sensitivity to criticism strained many friendships. But this Oxford shopkeeper was astute, energetic and an outstanding field botanist. During his term of office the membership continued to grow. He designed the Club's crest, choosing for historical reasons but rather incongruously the giant South American waterlily, *Victoria amazonica*. Mellowed by age he was admired – even revered – by many but still feared by a few. Without the support of his dominant personality it is doubtful whether the Club would have survived. But his death in 1932 enabled the Botanical Exchange Club to conduct its affairs in a more democratic manner.

It was another self-taught amateur, J. E. Lousley, successively Treasurer, Secretary, President and Vice-President, who led the Club to its transformation into the Botanical Society of the British Isles in 1947. Like Watson and Druce he was a touchy individual, but like his distinguished predecessors he was an accomplished field botanist who always aspired to the scientific standards of the professional. In 1949 there appeared the first issue of *Watsonia*, commemorating the man who had done so much for the Society and British botany. Five years later it was joined by the twice-yearly *Proceedings*. About the same time the ambitious Distribution Maps Scheme became a reality, culminating in the *Atlas of the British Flora* in 1962. Emboldened by this successful venture, the Society felt confident to flex its muscles. It challenged the proposed new reservoir at

Cow Green in Upper Teesdale, demonstrating to the world that botanists were now prepared to fight for the preservation of the country's threatened flora.

David Allen has related this confused and complicated history without pedantry in a vigorous style, adding here and there deft character sketches and some choice anecdotes. Although still predominantly an association of amateur botanists, there is a leavening of professionals, and this stimulating and harmonious relationship constitutes one of the strengths of a society which shows every promise of being in existence to celebrate in due course its bicentenary.

R. DESMOND

Pollen and spores: form and function. Editors S. Blackmore & I. K. Ferguson. Pp. 443, with 100 pages of black & white photographs and numerous text figures. Linnean Society Symposium Series Number 12, Academic Press, London. 1986. Price £60 (ISBN 0-12-103460-7).

This volume contains the papers presented at a joint Linnean Society and Systematics Association symposium held at the Linnean Society of London and the British Museum (Natural History) on 27th-29th March, 1985. It contains firstly a series of papers concerned with pollen ontogeny, including an interesting comparative account by Hideux & Abadie of the pollen ontogeny of various *Saxifraga* L. (Saxifragaceae) species. Barnes & Blackmore present some unusual 3-dimensional images of developing *Scorzonera hispanica* L. and *Cosmos bipinnatus* Cav. (Compositae) pollen prepared for S.E.M. by a freeze-fracture and cytoplasmic maceration technique. I should however like to see more evidence to support their theory that the final stages of the callose wall may be deposited differentially outside the plasma membrane.

There follows a group of papers concerned with the functional significance of various pollen morphological features. Chaloner presents the interesting hypothesis that features of exine sculpture may function by delaying electrostatic-charge sharing and thus prolong the adherence of pollen to a charged surface to which it is attracted (bee or stigma). There is a comprehensive review of form and function in wind-dispersed pollen by Crane. This is followed by two papers on fossil pollen, one of which is a discussion of Early Cretaceous angiosperm pollen by Walker & Walker, who suggest that the diversity of monocotyledonous pollen found at the base of the Potomac Group indicates an ancient origin of the Monocotyledons. The next two papers are concerned with pteridophyte spores; Tryon presents an interesting S.E.M. survey of spore diversity and function, and Lugardon presents a detailed ultrastructural study of exospores (in French).

The remaining papers are concerned with various aspects of pollen morphology and function, including an interesting review of the structure and function of compound pollen by Knox & McConchie. Kress, writing on exineless pollen structure and pollination systems of tropical *Heliconia* L. (Heliconiaceae), concludes that there is no relationship between pollen wall structure and pollen vector in the Zingiberales, although, as he himself admits, there is very little precise information available on this topic. He then proposes that such a relationship does not occur within the Angiosperms as a whole, a dangerous generalization which is contradicted in this volume by Ferguson, who presents evidence of a correlation between verrucate and supracteal gemmate processes and bat pollination in *Bauhinia* L. (Leguminosae). The area of pollen morphology and pollinator interactions appears to be where more critical studies are needed.

The volume concludes with a series of brief papers based on selected posters exhibited during the meeting on a range of topics including the conjectured function of intine-like components in *Canna* L. (Cannaceae) by Skvarla & Rowley and exine elasticity in *Lavandula dentata* L. (Labiatae) pollen by Suarez-Cervera & Seoane-Camba.

The volume is excellently produced, although this is reflected in the rather high cost. The black & white plates are of very good quality on the whole, although some of the S.E.M.s (for example on page 361) have rather too much contrast. I am sure that taxonomists would agree that palynologists should cite authorities for the genera and species on which they work; not all the authors of the papers in this volume do this. To conclude, this book provides an excellent resumé of modern palynological research.

C. A. FURNESS

Britain's natural heritage: reading our countryside's past. P. Colebourn & R. Gibbons. Pp. 240, with numerous colour and monochrome photographs, and maps. Blandford Press, Poole, Dorset. 1987. Price £14.95 (ISBN 0-7137-1750-5).

This large-format book should be assured of a wide sale solely on account of its stunning colour photographs, which show the British countryside at its best. Botanists will however quickly realize that there is nothing random about the choice of illustrations, which are of distinct, often famous habitats with the emphasis on sites where man has played a dominant role in shaping the plant and animal communities. The readable text interprets our countryside in terms of historical ecology, enabling anyone with a keen eye to begin to unravel their local landscapes in the light of man's influence on the land. We are becoming used to doing this for woodland, where the questions ecologists ask are: "How old is it?" and "What has been the past history of management?", because the answers give them the best clues as to which plants to expect. This book, with chapters on fields and farmscapes, ancient woods and forests, grasslands, heathlands and moorlands, wetlands, and coastlands, extends this approach to cover most habitats. The authors take as their basic premise that everything is older than we think and try to explain why, in general, the more ancient the habitat the richer the wildlife. They possess a detailed knowledge of the often widely scattered ecological literature and are good at turning dry facts into a lively account, as for example in their discussion of the plants of the Burren.

The opening chapter, on the effect of the ice age and subsequent climatic amelioration, is a good summary of current thought on 'refugia' such as Upper Teesdale, Ben Lawers, the Cairngorm Plateau, Cheddar Gorge, Avon Gorge, etc., and includes the new views on the role of Mesolithic man rather than the wet 'Atlantic' period as the cause of early forest decline in the uplands. Increasingly, mesolithic camps are being found at the old tree line and prehistoric fields located under peat deposits. The New Forest and river cliffs along the lower Wye Valley are suggested as holding some of the finest primary woodland in Britain where complex mosaics of stands, each separately adapted to local climate and soil conditions, occur. The 50 pages on woodland summarize a great deal of knowledge, ranging from medieval pasture-woodland to the ancient woods of Scotland. A number of these persisted till the 1715 rebellion, after which forfeited land was purchased by speculators who exploited the woods for shipbuilding and to fuel iron foundries. I was sorry not to see any mention of McVean's work on the role of fire in determining the regeneration of pine.

The grasslands chapter will contain something new for everyone. Particularly useful is the advice, backed up by photographs, on how to develop an eye for old grassland sites, as these, unlike ancient woodlands, cannot often be identified from maps. Five characters are given that can be used from a train, across a valley, in photographs . . . anywhere. There are also sections on water meadows, commons, enclosed meadows, secondary grassland and where downland plants come from. The chapters on wetlands, moorlands and coastlands are equally fascinating, especially in the combined use of photographs and maps to explain the history of sites.

A particularly valuable feature of the book is the way it is studded with thirty 'special studies' or essays, each half a page to two pages long, which outline the historical ecology of selected sites such as Dungeness, Farlington (grazing marsh), Breckland, Martin Down (chalk grassland), Monewden Meadows (primary meadow) and the Lizard Heaths, or cover special topics such as ridge and furrow, indicator plants of ancient woodland, looking at hedges, machair and Lammas Lands.

The book ends with a chapter on protecting and managing the more ancient parts of our countryside; but this is not a book about conservation, it is main-stream popular historical ecology. The photographs, I must stress again, are among the best I have come across. The text is readable, right up to date, and almost free from errors; it encapsulates a great deal of scattered knowledge. This is a book for those who wish to go beyond species identification, who want to understand.

O. L. GILBERT

Guide to the botanical gardens of Britain. Michael Young. Pp. 160, with 49 colour plates, 20 black & white illustrations and 1 map. Collins, London. 1987. Price £12.95 (ISBN 0-00-218213-0).

This book is both a pleasure and a disappointment. It is good to have a survey of the botanic gardens in Britain brought together in one volume, all illustrated with one or more beautiful illustrations, but for me the text did not quite succeed.

As I read the accounts of individual gardens I was reminded of the similar but equally legitimate differences between a plant portrait by a member of the Impressionist Movement and that of a botanical artist, for Michael Young's rather epithet-loaded descriptions (e.g. "sweeping vistas and painterly chiaroscuro perspectives", p. 22), while giving an often vivid impression of a particular garden, frequently failed to provide an adequate account of the scientific significance of that garden's features and activities.

In the author's Introduction, we are given a historical summary of the development of botanic gardens in Britain and an insight into their present-day roles, which sets the scene for the variable length 'chapters' on each garden that follow, alphabetically arranged. The most famous botanic gardens (like Kew and Edinburgh, Oxford and Cambridge) are, of course, included, but the coverage ranges from the Cruickshank Botanic Garden in Aberdeen to the Bedgebury National Pinetum in Kent, and from the 500-acre Westonbirt Arboretum to the half-acre garden at the South London Botanical Institute. It will probably come as a surprise to some that there are so many botanic gardens in Britain (and a number have been excluded because they are said not to be generally open to the public), so I anticipate and hope that a number of readers will be stimulated by Michael Young to visit gardens of which they had previously been completely unaware.

It is a pity that proof-reading was not better. To mention the more outstanding mistakes: *Cyphomandra befacea* (rather than *C. betacea* on p. 110) and *Echium wildfretii* (for *E. wildpretii* on p. 134); "*Clianthus puniceus* kakablak" was a puzzle on p. 94 until it was realized that Kaka's-Beak (or Parrot's-Beak) is the common name for this plant in New Zealand; on p. 22 one correctly reads that the Dawn Redwood was introduced into Britain in 1948, but on p. 73 this is given as 1941, the year of its discovery in China; more seriously perhaps, *Salix rosacea* is said to grow in the garden of the South London Botanical Institute, but there is no such species, and one can only assume that *Saxifraga rosacea* was intended.

However, despite these criticisms and one's disappointment, this is a worth-while publication for it draws attention to and brings together descriptions of nearly all this country's botanic gardens. Together they form an asset of which we may all be proud and, to echo part of the author's final comments in his introduction, "We as the visiting public should cherish these gardens and should encourage their development and their protection".

P. S. GREEN

Aquatic plants. A guide to recognition. D. Spencer Jones & M. Wade. Pp. 169, with numerous colour photographs. ICI Professional Products, Farnham, Surrey. 1986. Price £7.50 incl. p. & p. (ISBN 0-901747-03-3). Obtainable from Borcombe Printers Ltd., Publications Department, Unit 6, Budds Lane, Romsey, Hampshire SO51 0HA.

This is a pocket-sized guide which aims to make the identification of aquatic plants easier and quicker. The book has four keys – for narrow-leaved emergents, broad-leaved emergents, floating plants and submerged plants. Descriptions then follow of the most common and representative taxa; these are concise and clear, concentrating on key features which help in their determination and avoid confusion with similar plants. Each description is accompanied by a high-quality photograph, a line drawing and a distribution map.

The authors and publisher deserve much credit for producing a visually most attractive guide which is simply laid out, easy to use and fills a much-needed gap. It has no pretensions of being aimed at botanical students or the professional botanist and so was not expected to catch the eye of the majority of B.S.B.I. members. What it will do, however, is encourage many more people to 'boldly go where too few have gone before' and plodge in water and look at the plants therein with much more confidence. A-level students, youngsters beginning an interest in botany, water industry employees and those many tens of thousands of people who casually enjoy pursuits on

and near water will find it invaluable. Many B.S.B.I. members may also gain from this colourful 'refresher course'.

N. T. H. HOLMES

Plants in danger; what do we know? S. D. Davis, S. J. M. Droop, P. Gregerson, L. Henson, C. J. Leon, J. Lamlein Villa-Lobos, H. Synge & J. Zantovska. Pp. xiv + 461. I.U.C.N., Gland & Cambridge. 1986. Price £15 (ISBN 2-88032-707-5).

The plant data-base of the I.U.C.N. Conservation Monitoring Unit at the Royal Botanic Gardens, Kew contains records on just a little over 34,000 plant taxa, almost 16,000 of which are threatened in terms of the scales used in Red Data books. This volume is a concise summary of that data-base, providing data sources on plants for each country and each island group of the world. The text is arranged as a formal compendium, and the countries are described in alphabetical order. Information is provided under the following headings: area, population, vegetation, checklists and floras, field guides, information on threatened plants, laws protecting plants, voluntary organizations, botanic gardens, useful addresses and additional references.

The title does not convey the value of the contents, as the details on endangered plants occupy about a sixth of the total text. The book has more general qualities and perhaps has most value as a primary reference guide for conservationists, taxonomists and naturalists. It provides a much cheaper alternative to D. G. Frodin's (1984) *Guide to Standard Floras of the World*, which presumably inspired much of the content and layout regarding descriptive floras and checklists. However, the introductory chapters are very informative about the literature on rare, endangered and threatened plants and convey a useful picture of those areas which need the highest priorities for future coverage. The assessment of "Plants in Danger" is extremely useful. Naturally, the best-known areas are Europe, North America, Australia and parts of east Africa, but surprisingly, even the Balkan peninsula, Italy and Scandinavia require a lot more work. Least well-known are the tropics generally and the third world nations particularly; but it is encouraging to note that Red Data books are in preparation for China, India, Egypt and Cuba. Although there is a high degree of subjectivity in the way that conservation status is applied to plants, some of the estimates still present a dismal picture. For example, 669 of the 2,050 threatened species of the United States are Californian endemics; and in the United Kingdom 300 species are identified as rare and endangered, a figure that represents 17.6% of the native flora. One hopes that the book will serve to provide the right kind of ammunition for governments and a practical guide to conservation agencies, because, if the present rate of destruction of native habitats continues, the I.U.C.N./W.W.F. Plant Advisory Group estimate that by 2050 more than 60,000 of the world's species will be extinct and a significantly greater number will be threatened.

C. J. HUMPHRIES

Provisional keys to British plant galls. Edited by F. B. Stubbs. Pp. 95, with numerous line drawings. British Plant Gall Society, Leicester Polytechnic. 1986. Price £4.50 (ISBN 0-9511582-0-1).

Galls are defined as "plant tissue in which the cells have been stimulated to increase in size or in number, or in both, by an intrusive living organism". This may be a bacterium, fungus, nematode, mite, or an insect. The study of plant galls has been neglected for a long time in this country, largely because they fall into no-one's camp. The British Plant Gall Society was formed as recently as 1985, and determined to redress this neglect. This book is an important first step towards that end. It was produced in haste because of a serious gap in the available literature. No comprehensive work on British plant galls had been published for over sixty years, and only one broadly representative work; even this has been out of print for some time. This unpretentious little book is intended to bridge that gap.

It claims only to cover “. . . the majority of galls likely to be found on an average day . . .”. So far use in the field has been very satisfactory, failures being due mainly to immaturity of specimens. The first step required is identification of the host plant, which should not present too much trouble for B.S.B.I. members. (But be warned; non-botanist gall hunters may present you with some very weird specimens!) Thereafter the galls are arranged by their positions on the host, leading usually to a very short list of candidates. Most galls are then given a very brief description, sometimes with a simple line-drawing as well.

The book is the combined work of members of the Society. It contains a few errors, some as a result of the speed of production, e.g. *Wachtliella* and *Wachtliella* used interchangeably. Such quibbles are a small price to pay for such a useful book.

S. L. M. KARLEY

Flora of the British Isles. A. R. Clapham, T. G. Tutin & D. M. Moore. Third edition. Pp. xxviii + 688. Cambridge University Press, Cambridge. 1987. Price £65 (ISBN 0-521-30985-9).

Since 1952 Clapham, Tutin & Warburg's *Flora of the British Isles* has been the standard work on the plants of these islands, and its third revised edition, awaited with interest, was published in May 1987, though with a preface dated February 1985.

The format of the last edition was good, that of the new is better, of a larger size (25 × 19 cm), with a revised layout and well printed on high quality paper. Regrettably the book has tawdry plasticized covers quite inadequate for a volume of this importance and cost. The arrangement of the Flora remains the same as that of its predecessors, though it differs from them in utilizing *Flora Europaea* as the basis for its taxonomy and nomenclature. Some descriptions of families, genera and species have been rewritten, together with keys, but many are slight amendments of those given in the second edition. Synonymy is given, but it is meagre and unsatisfactory and often unrelated to names used in previous editions.

Various genera and parts of genera have been revised, including *Erophila* (introducing two unfamiliar names, *E. majuscula* and *E. glabrescens*), *Ulmus* (now down to two species), *Myosotis* and *Mimulus*. The species of *Claytonia* appear under *Montia* though there is good evidence for keeping the two genera apart. In the *Galium palustre* aggregate *G. palustre* and *G. elongatum* are retained at species level, with *G. witheringii* reduced to synonymy under the former. The treatment of *Dactylorhiza* is always problematical, but I find it difficult to accept *D. praetermissa* and *D. purpurella* as subspecies of *D. majalis*, while the absence of *Dactylorhiza* synonymy is deplorable. The accidental omission from the Flora (p. 531) of the whole of the text relating to the Zannichelliaceae is lamentable, and as a result families 136 to 150 in the 'Synopsis' (p. xix) are now numbered 135 to 149 in the text.

Species new to Britain since the last edition include *Atriplex praecox*, *Gentianella ciliata* and *Gagea bohémica*. A non-British species thought at one time to be a member of our flora is *Asplenium cuneifolium* Viv. (not L. as printed on p. 14); this has been confused with a serpentine taxon of *A. adiantum-nigrum* that may be worthy of subspecific status. Two other names that must disappear are *Aphanes microcarpa*, records of which should be referred to *A. inexpectata*, and *Festuca guestfalica*, for British plants so called apparently await a new name. Subspecies are invariably based on geographical distribution or ploidy level, an arrangement mostly used here. There are a number of changes from earlier editions, e.g. *Pinus sylvestris* subsp. *scotica*, *Caltha palustris* subsp. *minor*, *Nymphaea alba* subsp. *occidentalis* and *Galium palustre* subsp. *tetraploideum* have 'disappeared', the first reappearing as a variety (correctly 'race') the others going into synonymy. An ineffective use of the rank, first introduced in the second edition, is the arrangement of the *Calystegia sepium* complex as three subspecies (p. 365); all have the chromosome number $2n = 22$, and two of them are of horticultural origin and show no marked geographical distribution patterns. Paradoxically *C. sepium* subsp. *roseata*, a pink-flowered plant with a well-defined Atlantic coastal distribution, is disregarded, though it was deemed worthy of inclusion in *Flora Europaea*. Two new subspecific combinations are presented – *Saxifraga rosea* subsp. *hartii* (D. A. Webb) D. A. Webb (p. 252) and, in synonymy, *Galium mollugo* subsp. *album* (Miller) Clapham (p. 429); the absence of basionym information renders both names invalid.

Details of the distribution of British and Irish species are based on information given in the *Atlas of the British Flora* and its *Critical Supplement*, but there are additional important extensions of range including that of *Equisetum* × *trachyodon*, new to England (Cheshire) in 1978; *Elatine hydropiper*, known from Scotland since the late 1970s; *Polygonum maritimum*, an addition to the Irish flora, and *Eleocharis austriaca*, new to Scotland, both in 1973. In addition *Scleranthus annuus* subsp. *prostratus* is possibly extinct in Norfolk, *Alisma gramineum* is reduced to a solitary station in Worcestershire and *Damasonium alisma* has been extinct in Middlesex for many years.

The treatment of aliens is an improvement on past editions, though there are still too many short descriptions of rarely seen ephemerals that could have been excluded. Likewise the space apportioned to an extensive coverage of the scarce and decreasing *Camelina sativa* aggregate (p. 105) and rare *Xanthium* taxa (pp. 450–451) could possibly have been used more usefully elsewhere. The impermanent *Dicentra spectabilis* is described but the naturalized *D. formosa* is not. *Rapistrum perenne* and *Bunias erucago*, both rare casuals, appear in the same type size as the well-established *Rapistrum rugosum* aggregate and *Bunias orientalis*, which has been naturalized in England for over a century. Well-established and increasing aliens that are missing include *Verbascum chaixii*, *Campanula poscharskyana*, *C. portenschlagiana*, *Lonicera nitida* and *Conyza sumatrensis*. *Mateuccia struthiopteris* is not confined to Ireland but occurs in many parts of England. *Hirschfeldiana incana* is not casual in S. England but is locally established and increasing. *Veronica crista-galli* may be extinct in Sussex but is known to have occurred near Bath, Somerset for over sixty years. *Picris spinulosa* has not been established in W. Kent for some fifty years, if at all, but *Chaenorhinum origanifolium* has been on walls there for over a century. *Lemna miniuscula* is widespread and increasing rapidly in S. and E. England. *Lysichiton americanum* is certainly naturalized in Ireland, but the plant found in England is usually referable to the closely allied *L. camtschatcense*.

The nomenclature used contains too many illegitimate or invalid names, e.g. *Polypodium australe*, *Thlaspi alpestre*, *Arabis stricta*, *Stellaria alsine*, *Spergularia marginata*, *Lathyrus montanus*, *Sparganium minimum*, *Ophrys fuciflora*, *Festuca tenuifolia*, *Ranunculus ficaria* subsp. *bulbifer* and *Calystegia sepium* subsp. *pulchra*, to mention a few.

The book concludes with a glossary, and an index which omits page numbers of least one family (Caprifoliaceae), two genera (*Juncus* and *Typha*), some alien species (e.g. *Ailanthus altissima* and *Dichondra micrantha*) and certain synonyms (e.g. × *Aspleniophyllitis*, *Ceterach* and *Helxine*).

Although there is much that is useful in the Flora it is a disappointment, for it contains omissions and errors, many of which could have been avoided by a study of the botanical literature of the last decade, and at £65 it is overpriced.

D. H. KENT

The correspondence of Charles Darwin, Vol. 2, 1837–1843. Edited by F. Burkhardt & S. Smith. Pp. 603. Cambridge University Press, Cambridge. 1987. Price £30 (ISBN 0–521–25588–0).

This second volume of Charles Darwin's correspondence covers the seven years following his return to England from the *Beagle* voyage, years during which he married his cousin, Emma Wedgwood, and settled at Down House in Kent, where he was to spend the rest of his life. Like the first volume (see my review in *Watsonia*, 16:204, 1986), this one is again a testament to the enlightened scholarship of the editors and their associates, and to the skill of the publishers.

During the period under consideration Darwin was based in Cambridge (9 pp.), Great Marlborough St., London (138 pp.) and Upper Gower St., London (184 pp.), and Down House (89 pp.). Six appendices, occupying 29 pages, provide translations of letters from foreign correspondents (including a most appreciative analysis of the great Humboldt), a 'Chronology', a delightful 'autobiographical fragment', the much-quoted notes on marriage, questions about the breeding of animals and thoughts on 'the vitality of seeds'. Manuscript alterations and comments (20 pp.), a bibliography (27 pp.), a biographical register and index of correspondents (44 pp.) and an index (54 pp.), following the pattern of the first volume, complete the work.

Whilst I was able to identify with the schoolboy, student and young travelling naturalist revealed in the previous volume, the Darwin emerging here is already on a higher plane than that to which most of us could aspire. He also seemed to move from youth to middle age astonishingly rapidly. His

work-load was prodigious; little wonder that he agonized over whether he could spare the time to marry! During these years he wrote and had published his *Journal of Researches* and book on *Coral Reefs*, expended much energy on his contributions to the zoology report of the *Beagle* voyage, wrote papers on the parallel roads of Glenroy, South American geology and numerous other topics; it is scarcely surprising that periodically he wrote that he was 'unwell'. He also filled five of his notebooks on the transmutation of species. His quest for knowledge led, of course, to the bulk of the material provided here. Apart from the purely domestic letters, his correspondence ranges widely over the natural sciences and involves most of the leading lights of the day – De Candolle, Gould, Henslow, Hooker, Humboldt, Lyell, Waterhouse and so on. Not all the letters are to or from Darwin, however. I particularly enjoyed the communication of Lieut. Robert Bastard James, Commander of H.M. Brig *Spey*, to Lyell, concerning the geological and chemical composition of airborne dust collected off the coast of Africa. Not only is the un-Victorian name intriguing, but this letter seems to epitomize the general climate of scientific inquiry within which Darwin was operating.

This is not a book for reviewing, but for dipping into and reading. All readers of *Watsonia* who do so will find instruction, enjoyment and, at times, amusement.

D. M. MOORE

A new key to wild flowers. John Hayward. Pp. viii + 278 with numerous text figures by Michael Hickey. Cambridge University Press, Cambridge. 1987. Price £24.95 (hard covers; ISBN 0-521-24268-1), £8.95 (paperback; ISBN 0-521-28566-6).

This lucid and useful book, with helpful text illustrations, is an excellent alternative to *The wild flower key* by Francis Rose (1981). It differs considerably in layout and owes a sizeable unacknowledged debt to Gaston Bonnier's works on the British flora: *Name this flower* (1917, translated G. S. Boulger) and *British Flora* (1925, translated E. Mellor). The page layout is 'landscaped', that is the lines of text run from the bottom to the top and the book is used on its side.

The instructions are clear (and were successfully followed by my non-botanical 'guinea-pigs'); and provided one does follow them, one will normally end up with a name for a specimen. The keys are arranged in several suites, enabling one to jump forward if the family is known or in some cases even to beyond the genus. The keys all work in the same way: one reads a list of statements in the leftmost column and continues until a true statement is reached, then one moves on to the next column and continues thus until either referred to another key or a name is found for the specimen. Keys for ferns, for non-flowering trees and some other non-flowering plants are included.

It is a very useful crib or resumé of characters for quick identifications, especially if one knows roughly what something is. The text illustrations are very effective in explaining the statements but occasionally it is difficult to see to which bit they refer. The soft-covered edition is ring-bound and opens flat – most useful. There are of course some quibbles; no reference is made to albino flowers, and as "Flowers white" comes as an early statement several times, problems could arise. No mention is made of Britain in the title, but the only real problem is the *price!* Nine pounds for a paperback and £25 for a hardback seem extremely steep to me, especially for what is a beginners' or youngsters' book. One feels the publishers must be relying on library orders. It is, nevertheless, a worthy and useful addition to the list of books for people who need aids such as drawings in order to use keys for identifying plants.

J. M. MULLIN

Wildflowers in danger. John Fisher. Pp. 194, with 11 colour plates, Gollancz, London. 1987. Price £12.95 (ISBN 0-575-03893-4).

This is the ideal botanist's bed-side book – essays of varying length from a couple of paragraphs to several pages on a subject which must excite even the soberest academic – the rare, endangered and often most beautiful of our wildflowers. John Fisher writes well and has the happy knack of

using many of his 'subjects' as a starting point for a diversion into conservation issues generally, biographical details of famous botanists, travellers' tales and the kind of incident information which starts you off on the search for more.

It is sad therefore that the accuracy of John Fisher's facts do not match up to the delight of his themes, and this reviewer has been prevented from going to sleep by numerous sudden feelings that 'that can't be true'. Fisher is particularly unreliable on conservation matters. A few examples will suffice – he gives R.S.N.C. membership as 140,000 (actually over 165,000); number of reserves 1,300 (1,700) and the area protected 170 sq kms (470). He tends to panic when he comes to names of organizations and has consequently invented a few which are new to me, e.g. Nature Conservancy Trust, Scottish Naturalists' Trust. He also confuses the organizations' function, suggesting for example that for the Countryside Commission (in England and Wales) "the emphasis has been on conservation rather than access", which might be true of the Nature Conservancy Council but hardly applies to the Commission.

Even within the strictly botanical material one must be careful not to accept every fact as the truth. It was surprising to be told that *Gagea bohemica* has no English name, when the second edition of the B.S.B.I.'s recommended list gives early star-of-Bethlehem. B. Shepard will be bemused to read that there has been no new Flora of the Isle of Wight since Broomfield, whilst Dr Halliday will no doubt be excited or sceptical on the news that white rockrose grows on Humphrey Head; and Robert Lloyd Praeger may reasonably turn in his grave if the information reaches him that H. C. Watson subdivided Ireland into vice-counties. B.S.B.I. referees, too, will not perhaps have realized that they have been appointed to intervene "should disputes arise as to the identity of plants". Presumably we must now all carry whistles as well as lenses!

The species accounts are arranged in mouth-watering chapters: 'Among the rarest'; 'The most beautiful'; 'Aliens among the corn and elsewhere'. The last starts traditionally enough with pheasant's-eye, corncockle and thorum-wax, but the inclusion, at the end of the chapter, of lady orchid, heath lobelia and yellow star-of-Bethlehem is a trifle eccentric. One questions too the species selected to represent 'A hundred endangered plants', which is the running lead for most of the book. Can the inclusion of such relatively widespread or locally abundant species as golden samphire, hoary rock-rose, elecampane, sea pea and marsh helleborines really be justified, when from the 'A's alone *Alisma gramineum*, *Alopecurus aequalis*, *Althaea hirsuta*, *Anthoxanthum puelii* and *Apium repens* are omitted, though they are all 'Endangered' as defined in the second edition of the *British Red Data Book*? Could the selection perhaps have been influenced by the colour photographs taken by the author, most of which are successful in catching the spirit of the subject, though strangely golden samphire (too distant) and sea pea (shocking pink colour) are not good enough.

Perhaps it was unfortunate that this book should be given for review to a member who lives in Oundle and has spent many weeks in the Shropshire region, but with that background I could hardly fail to be startled to be told, incorrectly, that Breidden is pronounced to rhyme with our local poet, Dryden. Have another try then, Mr Fisher. This really applies to the book as a whole. A good read, I hope it goes to a second edition and that this gives the author an opportunity to produce an accurate version. He can start by correcting the statement that *Lychnis viscaria* was first found on Breidden in 1890, whereas it was recorded by Edward Llwyd before 1709 and published in the Third Edition of Ray's *Synopsis* of 1724.

F. H. PERRING

Chorology of the flora of Catalan Countries. O. de Bolòs. Introductory volume of 80 pp. and a loose-leaf binder containing 19 transparent overlays and 26 distribution maps, together comprising O.R.C.A.: Notícies i Comentaris, I. Secció de ciències, Institut d'estudis Catalans, Barcelona. 1985. Price not stated. (ISBN 84-7283-069-1).

The introductory booklet to this plant atlas of the Catalan countries has a text in both Catalan and English. In it the author explains that he was inspired to start the work by Hulthen's *Atlas över växternas utbredning i Norden* (1950) and the B.S.B.I. *Atlas of the British Flora* (1962). The area covered is the eastern side of the Iberian peninsula, and includes Andorra, the Département des

Pyrénées Orientales in France and the Balearic Islands. The relief, climate, physiographic zones, soils and vegetation in this region are described, the vegetation in phytosociological terms.

The distribution maps plot records in 10 × 10 km squares of the U.T.M grid, which are therefore compatible with the 50 × 50 km grid squares of *Atlas Florae Europaea*. There are 848 10-km squares in the area covered, which is (to use a traditional unit of area) about 3½ times the size of Wales. A single symbol is used for all records of native or fully naturalized plants, irrespective of date, but additional symbols are used for poorly localized records, records of plants which are not fully naturalized or squares in which the species is probably extinct.

The 26 taxa covered in the first batch of maps are in an apparently random assortment of genera including the trees *Abies alba*, *Alnus glutinosa* and *Taxus baccata*, the mediterranean shrubs *Arbutus unedo* and *Nerium oleander*, and three species of *Asparagus*, five of *Brachypodium* and six *Lavandula* taxa.

This addition to our knowledge of European plant distribution is welcome. It is to be hoped that further maps will be issued rapidly.

C. D. PRESTON

Med-Checklist, 3. *Dicotyledones (Convolvulaceae – Labiatae)*. W. Greuter, H. M. Burdet & G. Long (eds). Pp. cxxix + 395. Conservatoire et Jardin botaniques de la Ville de Genève & Secrétariat Med-Checklist, Botanischer Garten & Botanisches Museum Berlin-Dahlem. 1986. Price SF 98 (ISBN 2-8277-0153-7; 2-8279-0006-8).

The *Med-Checklist* details the species and subspecies of vascular plants which occur in the circum-Mediterranean countries, citing for each the synonyms from 64 "Basic Floras" which cover the area. Volume 3 is in fact only the second to be published, and it follows its predecessor after a commendably short interval of 2 years. It includes the families from Convolvulaceae to Labiatae in alphabetical sequence, and is thus dominated by the Cruciferae (138 pp.) and Labiatae (118 pp.), which together occupy two-thirds of the systematic section. Volume 2 (Compositae) will be published later.

The format of the *Med-Checklist* has been described by S. L. Jury in his review of Volume 1 (*Watsonia*, 16: 94-95). If anything the editors have adhered to this format too consistently in Volume 3. I wish they had included widespread, vegetatively reproducing hybrids in the account of *Mentha*. In their absence the treatment of this genus is rather unrealistic.

There are again considerable differences between the *Med-Checklist* and other recent taxonomic treatments, notably that of *Flora Europaea*. Many of these changes affect members of the British flora, the most far-reaching being those which involve the realignment of generic boundaries. *Acinos*, *Calamintha*, *Clinopodium* (and *Micromeria*) are all included in *Satureja*, which is thus swollen to 75 species in the *Flora Europaea* portion of the *Med-Checklist* area alone (*Flora Europaea* recognizes 12). *Cheiranthus* is included in *Erysimum*, *Gentianella* in *Gentiana* and *Lamiastrum* in *Lamium*. There is no space here to discuss the merits of these rearrangements, but at least the broad generic concept the *Med-Checklist* usually adopts has spared us segregates such as *Calathiana*, *Ciminalis* and *Holubogentia* (of *Gentiana*) and *Oreosedum*, *Petrosedum* and *Poenosedum* (of *Sedum*). Taxonomic changes at a lower level include the reduction of *Geranium purpureum* to *G. robertianum* subsp. *purpureum* and of *Erica erigena* to a subspecies of *E. herbacea*, so that its name becomes *E. herbacea* subsp. *occidentalis*. The change from *Thymus praecox* subsp. *arcticus* to *T. praecox* subsp. *britannicus* for the plant known until recently as *T. drucei* is inevitable for nomenclatural reasons, as *britannicus* was the first epithet to be used at subspecific rank. However the resurrection of *Hypericum quadrangulum* from the limbo of *nomina ambigua* to replace *H. tetrapterum* was surely unnecessary: those who think that the name is ambiguous (and they include N. K. B. Robson) can point to the fact that eight of the Basic Floras use it for *H. maculatum*.

Most of these changes will need to be evaluated before they are adopted in British Floras. Whether or not they are accepted, there can be no doubt about the value of the *Med-Checklist*. It has already established itself as a basic work of reference. A checklist, however, is a means to an end, not an end in itself. Only if the *Med-Checklist* inspires botanists to write critical modern floras

of the Mediterranean countries, and monographs of their more significant genera, will the efforts devoted to its production have been fully rewarded.

C. D. PRESTON

Modern aspects of species. Edited by K. Iwatsuki, P. H. Raven & W. J. Bock. Pp. xvii + 240, with numerous text-figures. University of Tokyo Press, Tokyo. 1986. Price unknown.

This unexpected volume represents the proceedings of the *First International Symposium on Biology*, held in Tokyo in November 1985, in connexion with the award to Professor E. J. H. Corner of the *First International Prize for Biology* to celebrate the sixtieth year of reigning of the Emperor of Japan. Although the volume contains papers of varying depth and specialization, a number are of exceptional interest to British botanists and should be much-read and widely cited.

After the opening series of addresses and introductions and a special lecture by the recipient, the real substance of the book is represented by the papers given at an Open Meeting and at separate Botanical and Zoological Meetings. These comprise twelve articles prepared by seven Japanese, two Americans, an Austrian and a Frenchman. Five of these strike me as particularly important.

Two general botanical papers are presented by P. H. Raven, on the biological species concept today, and F. Ehrendorfer, on modern studies of chromosome evolution. Raven re-examines the relationship of biosystematics (especially the extent of gene-flow in the wild) and classification and finds little correlation between them; the biological species concept is therefore rejected, in line with his earlier papers on this subject. Ehrendorfer covers the whole field of chromosome data as applied to taxonomy and evolution, with special reference to karyotypes (especially banding patterns), DNA-values, chiasma frequency and *in situ* hybridization with cloned DNA; his paper is worth studying for many reasons, not least the impressive Figure 8 on p. 74, showing three sequential treatments of the same mitotic spread.

L. D. Gottlieb discusses speciation in the annual genus *Clarkia*, showing how much modern techniques of isozyme electrophoresis and molecular biology (notably restriction enzyme fragmentation of chloroplast-DNA) can advance our understanding of a group already well worked in the 1950s and 1960s by standard biosystematic methodology. K. Suzuki provides a revealing study of speciation via hybridization at the diploid level in the genus *Epimedium*. This is a most welcome and useful example of a little-understood phenomenon that must actually be common in nature; pollinator preferences seem to be one critical factor. Y. Watano used isozyme electrophoresis to investigate two adjacent populations of *Osmunda lancea*, and was able to demonstrate that one of them probably arose via selfing of a gametophyte that was dispersed as a single spore from the other.

This book demonstrates very well that modern frontier research in plant taxonomy and evolution is very much in the hands of those who have access to the most sophisticated (and expensive) techniques of molecular biology. Regrettably this renders it increasingly remote from amateurs and even from many professionals.

C. A. STACE

Seed identification handbook. R. J. Flood & G. C. Gates. Pp. 72, with 184 colour photographs. National Institute of Agricultural Botany, Cambridge. 1986. Price £7.50 (Obtainable from The Librarian, N.I.A.B., Huntingdon Road, Cambridge, CB3 0LE).

This booklet illustrates seeds and other small propagules (the title using the agricultural concept of a seed) of crops or common impurities. While primarily British in scope, the book includes some frequent contaminants of imported seed.

Though the sequence of taxa appears haphazard, the seeds are ordered mainly by size, which the authors argue is one of the most obvious characters. Gramineae provide the main exception and are grouped at the end. Such an unusual sequence detracts from the utility of the book. For example, fruits of *Anthriscus caucalis* (p. 29) resemble and overlap in size with those of *Torilis*

nodosa (p. 33), yet they are placed several pages apart. Direct comparison is needed for identification, yet the reader must continually check a large proportion of the book for similar species. A sequence based on shape, surface morphology, or some taxonomic system would be an improvement, as would the addition of keys.

The authors should be congratulated on the generally high and even quality of the illustrations, though this was marred by poor colour registration on some pages of the review copy. Magnifications of $\times 2$ or $\times 4$ used throughout have the advantage of making photographs directly comparable, but smaller seeds lack detail. For example, *Hypericum hirsutum* (p. 7) has a tuberculate testa, mentioned in the text, but the photograph has insufficient resolution to show such detail. A magnification of $\times 8$ or $\times 10$ might provide a solution, as might an additional low-magnification scanning electron micrograph.

Seed material used appears to be in good condition and gives an indication of morphological variation, including propagules both with and without external structures which may become detached. An exception is *Linaria vulgaris* (p. 24), which consists largely of immature or damaged seeds. Most descriptions use general terms, but specialized terminology employed for grasses would be more accessible with an annotated diagram. Colour descriptions are largely superfluous and often at variance with the colour photograph.

The booklet fills a gap in existing seed publications, which are few, often old, out of print, with poor-quality illustrations or of limited application. It will prove useful to anyone regularly involved in seed identification in Britain and, it is hoped, will stimulate more publications of this nature.

D. A. SUTTON

The Englishman's Flora. Geoffrey Grigson, foreword by Jane Grigson and introduction by William T. Stearn. Pp. 478, with frontispiece and 44 illustrations. J. M. Dent & Sons Ltd., London. 1987. Price £25 (ISBN 0-460-07007-X).

Admirers of Geoffrey Grigson's *The Englishman's Flora* who have not been able to acquire a copy of the hardbound first (1955) edition have had to manage with poorly bound paperback editions for many years. The first edition is currently offered by booksellers at £50, so this edition, which has the dignity and durability of the first edition and is enriched by a foreword by Grigson's widow and a short introduction by W. T. Stearn, is to be warmly welcomed.

The Englishman's Flora, a rich compilation of plant names and plant-lore, was written at a time when folklore studies were at a low ebb in Britain. Folklore as a discipline had been in decline since the end of the nineteenth century. The small enthusiastic band who had struggled to keep folklore scholarship alive throughout the war years was aged and lacked energy. To a certain extent Grigson's knowledge and use of sources not usually appreciated by folklorists compensates for the sad state of folklore scholarship, but his work inevitably reflects the period in which it was produced. Thus it contains a great deal of rather speculative material which today's folklorists would reject.

None the less, the *Flora* remains a valuable reference work for plant names and is, above all, a stimulating and entertaining read. The articles on individual species give a good impression of the impact that these species have had on human life and thought, and together with the extensive bibliography, to which Stearn provides a supplement, provide a key which unlocks doors to many curious aspects of man's relationship with plants. £25 may seem expensive, but the volume's dignified presentation together with its thought-provoking contents should ensure many hours of pleasant browsing. It is, however, too large and heavy for reading in bed, so the tattered paperback editions will continue to be needed for comfortable bedtime reading.

A. R. VICKERY