Book Reviews

Wild plants of Glasgow. Conservation in the city and countryside. J. H. Dickson, with paintings by Elspeth Harrigan and photographs by T. N. Tait. Pp. 208, including black and white illustrations, maps and tables, and 30 pp. in colour. Aberdeen University Press, Aberdeen. 1991. Price £14.95 (ISBN 0–08–041200–9).

This book is the first fruits of the Flora of Glasgow survey which has been taking place over the last decade. It is aimed at the general reader, and will be followed later by a more detailed and technical publication. It is an extremely attractive book, which describes some of the extraordinary range of plants, native and introduced, growing in the Glasgow area, including something of their history and ecology, and the problems of conservation.

The book is divided into three sections. The first deals with the background and objectives of the survey, and gives an insight into how the data are analysed. Dot maps are used to illustrate some of the different distribution patterns which have been identified, and annotated site lists to indicate the characteristics of different plants.

The second and largest section of the book takes a more detailed look at nine contrasting habitats, and at some of the plants typical of each. These include some amazing finds, such as the wild Fig on the Clyde, and the 'extinct' Mudwort in a dried-up reservoir, as well as more common plants and some interesting hybrids. The final section consists of a chapter on conservation, and is followed by an extensive bibliography, and notes on Field Guides and Societies to join. In short it is a popular book which also succeeds in being scholarly.

Since it is intended for a general audience, popular English plant names are used throughout. Latin names are included for all the plants which receive detailed attention, but not in the captions to the illustrations, which I think is a pity. Personally I like to see both Latin and English used at first appearance even in more technical literature, but this would have made the text too unwieldy in places. Latin plant names are included in the Index (though one or two plants on the site lists have been missed).

But these are quibbles. The whole volume is a work of art and beautifully produced on expensive paper; the colour photographs are excellent, and some of the individual flower paintings are quite stunning. In his Introduction Dr Dickson bemoans the unattractiveness of the books available to him as a youngster, when he first took an interest in botany: he has made sure that no future generation of Glaswegians will be able to make a similar complaint. Let us hope he can pull off a double with the more technical publication still to come.

J. Muscott

The wild flowers of Luton. J. G. & C. M. Dony. Edited by C. Boon. Pp. 64, with maps. Privately published, Luton. 1991. Price £3.50 (inc. postage), available from P. Ellison, 90 Beverley Road, Ruislip, Middx., HA4 9AS.

This, the last work by Dr J. Dony in a line of distinguished books on his local flora, is announced as "an account of the wild flowers known to grow in the immediate past in Luton". Having already accounted in detail for the flora of Bedfordshire in general in two books, we might be excused for thinking that this could not be anything new. We would be wrong. In fact, it is two accounts in one, and breaks new ground in several ways. About a third of the book consists of an annotated check-list of the flora of Luton Borough and its immediate environs, covering some 4,803 ha, an area with a remarkable range of habitat types considering its size. The main body of the book, however, consists of a series of concise 'site reports' of places which "had a vegetation worthy of record". Some 23 sites are dealt with in detail, each having a description, historical notes, grid reference, and a list of

specially selected species recorded between 1987 and 1990. These selected species are those found in 128 or fewer tetrads in Bedfordshire as a whole (i.e. less than 33%). A special innovation is the use of these species lists to construct a 'plant rarity factor' for each site, the higher the resulting score, the greater overall botanical rarity represented by the site. These accounts are rounded off neatly with a clear site map for each site, and there is a coloured general map of the area in the centre spread which can be used both to identify specific sites and to see the extent and location of surviving semi-natural vegetation.

Just as Dr Dony's earlier Floras had pioneered the use of discrete 'habitat studies' as a way of providing a factual base-line for describing the typical vegetation of specific habitats, so this takes the process one step further, to provide an outline assessment, in botanical terms, of the conservation value of sites. The result is a mini conservation review of Luton Borough, based on sound facts. Many a consultancy would be incapable of producing such a document for a local authority's 'green audit', so much the current fashion. Luton has one virtually for nothing.

T. J. JAMES

Fern names and their meanings. A glossary for the fern grower and collector. J. W. Dyce. Pp. iv + 31. British Pteridological Society, London. 1988. Price £3 (ISBN 0–9509806–1–7).

'What do they mean'? 'Why do botanists keep changing them?' This small booklet is an attempt to answer, at least for "the amateur grower of British ferns and their varieties and cultivars", the first of those questions so frequently asked about Latin plant names. The second problem is also addressed briefly but passionately in the introduction.

The booklet has four main parts: an introduction, sections on the etymology of the names of British fern genera, and on the meaning of Greek and Latin word elements commonly found in fern varietal names, and the heart of the book, the main glossary of varietal names. The latter runs to 18 sides and includes over 700 entries, all listed in the neuter form.

The author indicates in his introduction that his basic source of information is the glossary of fern names prepared by Dr F. W. Stansfield and Rev. Canon Kingsmill Moore and published in the *British Fern Gazette* between 1919 and 1921. What he does *not* say is that his glossary is almost entirely a simple re-ordering of Stansfield & Moore's work (where the varietal names were arranged under each species) into a single alphabetical sequence, but in nearly all cases keeping their original definitions verbatim. One or two of Stansfield & Moore's own, rare, errors have however been corrected: their picturesque definition of *gemmatum* ('decked with gems') has been changed to the prosaic but more accurate 'provided with buds'. Some epithets are misspelt or malformed; in some instances this is obviously due to error on the part of the original fern grower or author (*gracilissimum* should be *gracillimum*, as indicated by Stansfield & Moore) but others (e.g. *minum* and *majum* which should be *minus* and *majus*) show faulty understanding of Latin.

In spite of its deficiencies, this is an admirably useful little book. It makes Stansfield & Moore's work available once again in a handy, accessible and inexpensive form to a new generation of fern growers and collectors who may not have the early volumes of *British Fern Gazette* at their disposal.

R. R. MILL

Atlas Florae Europaeae: Distribution of vascular plants in Europe. Vol. 9, Paeoniaceae to Capparaceae. Edited by J. Jalas & J. Suominen. Pp. 110, 155 maps. Committee for Mapping the Flora of Europe and Societas Biologica Fennica Vanamo, Helsinki. 1991. Price FIM 350 (ISBN 951–9108–08–4).

Volume 9 of *Atlas Florae Europaeae* is of particular interest to British botanists because, in covering mainly the Papaveraceae, it deals with genera such as *Papaver*, *Fumaria* and *Corydalis* (sensu lato) which have species with rapidly changing distributions in this country. *Fumaria parviflora*, for

example, is in decline throughout Central Europe and is hardly known north of 50°N except in Britain where it reaches 57°N, and the same seems to be true of *Papaver hybridum*, now apparently extinct in Belgium and Holland.

Many of the 24 British species mapped in this part are introductions but their treatment is somewhat arbitrary. *Chelidonium majus* is accorded native status throughout its range here whilst all records of *Berberis vulgaris* are regarded as introductions, whereas both are probably best regarded as 'doubtfully native'. Although a map of *Eschscholzia californica* is included, no British localities are shown, though it is said by Stace in his *New Flora of the British Isles* (1991) to be naturalised and perennating on dunes, walls and cliff tops in Guernsey and in quarries and by railways in Kent. There is no map of the ever-spreading Oregon-grape, *Mahonia aquifolium*. This variable treatment is doubtless a reflection of our own uncertainty and it is an area to which the B.S.B.I., with its wide network of recorders, could surely contribute in advance of future parts.

Members may also be able to contribute useful information from visits abroad. I was surprised to find the native status of *Laurus nobilis* in Majorca questioned: I saw it in February 1991 on a cliff at the mouth of the Torrent de Pareis where it was recorded in my 1880 Flora.

The maps in this *Atlas* will be even more fascinating when put alongside the results of the Monitoring Scheme when they are published. Comparison with that scheme will not be as easy as could be wished because some of the recent name changes are long and unattractive. *Corydalis* has been split into *Pseudofumaria* and *Ceratocapnos*, whilst with *Fumaria*, *F. martinii* has been lumped with the more widespread *F. reuteri*, and orthographic research has decided that *F. muralis* now has a subsp. *boroei* rather than subsp. *boraei*. There are times when one would like to recommend that taxonomists be paid a negative productivity bonus.

With this volume the number of maps published since the project began in 1966 has reached 2109 and perhaps 15% of the task is completed. Now is surely a time to salute the efforts of those two botanists from Helsinki, Jaakko Jalas and Juha Suominen, who have masterminded the project as organisers and editors over the 25 years since it began.

F. H. PERRING

Wild orchids of Dorset. M. N. Jenkinson. Pp. 120, with drawings, maps and 63 colour plates. Orchid Sundries, Gillingham, Dorset. 1991. Price £17.95 hardback (ISBN 1–873035–01–2); £13.95 paperback (ISBN 1–873035–02–0).

This book, by a police officer, is said to be "directed not so much at the committed orchid enthusiast, but seeking to find new converts to the faith". Indeed much enthusiasm for the field study of orchids is engendered here, even though the perils of looking for *Hammarbya paludosa* are made abundantly clear.

Short introductory sections refer to the objectives of the book, the structure of the orchid flower, the geology of Dorset, the main habitats of orchids in the county (listed under five categories), and the nature reserves. Much of the book is devoted to accounts of some 28 species of orchids which occur regularly. For each species information is given on status, habitat, flowering period, distribution and distinctive features, but there is no overall key. The distribution maps, based mostly on records made during the last ten years, provide more information than previously available, presence being shown within 1-km squares. Although readers are repeatedly reminded not to pick flowers, the wisdom of the publication of such detailed distributions of uncommon species is questionable.

Notable features are the full treatment of the helleborines (including the recent discoveries of *Epipactis purpurata*) and of the dactylorchids, both subjects of special study by the author. In the dactylorchids, nomenclature departs from *Flora Europaea*, and "a newly identified form, var. *bowmanii* Jenkinson" (not validly published) is included under *Dactylorhiza majalis* subsp. *traunsteinerioides*. This form, found also in Hampshire, is robust, has a rather dark flower colour and a fairly narrow, very deeply three-lobed labellum. Hybrids are not prominently treated, but the features of the labellum of many forms of the marsh orchids are illustrated.

There are a few unfortunate statements, e.g. "physiological" features of the landscape, *Epipactis*

palustris spreading by underground "runners, or elongated roots", and one may doubt whether there would ever be "climax pine forest" in the New Forest. However, the valuable points for field identification, and details of the phenology and occurrence, together with the original colour photographs (for each species a general view and a close-up of flowers, mostly of good quality), make this a useful and attractive book, particularly for those exploring the unspoilt countryside of Dorset.

A. J. WILLIS

The Chelsea gardener: Philip Miller 1691–1771. H. Le Rougetel. Pp. 212, illustrated in black and white and colour. Natural History Museum Publications, London. 1990. Price £14.95 (ISBN 0–565–01101–4).

Philip Miller is, without doubt, the most celebrated English gardener of the eighteenth century. He was a self-educated man, and what he could not learn from his father or other gardeners he learnt from books. Having set up his own nursery in Southwark, he was already established in the small circle of elite gardeners, when, in 1722, he was appointed Gardener (in today's terminology, Curator) of the Society of Apothecaries' Physic Garden at Chelsea. He was soon to put the garden on to a sound footing and to establish over the next 48 years an institution of international repute.

This is a book not just about Philip Miller and his achievements at Chelsea; it is a masterly analysis of Miller's influence on gardening and horticulture – and they were by no means synonymous in those days. The author has arranged her account in 20 interlocking chapters, the first three giving background, others discussing Miller's links with botanists abroad, in Europe and North America, with eminent gardens and gardeners, plant illustrators and the like. His links with Cambridge and the effects his views were having on forestry and agricultural policy are reviewed; and the importance of Philip Miller's published works to botany at large is discussed in Chapter 20 by William Stearn. His most important work, the *Gardeners' Dictionary*, which went through eight editions between 1731 and 1768, contained cultural information for the kitchen, flower and fruit garden, and much descriptive botanical material beside. The last edition appeared after the publication of Linnaeus' *Species Plantarum* in which binomial nomenclature was introduced, and Miller followed the convention and thereby validated many pre-Linnaean genera he had used in earlier editions.

Miller was also a field botanist and a teacher, collecting in many parts of England from the Cheviots to his home county of Kent. He was able to find the Deptford Pink (*Dianthus armeria*) in Deptford, *Aquilegia vulgaris* in Bexley and *Narthecium ossifragum* on Putney Heath.

This book is a 'must' for anyone interested in the history of botany or gardening and the kind of book that will be referred to time and time again. Hazel Le Rougetel is to be congratulated in giving us such a delightful, concise account of what must have been many years of fascinating research.

A. C. JERMY

Shamrock, botany and history of an Irish myth. E. C. Nelson. Pp. xiv + 200 with 5 colour plates and numerous black and white photographs and illustrations. Boethius Press, Aberystwyth & Kilkenny. 1991. Price IR£28 (ISBN 0–86314–200–1 hardback); IR£14 (ISBN 0–86314–199–4 paperback without bibliography, pp. xiv + 158); now only available from the author, 14 Connaught Parade, Dublin 7; p&p extra.

The curtain rises on a sentimental discourse of the importance of shamrock to the Irish, resolving to strip away the facts from the fiction.

Act I opens on an Ancient Briton, St Patrick, himself of whom little is known, and who certainly has nothing to do with shamrock! Indeed as we pass through the centuries nothing is heard of this blessed plant in Latin, Irish or English, until we realise that shamrock is the anglicised version of *seamróg* meaning a young clover. Variations on *scothsheamrachor* or clover-flowered thus abound

in mediaeval manuscripts. The first time the word shamrock made its appearance was in Edward Campion's *The first boke of the histories of Irelande* (1577) where he stated that shamrocks were eaten by the Irish!

By Act V we have caught up with the Herbalists where in 1571 Matthias de l'Obel wrote a strange passage about the Irish passion for a meal of clover or meadow trefoil. This was followed by John Gerard in 1597 who understood that Shamrock was clover and that *seamróg* covered both the red and white clovers. By the early 1600s, it was the accepted view in England that shamrock was eaten daily by the Irish or only in times of dire necessity (depending on the authors' own prejudices).

Some decades later, *seamróg* was being defined as wood sorrel in an Irish dictionary. It was not until 1726 that an Englishman, the Rev. Dr Caleb Threlkeld, set the record straight, recognising the tradition around St Patrick and the shamrock as an explanation of the Holy Trinity, and also that *seamróg* were clovers. He was also the first to record the now renowned ritual of drowning the shamrock with alcohol and food.

By Act XI, the shamrock was beginning to be worn not just on 17 March but as a sacred political badge throughout the year. The Volunteers were the first to use it in 1779, followed by the United Irishmen in 1791. The shamrock motif was seen on flags, belts, cockades, glassware and seals, even in a weekly journal *The Shamroc* and in verse 'The Wearing of the Green'.

With the dawning of a new century, the romantic, mawkish image of the shamrock blossomed forth. At the same time the 'Age of Reason' brought the actual botanical identity of the shamrock into question. The first scientific survey of what plant was worn in Irish buttonholes was undertaken by James Britten in the 1870s. He discovered that the plant mostly in use as the true shamrock was *Trifolium minus* (now called *T. dubium*). Unfortunately, not many people took note of his systematic findings. Indeed, ten years later, one Nathaniel Colgan added to the confusion by establishing all the above plants as rivals, plus the red clover (*T. pratense*).

When the Currency Commission of 1926 decided to ban the shamrock motif from the new coinage there was a mass uproar and by the time the Irish Post Office issued the first definitive stamps and one commemorative one in 1933–4, each one had shamrocks in the design.

And so we finally come to the late 1980s, when Charles Nelson attempted to assess the present day status of the shamrock in Ireland by means of modern communications. In fact *Trifolium dubium* was revealed as the most commonly regarded true shamrock, while black medick (*Medicago lupulina*), red clover, and wood sorrel (*Oxalis acetosella*) accounted for only a few gatherings. The curtain closes on the fact that "shamrock is a young clover, nothing more, nothing less". That is what it always meant "and what it will mean until the end of time."

Had this book been written by anyone else, it might have been both boring and pedantic, but Dr Nelson's sparkling dry wit and wicked sense of humour comes through again and again. Accompanied by some delightful colour plates by Bridget Flinn and a hilarious and irreverent forward by Bernard Loughlin, this book deserves to be read by a wide audience. *Vivat trefolium*!

S. ANDREWS

The Burren. A companion to the wildflowers of an Irish limestone wilderness. E. C. Nelson & W. Walsh. Pp. 343, with 100 colour and several black and white illustrations. Boethius Press, Aberystwyth, and The Conservancy of The Burren. 1991. Price IR£32 (ISBN–86314–213–3 hardback); IR£19 (0–86314–214–1 paperback); available from 14 Connaught Parade, Dublin 7; p&p extra.

The Burren of north-western Co. Clare is Ireland's premier botanical attraction. Remarkably, it was first explored in detail only in 1851, the year that T. H. H. von Heldreich revealed Greece's Mt Olympus in remotest Thessaly to the botanical world. The two areas are actually very comparable, for they are both karstic landscapes of bare limestone, subterranean water and few human inhabitants, making travel difficult in the days before motorised transport. Each has a rich and diverse flora and is amongst the most precious gems of Europe's natural heritage. My own view (coloured by my affection for Connemara) had long been that the Burren received too much attention from botanists, especially those visiting from Britain, to the detriment of the study of other

regions of Ireland. However, reading *The Burren* has successfully prodded me to take a positive view of the region, the book stirring up as it does images of low, mysterious, grey hills, pastures bright with Spring Gentians in May, and the massed flowering of Mountain Avens, Bloody Cranesbill, Hoary Rockrose and other species in the native rock garden that the Burren presents to the visitor in summer.

Charles Nelson sets out an eloquent, enthusiastic and erudite portrait of a landscape and its plants. He provides background information to the flowers that make the Burren so special, gleaned from a wide variety of sources, whilst maintaining an unobtrusive personal touch by allusions to his childhood in Co. Fermanagh, his interest in tropical drift-seeds and the genus *Fuchsia*, and his knowledge of Irish garden history. The style is discursive, the text packed with observational sketches, anecdotes and quotations from the literature of botany, folklore and Irish history. This is not a new Flora of the Burren: there are many references to David Webb and Maura Scannell's *Flora of Connemara and the Burren* (1983) – reviewed in *Watsonia* **15**: 148–9 (1984). Nor is it a guidebook; for topographical information the reader is encouraged to refer to Tim Robinson's excellent annotated map, *The Burren, a map of the uplands of North-West Clare, Éire* (1977). It is indeed a companion, a book, in the author's words, to be read by the fireside when "a westerly gale hurls stair-rods of rain horizontally across Cappanawalla". It will certainly be a useful item in one's hotel or 'bed-and-breakfast' during a visit. I readily forgive the author for ignoring the mundane plants that excite feeble minds like my own – there is, for example, no mention of any docks or knotgrasses!

The author defines the region more or less on the basis of the (limestone) geology, although he is sensibly a bit vague about the eastern limits around Kinvarra and Gort, where one can still see a 'good' Burren flora. The text is beautifully set out, the words interspersed with water-colour illustrations by Wendy Walsh, deliberately conceived in a sketch format to give a sense of immediacy. There are also black and white topographical scenes and some portraits. I should have been happier with numbers as well as titles at the head of each chapter. Nor am I am at home with the Irish word *scailp* to describe the deep crevices in the limestone; in Yorkshire, where my family came from, they are *grykes* (as they are in Scandinavia).

Charles Nelson has done us all a considerable favour by his distillation of fact and experience, and I urge the many lovers of the Burren to buy this fairly priced book, not least because all proceeds will go to support the work of The Conservancy of The Burren. The future of this special place is uncertain, the worst threat being increased pressure from tourism, notably the proposal to erect a superfluous and environmentally insensitive 'visitor centre', and it is up to botanists above all to promote its conservation. This book is a beginning.

J. R. Akeroyd

The northwest European pollen flora, Volume 6. Edited by W. Punt & S. Blackmore. Pp. v + 275, with 103 black and white plates. Elsevier, Amsterdam. 1991. Price D.Fl. 240 (ISBN 0–444–891641–1).

This latest volume in the northwest European pollen flora project continues to document systematically the pollen morphology of all families of vascular plants indigenous to, or regularly naturalized in, northwest Europe. In this volume the families covered are Selaginellaceae, Oleaceae, Geraniaceae, Juglandaceae, Cornaceae, Globulariaceae, Buxaceae and Ranunculaceae, with the last family occupying more than half of the book. Each family account contains detailed descriptions of pollen types (i.e. the morphologically discernible groups of pollen species) together with keys to their identification, and is accompanied by excellent scanning electron and light micrographs.

The arrangement of the survey is taxonomic and its clearest aim is to provide taxonomic information on the range of form of pollen within families. But pollen identification has become an important aspect of the work of many other plant scientists in disciplines as varied as allergy studies, forensic science and the reconstruction of past vegetation and hence past environments. Palynologists with these interests will look to the *Pollen Flora* as a valuable source of data on pollen

morphology, but the material contained in these volumes has to be used with caution in these areas. The palaeopalynologist, for example, when faced with an unknown pollen grain, does not normally have the assurance that it belongs to a particular family. A spiny trilete spore, such as that of *Selaginella kraussiana* (G. Kunze) A. Braun as described in this volume, could also belong to a bryophyte, such as *Anthoceros* or *Riccia*. Some pollen grains belonging to members of the Oleaceae are very similar to those of certain Cruciferae; but such similarities cannot, of course, be dealt with in a systematically arranged account.

The book will be of greatest value to those concerned with pollen identification when detailed information and illustrations are needed to confirm identity or to provide greater taxonomic resolution in important groups. The Ranunculaceae is of particular note here because most general pollen keys provide limited taxonomic detail, yet distinction between ranunculaceous groups can be of profound ecological value for the palaeoecologist. The '*Ranunculus acris* type' pollen recognized by most palynologists, for example, covers a multitude of ecologically varied species, and the information provided here for more precise identification will be very welcome.

The keys are generally robust, though some expressions are loose and ambiguous, such as the distinction between "reticulum relatively coarse" and "reticulum fine" in the distinction between *Olea* and *Phillyrea*. This could have been improved by providing a count of lumina density across the mesocolpium, which permits very adequate separation. I remain unconvinced whether some of the fine distinctions, such as that between *Erodium moschatum* and other members of the genus, can be effected by light microscopy alone. In the identification of fossil pollen using conventional phase contrast microscopy, the work described in this valuable collection of papers will prove useful, but must clearly be applied with great caution and always with the assistance of reference material.

P. D. Moore

New Flora of the British Isles. C. A. Stace. Pp. xxx + 1226, illustrated. Cambridge University Press, Cambridge. 1991. Price £24.95 (ISBN 0–521–42793–2).

This eagerly awaited and reasonably priced book fulfils almost all expectations and is essential for anyone with a serious interest in the British and Irish floras. It is a manual for identification rather than a descriptive Flora, and so needs to be judged for its usefulness rather than just the information it contains. I make no apology for repeating the words 'helpful' and 'useful' rather often in this review.

Everything in the Flora, from the taxa included (especially non-native taxa) to the nomenclature and the construction of the keys has clearly been worked out afresh. Taking on trust its claim to contain 2990 keyed and numbered species, it thus contains nearly half as many again as the 2030 that are in the 3rd edition of the *Flora of the British Isles* by Clapham, Tutin & Moore (CTM). This gives some idea of the amount of unfamiliar materials made available by Stace. Most of the extra species are aliens, and in some genera the result is quite startling, *Cotoneaster* containing 45 keyed and numbered taxa (five in CTM), *Crocus* containing nine (two in CTM) and even *Trifolium* 32 (22 in CTM). There are 90 more grasses in Stace. His criteria for inclusion of non-native taxa are eminently helpful, the aim being "to include all taxa that the plant-hunter might reasonably be able to find 'in the wild' in any one year. Any such plant, whether native, accidentally introduced or planted, affects wild habitats and is part of the ecosystem, and botanists and others might be expected to need or want to identify it". He thus includes a number of plants that persist rather than regularly naturalise, as well as a wide range of non-persistent but recurrent casuals.

The dichotomous keys seem to work well, and many are quite original. The *Carex* key, for example, broken up into sections like all long keys, differs in many ways from previously available ones, often uses quite different characters, and works at least as well. I personally dislike the layout of the keys, with alternately indented couplets, but one soon gets used to it. Multi-access keys are often provided, but in only a few cases (notably *Epilobium*) are they the only sort available. The ones in *Sorbus*, and in the novel account of the cultivars of *Populus* × *canadensis*, are especially useful. The species descriptions are mostly less than 30 words, and have a limited value for confirming identifications. As so many unfamiliar species are included for which fuller descriptions

will be unavailable to most readers, this does create problems. The drawings, mentioned later, do however somewhat compensate for this. With more familiar species, too, the brevity of the descriptions can be worrying. Is there, for example, no mention of the hairs at the junction of leaf-blade and sheath in *Poa humilis (P. subcaerulea)* because the author considers them not to be diagnostic, or because there is just not the room to include this character?

Abbreviations are few and easily understood. The text in general contains an immense amount of useful comment. Unnumbered and unkeyed "other genera" and "other species" are frequently included, but I cannot help feeling that, as in most other Floras, they do more to salve the author's conscience than to help the reader. They stand out here because the rest of the *Flora* is so helpful. Crop species are especially well treated and up-to-date. *Red Data Book*, scheduled, and Rare species (in fewer than 100 10-km squares) are indicated. English names, many of them new, are provided for all the numbered species. The bibliography is very brief, and it is perhaps a pity that no direct references to more detailed accounts are given anywhere in the text.

The taxonomic stance of the book is a good balance between expert and consensus opinion. It is comforting to find one's doubts about identifying segregates of such species as *Galium mollugo, Rhinanthus minor* and *Sedum telephium* confirmed, but I am sorry to see the subspecies of *Pilosella officinarum* so briskly dismissed (many of us record them, even though we may doubt whether they are worth subspecific status). For once in a British Flora though, subspecies are generally very fully treated. Varieties are rarely and rather unpredictably included. In the case of *Fumaria* the key would probably have worked better if varieties *had* been included (as P. D. Sell, *BSBI News* **41**: 16 (1985) recommends), and this is one of a number of cases where recourse to the *Plant Crib* is still essential. All hybrids known to occur in Britain and Ireland are included. More are keyed and described than in our other Floras, but inevitably, alas, the great majority are not. Here, as elsewhere, the continuing need for a comprehensive critical and descriptive Flora of Britain and Ireland is highlighted. Of the apomictic groups, *Rubus, Hieracium* and *Taraxacum* are treated only in outline, but *Sorbus* and *Euphrasia* are treated in full.

Physically the book is about the same size as the 2nd edition of Clapham, Tutin & Warburg's *Flora*. The binding is sewn, and the cover is pliable plastic. My copy is still in perfect shape after two months' daily use. It is printed from camera-ready copy produced by a word-processor, and the type is large and easy to read (though lacking such refinements as accents and italics). Traditional typesetting would probably have reduced the number of pages by about a third and made the book more suitable for the rucksack, but, as the author remarks, would even so have increased the price. Errors of any sort are minimal. Main Argyll is given for *Rorippa* × *hungarica* instead of *R.* × *armoracioides*. *Veronica hederifolia* should be cross-referenced to the illustrations instead of *V. serpyllifolia*. The drawings of *Ledum* and *Vaccinium uliginosum* are labelled the wrong way round. *Salsola* is missing from the index. The second half of dichotomy 8 on p. 564 should lead to 17 not 16. Otherwise there seem few errors likely seriously to mislead the reader. Even the cm scale inside the front cover is only 1% out. The brevity of the distributional information occasionally leads to slight inaccuracy, but this is almost inevitable and detail of this sort is not what one will chiefly come to this *Flora* for.

There are some 150 pages of illustrations, and it is here that my only serious criticisms of the book lie. The line drawings are mostly by Hilli Thompson and include excellent series of crucifer, umbellifer and *Rumex* fruits. Her habit drawings of unfamiliar aliens are especially helpful and compensate a good deal for the brevity of the description. Most give a good impression of the jizz of the plants but some, for example those of *Cotoneaster*, are curiously diagrammatic, and several of the series of drawings of leaves are unsatisfactory. In a few cases poor choice of specimens rather than quality of drawing means that they fail to show, or even contradict, the diagnostic characters, for example the number of intercalary leaves and angle of branching of *Odontites vernus* subsp. *serotinus*, the leaf-lobes of *Ranunculus omiophyllus*, or the apical leaf-lobes of the *Veronica hederifolia* subspecies. Other artists have also contributed valuable drawings, such as those of *Dactylorhiza* labella by R. H. Roberts and *Oenothera* flowers by J. Zygmunt. The many light photographs often seem to suffer from very poor reproduction, and it is difficult to see why the blurred *Potamogeton* leaf-apices were not drawn instead. The *Euphrasia* silhouettes are too small and murky to be of much use, but those of *Sorbus* are excellent. There are also many scanning electron micrographs (S.E.M.). Those of *Epilobium* seeds and *Isoetes* megaspores are good, and the latter for once show that the sculpturing is not as easily diagnostic as most descriptions imply, but

most of the rest are unsatisfactory. Even the very clear ones of *Montia* seeds, by the very nature of the process, omit the diagnostic shininess or otherwise of the coats. Those of *Tripleurospermum* achenes fail to show even the oil-glands, let alone their diagnostic shapes, and the complete series of *Carex* utricles includes many unrecognisable and often shrivelled examples. S.E.M. pictures are generally unhelpful as identification aids for botanists with a lens or light microscope, and with an artist of Thompson's ability and versatility to hand it is a mystery why they were used.

The *New Flora* was prepared in close consultation with D. H. Kent who was simultaneously compiling a new nomenclatural check-list of British and Irish plants. Thus the nomenclature, like every other aspect of the *Flora*, is uncompromisingly up-to-date according to current knowledge, resulting in a large number of changes to familiar names. These will best be reviewed when the check-list itself is published. Meanwhile the reader's dismay at them should be largely offset by the fact that they are an integral part of an authoritative and user-friendly Flora that will be our standard for taxonomy, nomenclature and identification for some time to come.

A. O. CHATER

Pleistocene palaeoecology of central Norfolk – a study of environments through time. R. G. West. Pp. ix + 110, with 44 figures. Cambridge University Press, Cambridge. 1991. Price £40 (ISBN 0–521–40368–5).

This book continues the Pleistocene history of East Anglia from the author's earlier book *The pre-glacial Pleistocene of the Norfolk and Suffolk coasts*, concentrating on a part of the catchment of the River Wensum near East Dereham. Within this area, sections exposed by commercial sand and gravel workings over a period of c. 20 years have provided "an extraordinary wealth of evidence" on environmental changes from the time of the first major glaciation of East Anglia. The presentation of this evidence is organised chronologically. Five chapters deal with the local succession of deposits identified as belonging to the Anglian, Wolstonian and Devensian cold stages and the Hoxnian, Ipswichian and Flandrian temperate stages. The geological evidence and palaeobotanical analyses produced by Professor West's intensive studies are presented in meticulous detail in the form of many clear sections (related to aerial photographs as well as maps), pollen diagrams, and tables of fossil identifications. These numerous sections include glacial tills and gravels and overlying fluviatile deposits with limnic sediments formed in depressions. His synthesis of this evidence supports – through the relative positions of deposits identified by their palaeobotany – the succession of Middle and Upper Pleistocene stages originally proposed for East Anglia by Professor West and co-workers. At the same time he reiterates his caution that it remains possible that additional stages may yet be identified in the terrestrial record.

The form of the book is that of an extended scientific paper. It furnishes an excellent example of how primary data of the highest scientific value have been gathered, processed and synthesized to provide the basis for reconstruction of past environmental – including climatic – changes. Not only does this treatment fulfil the author's claim that "the observations have led to a much better understanding of the Pleistocene in Norfolk and are indeed relevant to the wider understanding of the British Pleistocene" but it provides for the more general reader an insight into the methods by which primary data are obtained and used to reconstruct climatic changes in the past. These reconstructions can then be of use in comparison with models of possible climatic change in the future. This book is indeed, as claimed on the fly-leaf, "a unique 'case study' of an investigation of past climatic change".

Throughout the work there is a new emphasis on the importance to the palaeobotanist of thorough acquaintance with the processes involved in accumulation of each sediment type, in order to reach sound conclusions as to the *taphonomy* of fossil plant assemblages, whether pollen, spores or larger fossils. The influence of this on the relationship between the fossil assemblage and the vegetation from which it was derived is considered throughout. The presentation of the chronologically arranged botanical evidence is followed by two chapters on stratigraphic questions, related especially to periglacial conditions during the cold stages and to inferred changes in water levels. A further chapter discusses, in a review of the history of the Whitewater, Blackwater and Wensum

valleys, the aggradation of the Beetley Terrace during a non-glacial post-Hoxnian cold stage. This preceded the Ipswichian and therefore seems to coincide in time with the Wolstonian. The final very concise chapter placing the work at Beetley "in the context of the East Anglian Pleistocene" should be required reading for all students of the British Quaternary.

The reference list is of a realistic length to encourage further study. Hopefully the work as a whole will stimulate others to undertake this kind of devoted fieldwork and patient study-in-depth in promising areas.

W. TUTIN